Usenet Newsgroup Archive: rec.radio.amateur.space

1995

These Usenet messages were preserved as a plain-text archive. This PDF was generated by Digital Library of Amateur Radio & Communications from the source text file in 2026.

Date span: 1995-01-01 through 1995-12-31

Source text: rec.radio.amateur.space.txt

Source item: https://archive.org/details/usenet-rec

Messages included in this PDF: 2,755

Message records with no readable body available in the source text: 6

Messages are presented chronologically by archived date.

Binary or encoded payloads are not printed as blocks of encoded text; a placeholder appears where such material was detected. The original source text is unchanged.

1. Re: NOAA 14 images and information

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 00:23:42 UTC
From: dew@antares.csi.lsu.edu
Message-ID: <3e4sme$rp0@unix1.sncc.lsu.edu>
Source record: 26151
Cross-posted to: rec.radio.amateur.space,sci.geo.meteorology

In article <3e1i8a$hr8@mailer.fsu.edu>, Paul Ruscher <ruscher@met.fsu.edu> writes:
|> NOAA 14 was launched successfully today from Vandenberg AFB and a look at
|> its first Automatic Picture Transmission images (4 km resolution) can be
|> found on the Florida EXPLORES! home page at
|>
|> http://thunder.met.fsu.edu/explores/explores.html
|>
|> You will also find a NOAA Satellite Resource Guide there, which includes
|> information about all NOAA satellites, including NOAA 14.
|>
|> Happy New Year!
|>
|> Paul Ruscher / FSU Meteorology & Florida EXPLORES! / Tallahassee
|>

AVHRR CHannels 1 & 2 (VIS and NIR) are also up but we are calibrating with
pre-launch coefficients. We will put sample imagery up of the Gulf of
Mexico area as well as the volcano in Mexico. The thermal channels are
being outgassed now - we will post as soon as they are operational.

here are Keps as of today from Naval Space Surveillance (we will post
daily updates to the keps on

http://antares.csi.lsu.edu

23455.6054565.8282262.00000.0006583.9606714.5689559.2746924941231 <-- one liners

23455u 94089 A 94365.10166491 .00000000 00000-0 00000-0 0 0005++ <- two liner NORAD
23455 098.8893 304.1146 0006583 345.5546 014.5986 14.1159347200009++

We will also post operational updates at the same URL as well as
better inflight calibration coefficients as they are calculated.

HEY Paul - is it just us gulf types who are so wired about this? :)

--
David Wilensky

2. Pressure transducer from weather balloon?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 01:27:36 UTC
From: wdunckel1@aol.com
Message-ID: <3e50e8$6mk@newsbf02.news.aol.com>
Source record: 26152

I ordered a radiosonde from Electronics Gold Mine. The pressure
transducer is a SDC 909-4503205 13 but I can not find any data on this.
Can anyone help me? I cant even determine the manufacturer!

Thanks for any help you may be able to give me!

Walt KD6VYV

3. Re: PSK modem

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 01:37:13 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <xSwYweh.sak1@delphi.com>
Source record: 26153

Robert D Houghton <rhought@cello.gina.calstate.edu> writes:

>I would be interested in knowing which 435 to 28 Mhz converter you are
>going to buy. I am planning to get on the pacsats the same way. I have

Yes, it's the Hamtronics converter. I have good experience with other
Hamtronics kits, so it should be a good design.

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " sak1@delphi.com " \ / *
* \ __\/__ / Open Your Mind \/ *
**********************************************************************
```

4. Re: PSK modem

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 04:44:08 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <5a+4wkg.sak1@delphi.com>
Source record: 26154

I have a technical question that might be a bit outside this news group. However, I have tried to get hold of information on PSK demodulators or modems. Just to recap, PSK is phase shift keying. On commercial transmissions, QPSK and BPSK is common for digital communication. I assume Bi Phase Shift Keying is the same method that is used on amateur satellites, where the RF carrier is shifted 180 degrees between a low and a high bit. After being downconverted to 28 MHz and demoded on a SSB receiver, you should end up with a Audio Phase Shift Keyed signal (?), let say centered around 2 kHz. Now, making a PLL circuit to detect the phase change could be done by using a simple chip as NE 565. Then the two states could be converted to normal AFSK packet (1200 bps only) using the NE 566. However, I have one question. What determines what the PSK VCO locks to. Is there a "long" low or high bit that locks the VCO in phase to set the low or high bit state. When is the signal in phase and when is it 180 degrees out of phase? Or does the software take care of this? There are chips, QPSK and BPSK demodulator chips, that can demod RF carriers up to 1 GHz directly. Demoding a 2 kHz PSK tone should be very easy. However, I have the 1993 ARRL hand book and I get the Amateur 73 magazine, but there seem to be some magic involved when talking about PSK, why? I have never seen a PSK circuit design or a technical description of the PSK modulation system. This information must be available someplace. Please drop me a note via E-mail, or make an open response. Digital PSK is the wave of the future.

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " sak1@delphi.com " \ / *
* \ __\/__ / Open Your Mind \/ *
**********************************************************************
```

5. Re: RS-15 Anyone Worked It??

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 14:45:16 UTC
From: mbarts@vt.edu
Message-ID: <mbarts.18.000EC199@vt.edu>
Source record: 26160

I've managed to squeek out two SSB QSOs on RS-15 so far. My downlink is considerably weaker than on RS-10, not surprising given the difference in altitudes of the two birds. I notice that RS-15 seems noisier than RS-10. Is that just local conditions or has anyone else noticed that as well? I've heard rumors that guys are working Europe on RS-15 but only DX I've heard so far is a cw station signing /YV5. Of course, I couldn't work him. Anybody else having any luck with this bird?

Mike KB4NT
mbarts@vt.edu

6. Re: GOES TAP FORMAT

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 15:10:53 UTC
From: Chris Oesterling <chris@angus.mystery.com>
Message-ID: <uc09Xc1w165w@angus.mystery.com>
Source record: 26155

durham@lobby.ti.com (ken) writes:

> I have been unable to find the GOES TAP signals on Spacenet 3, TR17 by mixin
> my satellite receiver up 100Mhz and listening around 1.9Mhz with an FM broadc
> detectable signal near this frequency. Other subcarriers start at about 3Mhz
> 7.2Mhz. These are all music or TV sound however.
>

My source of information is "Satellite Radio" by Thomas P. HArrington. I
got it from Universal Electronics in Columbus Ohio. I verified the
satellite, transponder, and frequency in their monthly guide and they
seem to think it's correct. The satellite receiver output must be
unclamped baseband video output (0 - 13MHz) Dump that to a general
coverage receiver (wider band enable helps) and should have it. I can't
say I've tried this (I'm using a 1.7 gig Yagi and downconverter) but I'd
like to know if you have any success. - Chris

--
Chris Oesterling (chris@angus.mystery.com)
Mystery Spot BBS, Royal Oak, MI ----------?--

7. TrakBox died at midnight!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 17:01:12 UTC
From: BIDDLEAP@ctrvax.Vanderbilt.Edu
Message-ID: <1995Jan1.170112.9997@news.vanderbilt.edu>
Source record: 26156

Hi,

Just a brief note that the popular Trakbox, used for tracking
satellites, has a bug in the firmware which causes it to crash
when it tries to track using 1994 keps in 1995. Keps with a
1995 epoch should solve the problem, at least for another year.

Alan
WA4SCA

Recommended
four
line
signature.

8. All fax stations on LF-MF-HF

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 17:29:01 UTC
From: Marius Rensen <100116.2632@CompuServe.COM>
Message-ID: <3e6oot$f6i$1@mhadg.production.compuserve.com>
Source record: 26157

[No readable article body recovered]

9. Re: PSK modem

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 17:57:46 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Jan1.175746.28678@ke4zv.atl.ga.us>
Source record: 26159

In article <xSwYweh.sak1@delphi.com> Steve Kittelsen <sak1@delphi.com> writes:
>Robert D Houghton <rhought@cello.gina.calstate.edu> writes:
>
>>I would be interested in knowing which 435 to 28 Mhz converter you are
>>going to buy. I am planning to get on the pacsats the same way. I have
>
>Yes, it's the Hamtronics converter. I have good experience with other
>Hamtronics kits, so it should be a good design.

Alas, not necessarily. I love their helical filtered preamp, but the converter was a dog. I could get the oscillator to start reliably, or be spur free, but not both at the same time with the supplied components. The NF was also nothing to write home about. I think you'll be better off just scratch building a converter. Try Reisert's common base oscillator design (Ham Radio, March 84). By the time you get the Hamtronics to work right, if you do, you'll have done more work than if you started with a clean sheet. Build it "ugly" style on an unetched piece of copperclad.

Disclaimer: Sample of one and all that, but I do have a good test bench, and somewhat of a clue. Their oscillator design is very sensitive to the particular crystal's activity. I don't like that in a design expected to be built by someone without a well equipped test bench. You might be lucky and get a hot crystal, but then again you might get one worse than mine. The Reisert circuit will start them all, and cleanly too.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

10. re: RS-15 KEPS

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 18:41:46 UTC
From: durham@lobby.ti.com
Message-ID: <3e6t1a$874@superb.csc.ti.com>
Source record: 26158

RS-15 is alive, but the KEPS don't agree with the correct AOS and LOS observed. I heard it when it was supposed to be on the other side of the world. When it is supposed to be overhead, there is no signal! I have downloaded from several sources which all seem to agree on the wrong location. The tracking program (Instantrack) is working OK for the other satellites, so there must be some kind of flaw in NORAD observation or reporting. Hope someone involved in the generation of this data notices soon.

Ken K5MBV

durham@lobby.ti.com

11. Re: PSK modem

Newsgroup: rec.radio.amateur.space
Date: 1995-01-01 20:51:15 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <Ry-bYYz.sak1@delphi.com>
Source record: 25961

Thanks Gary for the warning about the Hamtronics downconverter.

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " sak1@delphi.com " \ / *
* \ __\/__ / Open Your Mind \/ *
**********************************************************************
```

12. Worked RS-15?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-02 10:51:15 UTC
From: ken@sislnews.csc.ti.com
Message-ID: <950102105115@ken_durham.linear.sc.ti.com>
Source record: 25963

Posted this earlier, but it seems to be deleted...

Mike, I have heard RS-15, but not worked it because the KEPS don't work
for me. They show the satellite on the other side of the earth when it
can be heard overhead. This makes it hard to aim the beams!
Do you or anyone else have working KEPS? I got mine from several sources
and all seem to agree, but none work for me.

Ken K5MBV durham@lobby.ti.com

13. RS-15 Anyone Worked It?? YES

Newsgroup: rec.radio.amateur.space
Date: 1995-01-02 15:24:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A0D1F8.14E60000AE.uuout@freddy.supernet.ab.ca>
Source record: 25962

Hi Bruce,
Yes, I have worked RS-15. I have worked approx. 37 stations on
this bird. Things to think about are as you stated, overlap with RS-10
since it is on the same passband, as well as a weaker downlink at the
moment. Power on the downlink seems low...in a chat with Red K4HVK, he
stated that there was a problem with the downlink power (only about .5
watts or so, not the 5 watts we expected, with the beacon at 1.2 watts)
is being worked on.

So you may find it a little hard to work at first and if they
can fix this problem you should have good success. Please note that if
you listen to the beacon you'll be able to hear which bird your actually
on (if you can copy cw).

I'm using about 25 watts into 2 X 20 element cross yagis on the
uplink with a rs 5 by 3 reports on the downlink. Receive antenna is a
dipole (rotatable). This seems to work and I'll leave it up to you as
far as the element set that you wish to use (about 8 sets out there).

Good luck with RS-15
73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

14. Suggested RS-15 element set

Newsgroup: rec.radio.amateur.space
Date: 1995-01-02 16:24:15 UTC
From: wallio@dsm1.dsmnet.com
Message-ID: <3e99bf$3g@dsm6.dsmnet.com>
Source record: 25964

The following is offered to suggest an accurate RS-15 element set:

Launch event 94085 has resulted in element sets being released for two objects, 94085A (23439) and 94085B (23440). One of these objects is the payload (RS-15) and the other is probably the spent launch vehicle.

It is not unusual for the big guys to confuse one object for the other right after a launch and separation event. The situation is compounded by skeleton staffing of required analysts during the holidays. Note that we have not received new element sets since day 362 (we would normally expect almost daily updates).

The two latest available relevant element sets are as follows:

1 23439U 94085A 94362.60621975 -.00000042 00000-0 00000 0 0 107
2 23439 64.7982 170.9390 0224393 305.3126 52.6969 11.19236697 283

1 23440U 94085B 94361.79150546 -.00000043 00000-0 00000 0 0 10
2 23440 64.8297 172.1572 0188748 292.0126 66.1014 11.27113018 197

Comparing tracking program AOS, TCA and LOS predictions based on these two element sets with logged observations can resolve the confusion.

The (probably) spent launch vehicle is 23439. RS-15 (riding on the larger payload) is 23440.

Good hunting.

Ralph Wallio, W0RPK Indianola High School Theatres
1250 Highway G-24 Middle River Valley Radio Observatory
Indianola, Iowa 50125 High Altitude Balloon Experiments in Technology
Phone: 515-961-0383/6406
I'net: wallio@dsmnet.com IHS - MRVRO - HABET
PBBS : W0RPK@W0AK.IA.USA Multi-discipline Hands-on Education
---

15. Odd signal (132-139Mhz)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-02 16:50:01 UTC
From: Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com>
Message-ID: <3e9arp$spv@hpuerci.atl.hp.com>
Source record: 25965

Lately, I've been hearing what sounds like a 105 bps "metronome"
all across the range of 132 - 139 Mhz. Is this a local interferenc
(I'm in northern NJ) or has anyone else picked it up? I'd be
curious to know the source...Any ideas?

Regards.

16. RS-15 KEPS is 23440

Newsgroup: rec.radio.amateur.space
Date: 1995-01-02 21:04:55 UTC
From: durham@lobby.ti.com
Message-ID: <3e9ppn$kmu@superb.csc.ti.com>
Source record: 25966

Thanks for the info guys. 23440 worked fine for AOS and LOS for RS-15.

RS-15 puts out a decent beacon signal, but the transponder doesn't
compare well with RS-10/11. Could hear myself briefly with 170W and 11 el.
This on a high pass. Heard a few incomplete QSO's and they were weak.

23439 is not the correct designator for this satellite.

Ken K5MBV durham@lobby.ti.com

17. Re: TrakBox died at midnight!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 00:32:42 UTC
From: BIDDLEAP@ctrvax.Vanderbilt.Edu
Message-ID: <1995Jan3.003242.24945@news.vanderbilt.edu>
Source record: 25967

Well,

As the result of a lot of work by many people,
it turns out that the TrakBox
can be conned into working by at least two tricks.

1. Set the date in the RT clock in the TB as if December has
more than 31 days. i.e. January 2 becomes 1994/12/33.

2. Set the date in the RT clock in the TB as if 1994 has 13
months in it. i.e. January 2 becomes 1994/13/2.

I am using the first, and the second is reported also to work.
It seems that two bugs/features cancel out here.

Thanks to all who worked this out in a few hours!

Alan
WA4SCA

Recommended
four
line
signature.

18. Re: Odd signal (132-139Mhz)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 02:38:37 UTC
From: Jim Finney <jpf@jax.jaxnet.com>
Message-ID: <3eadbd$qrr@jaxnet.jaxnet.com>
Source record: 25968

Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com> wrote:
>
> Lately, I've been hearing what sounds like a 105 bps "metronome"
> all across the range of 132 - 139 Mhz. Is this a local interferenc
> (I'm in northern NJ) or has anyone else picked it up? I'd be
> curious to know the source...Any ideas?
>
> Regards.

I hear this also around 144.220. Location, Northeastern Florida.

Anybody have any ideas on what it is?

Jim Finney
jpfinney@attmail.com

19. RS-15 Anyone Worked It?? Yup

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 06:00:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A0D564.14E60000B3.uuout@freddy.supernet.ab.ca>
Source record: 25969

Hi Mike,
Yes I have worked DX on RS-15. I also find the bird very noisy.

-> I've managed to squeek out two SSB QSOs on RS-15 so far. My downlink
-> is considerably weaker than on RS-10, not surprising given the
-> difference in altitudes of the two birds. I notice that RS-15 seems
-> noisier than RS-10. Is that just local conditions or has anyone else
-> noticed that as well? I've heard rumors that guys are working Europe
-> on RS-15 but only DX I've heard so far is a cw station signing /YV5.
-> Of course, I couldn't work him. Anybody else having any luck with
-> this bird?

I had spoken to Red K4HVK and he had said that the control station was
still working on a problem with the attenuator. Apparently the beacon
is about 1.2 watts (normal) but the power output of the transponder is
not very good (approx. .5 watts). It should be putting out about 5
watts.

So we must sit and wait to see what happens in the near future. There
are a lot of stations on the bird so keep trying you'll get that DX yet.

Station here: 2 X 20 elements uplink
Dipole downlink
25 watts

It does work but not to well. Good luck with your DX

73 de Ernie VE6LU

20. Re: Odd signal (132-139Mhz)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 08:03:21 UTC
From: n7ryw@teleport.com
Message-ID: <3eb09o$8vo@desiree.teleport.com>
Source record: 25972

In article <3eadbd$qrr@jaxnet.jaxnet.com>, jpf@jax.jaxnet.com said...
>
>Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com> wrote:
>>
>> Lately, I've been hearing what sounds like a 105 bps "metronome"
>> all across the range of 132 - 139 Mhz. Is this a local interferenc
>> (I'm in northern NJ) or has anyone else picked it up? I'd be
>> curious to know the source...Any ideas?

>I hear this also around 144.220. Location, Northeastern Florida.
>
>Anybody have any ideas on what it is?

It sounds like you are both getting hit by the dreaded Pager systems.
They have very powerful signals, and although they are above 150 mHz,
they can mix in the front end and come out most anywhere.
The popular term is Intermod.
Sorry to bring the bad news!

From Bill, n7ryw@teleport.com

21. 400 MHz receiving: want to test, what to listen?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 09:37:01 UTC
From: brax@ava.hut.fi
Message-ID: <brax.7.2F091ABD@ava.hut.fi>
Source record: 25970

I am building a receiving setup to dump data from a swedish microsatellite called Astrid, due to launch almost any minute now from Plesetsk, Russia. I would like to test my equipment, but I don't have any tables where I could find another satellite already in orbit that would send some signal around 400 MHz, +-20 MHz. (BTW, why can't the beacon frequency be included in the two-line data sets that are so kindly published regularly?) Does somebody know a suitable target?

Some weeks ago I posted a question about the mysterious FB in the preamp I was constructing after the design of Chip Angle. Thanks to those who provided me not only with the answer but also with large amount of most useful side information. The preamp is working fine, I have tested it with a HP network analyser and it shows adequate performance from 250 MHz to 550 MHz, with >12dB of gain and <1dB noise figure at the nominal frequency +-20 MHz. I also constructed a 7-turn axial-mode helix antenna for the station, which turned out to be a success with SWR <1.2 from 380 to 420 MHz and cost <$40. If someone is interested, please feel free to mail or post.

Matti Brax

22. Re: Odd signal (132-139Mhz)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 11:55:27 UTC
From: jcarter@orl.mmc.com
Message-ID: <3ebdvf$7g5@theopolis.orl.mmc.com>
Source record: 25971

```
In article 8vo@desiree.teleport.com, n7ryw@teleport.com (William Roth) writes:
/In article <3eadbd$qrr@jaxnet.jaxnet.com>, jpf@jax.jaxnet.com said...
/>
/>Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com> wrote:
/>>
/>> Lately, I've been hearing what sounds like a 105 bps "metronome"
/>> all across the range of 132 - 139 Mhz. Is this a local interferenc
/>> (I'm in northern NJ) or has anyone else picked it up? I'd be
/>> curious to know the source...Any ideas?

If it sounded like a rotating drum and was 137MHZ to 138MHZ then it
could have been a download from a NOAA weather satellite.

Jim

\/\/ * \/ _._. __._ /\/\/ | James A. Carter (Jim) | jcarter@orl.mmc.com |
/|\ | Senior Software Engineer |_________________________|
/\|/\ K D 4 P O N | Martin Marietta | These views are my own |
/\/|\/\ ORLANDO | Mail Point 138 | and not that of my |
/\/\|/\/\ FLORIDA USA | 5600 Sand Lake Road | employer. |
/\/\/|\/\/\_____________| Orlando, FL 32819-8907 |___________73's_Jim ____|
```

23. Re: Odd signal (132-139Mhz)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 13:38:12 UTC
From: Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com>
Message-ID: <3ebk04$j5o@hpuerci.atl.hp.com>
Source record: 25973

jcarter@orl.mmc.com (James Carter) wrote:
>
> In article 8vo@desiree.teleport.com, n7ryw@teleport.com (William Roth) writes:
> /In article <3eadbd$qrr@jaxnet.jaxnet.com>, jpf@jax.jaxnet.com said...
> />
> />Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com> wrote:
> />>
> />> Lately, I've been hearing what sounds like a 105 bps "metronome"
> />> all across the range of 132 - 139 Mhz. Is this a local interferenc
> />> (I'm in northern NJ) or has anyone else picked it up? I'd be
> />> curious to know the source...Any ideas?
>
> If it sounded like a rotating drum and was 137MHZ to 138MHZ then it
> could have been a download from a NOAA weather satellite.
>
> Jim
>

No it wasn't WEFAX transmission ((I use them all the time...) and
it was across the whole band. Its been suggested that its
intermod from a beeper co.

Rolf

24. RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 15:23:10 UTC
From: ROBERTSM@JSC.MIL
Message-ID: <sf092662.025@JSC.MIL>
Source record: 25974

The following is a 2 line element set for RS-15 that results in
predictions within 3 minutes of the AOS/LOS:
RS-15
1 23439U 94085A 94361.17042135 -.00000043 00000-0 0000000 0 81
2 23439U 64.8325 173.1633 0187416 292.2585 65.8559 11.27110522 128
I have noticed that some of the other element sets produce wrong
predictions for RS-15.
I have worked several stations on RS-15. The downlink signal
levels are weaker than RS-10. My son Andy, N3QYA, has worked several
Europeans in the past few days on RS-15.
Good luck and see you on the birds. 73
Mel W3MR robertsm@jsc.mil

25. Building portable satellite station

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 15:38:37 UTC
From: dgf@netcom.com
Message-ID: <dgfD1u64D.I23@netcom.com>
Source record: 25975

I'm starting construction on a portable satellite station for the 70CM->2M satellite modes. I haven't used any of these modes before. For 2M operation I'll be using an ICOM IC-202. For 70CM operation, I'll be using a MIZUHO 6M SSB/CW HT driving a MM 50/432 MHz transverter. Another station will be built for 2M->10M usage, so these questions are specific to the 70CM->2M modes.

The station will be used for Field Day (hopefully FD 1995 if all goes well!).

For the most "sure fire" results, I suspect uplink on 70CM and downlink on 2M is best (due to third-harmonic interference the other way around). Please correct me if I'm wrong.

Question #1: For SSB usage, do I need to accomodate LSB transmit or receive on either 2M or 70CM? I don't know the "conventions" currently in use. Neither rig will do this unmodified.

Question #2: I have to pick 100 kHz of coverage on 70CM (the Mizuho will only do two 50 kHz ranges). What would be the suggested 70CM coverage given this constraint (that is, pick the "best" 100 kHz of the 70CM band)?

BTW I've read a recent FAQ; I'm looking here for advice given some equipment constraints as noted above.

Thanks for any info! Direct e-mail preferred...

73 Dave WB0GAZ dgf@netcom.com

26. Re: TrakBox died at midnight!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 18:43:22 UTC
From: exuward@exu.ericsson.se
Message-ID: <3ec5sa$rvu@cnn.exu.ericsson.se>
Source record: 25976

I have heard of this problem happening with different types of realtime software. It sometimes results from a divide by 0 error in the calculations. Can you set the day value to 1? Does it work again on Jan 2?

Jerry.

27. Info on FM to SSB conversion?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-03 23:32:22 UTC
From: jls@capedata.iii.net
Message-ID: <3ecmqp$j9h@nic.iii.net>
Source record: 25979

I own a Yeasu FT-5200. Have worked MIR, on several occasions, and have heard the Dove. Would like to work Oscar-13. Is there any way to build or is there a kit available for conversion from an FM to SSB signal?

Jeffery Stutzman
Packet: N1LUY@KQ1K.MA.USA.NOAM Buzzards Bay, Ma.
MANU TENERE MARE SUPREMUS

28. Re: NOAA 14 images and information

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 03:45:05 UTC
From: Paul Ruscher <ruscher@met.fsu.edu>
Message-ID: <3ed5k1$p8r@mailer.fsu.edu>
Source record: 25977
Cross-posted to: rec.radio.amateur.space,sci.geo.meteorology

dew@antares.csi.lsu.edu (David E. Wilensky) wrote:
> HEY Paul - is it just us gulf types who are so wired about this? :)
Yes, it must be. Here are updated keps for NOAA 14; more operations
information including the mysterious fix of the nitrogen gas leak
is also found on the EXPLORES! home page, URL
http://thunder.met.fsu.edu/explores/explores.html
Included are more images (12/30 images were *not* NOAA 14, my bad!)
and some operations reports from NOAA.
Paul Ruscher

29. NOAA 14 keps

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 03:48:21 UTC
From: Paul Ruscher <ruscher@met.fsu.edu>
Message-ID: <3ed5q5$pjh@mailer.fsu.edu>
Source record: 25978
Cross-posted to: rec.radio.amateur.space,sci.geo.meteorology

```
NOAA 14
1 23455U 94089A 95001.80295183 -.00000026 00000-0 10000-4 0 96
2 23455 98.8830 305.7887 0008914 311.7178 48.3252 14.11487056 332
```

30. Re: Satellite equipment

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 04:22:00 UTC
From: jimmy.johnson@totrbbs.atl.ga.us
Message-ID: <110.13.uupcb@totrbbs.atl.ga.us>
Source record: 25981

Gerald I was reading a message that you wrote to someone else and you mentioned the Kansas City Tracker. Can you give me any info on this? I am new to satellites and was looking for a program for the control of the rotor via computer and KCT is the only one I have ever heard anyone talk about. Is this shareware or commercial software? If commercial can you tell me what it cost and where to get it? Also is there any way you can UL the doc file for me to look at? Any help would be GREATLY apprecited. The only sat I have worked so far is RS-10.

JIMMY

KD4ISP@WB4GNA.#CENAL.AL.USA.NOAM - Packet
JMJSTU@SUN.CC.WESTGA.EDU - Internet

Top Of The Rock BBS - Lilburn, GA SYSOP: Steve Diggs
UUCP: totrbbs.atl.ga.us Snailmail: 4181 Wash Lee Ct.
Phone: +1 404 921 8687 Lilburn, GA 30247-7407

31. Re: Info on FM to SSB conversion?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 11:32:25 UTC
From: moritz@ipers1.e-technik.uni-stuttgart.de
Message-ID: <3ee109$k7b@info4.rus.uni-stuttgart.de>
Source record: 25980

In article <3ecmqp$j9h@nic.iii.net>,
Jeffery L. Stutzman <jls@capedata.iii.net> wrote:
>I own a Yeasu FT-5200. Have worked MIR, on several occasions, and
>have heard the Dove. Would like to work Oscar-13. Is there any way
>to build or is there a kit available for conversion from an FM to SSB
>signal?

Jeffrey,

Nothing is easier than that:

You take the output signal from your FT-5200, attenuate it and feed it to
a FM-receiver. Than you connect the audio to a SSB transmitter and
there you are.

On the receive side it works much the same, so hope to hear you soon
on OSCAR-13 with your FT-5200!

73, Moritz

32. Re: Info on FM to SSB conversion?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 13:24:28 UTC
From: zlau@arrl.org
Message-ID: <1995Jan4.132428.25055@arrl.org>
Source record: 25982

N1LUY Jeffery L. Stutzman (jls@capedata.iii.net) wrote:
: I own a Yeasu FT-5200. Have worked MIR, on several occasions, and
: have heard the Dove. Would like to work Oscar-13. Is there any way
: to build or is there a kit available for conversion from an FM to SSB
: signal?

Yes. There is no kit available because it is cheaper to just make
an SSB radio.
--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

33. RS-15 element experience

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 13:32:38 UTC
From: reinhart=40marlboro#%forwarder@shipco.geis.COM
Message-ID: <199501041331.AA026876313@relay2.geis.com>
Source record: 25983

My experience has been that the "RS15?" elset in ARLK057, the Keplerian bulletin sent out by the ARRL, works pretty well. The AOS/LOS seems to be off by about 10 minutes on the *early* side. I confirmed those findings with another station here in Mass.
One bulletin I saw suggested that 100 watts ERP would be necessary to work the bird well, and I have to agree with that. Right now my station is capable of about 70 watts ERP. The antenna is an MFJ three element beam that I can point only in azimuth. My best results with RS-15 (and even those aren't all that great) happened with the bird about 30 degrees above the horizon and the beam pointed. Not surpising, but nice confirmation. Once my AOP-1 is back up in the Spring (and thanks to all those who gave me suggestions about fixing the boom slip, but the New England winter hit before I could get the antennas up again) I don't think I'll have any trouble. The pass duration is much longer, maiking pointing easier, and the Doppler is much easier to manage. Bascially, I think that many stations which have performed well for RS-10 are going to have to be upgraded for RS-15. My advice, for what it's worth, is to put the money into antennas and preamps, not amps, if you possibly can.
There was one other comment that RS-15 seems noisier than RS-10. I don't think that's the case. Ten meter noise appears to have increased over the last few days. The last ARRL propagation bulletin did mention a recurring coronal hole that could be stirring things up.
When it comes to concern over "which bird is he on?", I might suggest that we switch from "CQ RS" to "CQ 10" and "CQ 15", or "CQ RS5" or some such. Let's see some discussion on this.
Lastly, it seems that much of the cw work is clumping up down at the very low end of the passband. Let's spread out some. Since there is so little SSB activity, try a little higher, maybe. SSB ops, it's only a suggestion!

David Reinhart
wa6ilt@amsat.org
wa6ilt@k1ugm@#ema.ma.na

34. Re: Radio Astronomy info

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 17:48:00 UTC
From: wiselace@cix.compulink.co.uk
Message-ID: <D1w6s0.G9I@cix.compulink.co.uk>
Source record: 25987

I am pleased to see this question and the response that it
has drawn. I was involved in some VLBI Radio Astronomy
back in the 1960's with some eminent Astronomers. It has
since been in my mind that a large apperature synthesised
Radio Telescope could be achieved by taking the signals
from widely distributed receivers recorded in some form to
be decided and processed at a common point by computer
This project would take vast resources and I doubt if it could
be achieved by a professional body. As I see it many
Amateur Short wave listeners and Radio Hams would need
to participate. A special but easily constructed receiver
would need to be designed, the specification yet to be
decided, a timing system would need to be set up to re
synchronise the data. A cheap recording system would
need to be devised, a system with sufficient bandwidth
to leave the data intact or at least recoverable. A network
of people would be required to pass and co-ordinate the
data. The services of a University or other large computing
service would be required, software to perform the various
data manipulations would have to be developed. Submission
of observed data could be by packet, internet, snail mail,
any other means that someone could come up with.
By processing the data in different way the simulated
telescope could be made to sweep or concentrate upon
specific co-ordinates. True international co-operation
would permit continuous observation of the whole sky.
It may transpire that a broad spectrum of frequencies can
be observed. The data received by a single station would
of course be unintelligible as the practical limitations to the
receiver temperature of an amateur station, however as the
signals from many stations are combined the system noise
temperature will reduce dramatically.
The services of professional astronomers and cosmologists
would be required to evaluate the data provided, but the
information should be available for all.

Well hoping others will spot this and chip in their six pennyworth.
Gary Peach

35. Re: Info on FM to SSB conversion?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 18:55:21 UTC
From: SPFM19A@prodigy.com
Message-ID: <3eequp$16q6@usenetw1.news.prodigy.com>
Source record: 25984

Is there anyway to convert a fm receiver or sw to SSB? Can you easily build an SSB receiver from scratch?

36. Re: Satellite equipment

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 21:16:45 UTC
From: Larry Jenkins <larry.jenkins@cl_clpl_gw.chinalake.navy.mil>
Message-ID: <D1wGFy.2AA@avalon.chinalake.navy.mil>
Source record: 25985

jimmy.johnson@totrbbs.atl.ga.us (Jimmy Johnson) wrote:
>
> Gerald I was reading a message that you wrote to someone else and you
> mentioned the Kansas City Tracker. Can you give me any info on this? I
> am new to satellites and was looking for a program for the control of
> the rotor via computer and KCT is the only one I have ever heard anyone
> talk about. Is this shareware or commercial software? If commercial can
> you tell me what it cost and where to get it? Also is there any way you
> can UL the doc file for me to look at? Any help would be GREATLY
> apprecited. The only sat I have worked so far is RS-10.
>
> JIMMY
>
>
> KD4ISP@WB4GNA.#CENAL.AL.USA.NOAM - Packet
> JMJSTU@SUN.CC.WESTGA.EDU - Internet
>
> ----
> Top Of The Rock BBS - Lilburn, GA SYSOP: Steve Diggs
> UUCP: totrbbs.atl.ga.us Snailmail: 4181 Wash Lee Ct.
> Phone: +1 404 921 8687 Lilburn, GA 30247-7407
I am new also and would like information on working any satalite.

37. Re: Odd signal (132-139Mhz)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-04 21:29:09 UTC
From: mayotc@goya.its.rpi.edu
Message-ID: <3ef3v6$g14@usenet.rpi.edu>
Source record: 25986

In article <3e9arp$spv@hpuerci.atl.hp.com>,
Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com> wrote:
>Lately, I've been hearing what sounds like a 105 bps "metronome"
>all across the range of 132 - 139 Mhz. Is this a local interferenc
>(I'm in northern NJ) or has anyone else picked it up? I'd be
>curious to know the source...Any ideas?
>
>Regards.

Just a guess, but try unplugging your Canon BJ-200e. It emits noise
like this even when off.

-Tom Mayo N1RMU tcmayo@mntr02.psf.ge.com

38. Re: RS-15 element experience

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 06:29:07 UTC
From: BRUCE268@news.delphi.com
Message-ID: <3eg3jj$sr@news2.delphi.com>
Source record: 25988

reinhart=40marlboro#%forwarder@shipco.geis.COM writes:

> My experience has been that the "RS15?" elset in ARLK057, the Keplerian
> bulletin sent out by the ARRL, works pretty well. The AOS/LOS seems to be
> off by about 10 minutes on the *early* side. I confirmed those findings
> with another station here in Mass.

I can confirm this also, but you have to use the keps marked with the "?"
mark, or else you are apparently tracking the booster rocket not the payload!

> One bulletin I saw suggested that 100 watts ERP would be necessary to
> work the bird well, and I have to agree with that. Right now my station is
> capable of about 70 watts ERP. The antenna is an MFJ three element beam
> that I can point only in azimuth. My best results with RS-15 (and even
> those aren't all that great) happened with the bird about 30 degrees above
> the horizon and the beam pointed. Not surpising, but nice confirmation

I have used my 11ele beam with 100W and two ele tri-bander for downlink (both
azimuth rotatable only) with good results on RS-10, but so far poor results
with RS-15.

> The pass duration is much longer, maiking pointing easier, and
> the Doppler is much easier to manage. Bascially, I think that many
> stations which have performed well for RS-10 are going to have to be
> upgraded for RS-15. My advice, for what it's worth, is to put the money
> into antennas and preamps, not amps, if you possibly can.

The higher orbit and thus longer window sure sounded great, but apparently
there is a problem with the sat's downlink power, and unless they can correct
this the bird may be of limited use with an average ham station.

> There was one other comment that RS-15 seems noisier than RS-10. I
> don't think that's the case. Ten meter noise appears to have increased
> over the last few days. The last ARRL propagation bulletin did mention a
> recurring coronal hole that could be stirring things up.

The band has sounded about the same at this QTH, again I think it may be
the problem with the downlink power.

> When it comes to concern over "which bird is he on?", I might suggest
> that we switch from "CQ RS" to "CQ 10" and "CQ 15", or "CQ RS5" or some
> such. Let's see some discussion on this.
> Lastly, it seems that much of the cw work is clumping up down at the
> very low end of the passband. Let's spread out some. Since there is so
> little SSB activity, try a little higher, maybe. SSB ops, it's only a
> suggestion!

Both of these sound like good suggestions.

>
> David Reinhart
> wa6ilt@amsat.org
> wa6ilt@k1ugm@#ema.ma.na

I would be interested in follow-ups on this RS-15 thread with any updates on keps or the condition of the bird. Good luck with the new bird.
73, Bruce WA4JAV.

39. Building portable satellite station

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 06:54:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A0F59A.14E60000C0.uuout@freddy.supernet.ab.ca>
Source record: 25989

Hi David,
Welcome to the satellites and its very nice to see that you are
undertaking a venture that will enlighten all.

To shed some light on your question;

-> Question #1: For SSB usage, do I need to accomodate LSB transmit or
-> receive on either 2M or 70CM? I don't know the "conventions"
-> currently in use. Neither rig will do this unmodified.

The answer is yes, you will need to be able to transmit LSB on 70cm if
you intend to work AO-10 or AO-13 (mode B) as the birds have
inverting transponders. Also if you get the chance to work FO-20
(mode J) you'll need 2m LSB for transmit and 70cm USB for receive.

-> Question #2: I have to pick 100 kHz of coverage on 70CM (the Mizuho
-> will only do two 50 kHz ranges). What would be the suggested 70CM
-> coverage given this constraint (that is, pick the "best" 100 kHz of
-> the 70CM band)?

Now this will be very hard to figure out because I really don't know
what you want to work....suggestion....have a look in some books on
AO-13, AO-10, FO-20, and the RS birds. If you can split that 100kcs
into two 50kc bands, I would use 435.475 to 435.525 LSB transmit for the
uplink on AO-13 and 435.825 to 435.875 for FO-20 USB receive. Now
please keep in mind that FO-20 and AO-10 may not be useable during this
time. These birds are here today and gone tomorrow, as far as
reliability???

Good luck Dave and C U on the birds

73 de Ernie VE6LU

40. What are the RS15 Particulars?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 08:33:38 UTC
From: bcieslak@mkelan5.remnet.ab.com
Message-ID: <bcieslak.51.00088F71@mkelan5.remnet.ab.com>
Source record: 25992

What modes and freqs?

Brian AE9K

41. Re: Info on FM to SSB conversion?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 08:49:05 UTC
From: n7ryw@teleport.com
Message-ID: <3egbna$oji@desiree.teleport.com>
Source record: 25990

In article <3ecmqp$j9h@nic.iii.net>, jls@capedata.iii.net said...
>
>I own a Yeasu FT-5200. Have worked MIR, on several occasions, and
>have heard the Dove. Would like to work Oscar-13. Is there any way
>to build or is there a kit available for conversion from an FM to SSB
>signal?

This would not work. SSB needs to be tuned in 10 Hz increments to be
understandable, especially with Doppler. The 5200 tunes in 5000 Hz steps.
A little too coarse.

Maybe you might want to try a radio built for SSB?
--
From Bill, n7ryw@teleport.com

42. Re: Satellite equipment

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 08:55:52 UTC
From: n7ryw@teleport.com
Message-ID: <3egc41$oji@desiree.teleport.com>
Source record: 25991

In article <110.13.uupcb@totrbbs.atl.ga.us>,
jimmy.johnson@totrbbs.atl.ga.us said...
>
>Gerald I was reading a message that you wrote to someone else and you
>mentioned the Kansas City Tracker. Can you give me any info on this?

<mucho snippo>

There are two systems in widespread use, the Kansas City Tracker and the Track Box. Both are very well supported, and there are others, but I don't recommend them because they use two of your computers' ports, and they are hard enough to come by. The KCT is a finished card for internal PC installation, while the Track Box is a kit that connects to a serial port.

To get the Kansas City Tracker, you can call 609-751-1018
For Track Box information, contact TAPR. I don't have their info in front of me, but I am sure that someone has it here.
From Bill, n7ryw@teleport.com

43. RS-15 Experience

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 14:21:13 UTC
From: ken@sislnews.csc.ti.com
Message-ID: <950105142113@ken_durham.linear.sc.ti.com>
Source record: 25999

The problem with getting a decent signal out of the transponder may be due in part to the innacuracy of the Keps. The best I've found have about 30 to 45 second AOS errors. This is a problem for the uplink beam since it results in a significant offpointing error (attenuation.)

I managed to work RS-15 on a high pass by hunting with the 2 meter beam while listening to the output. My signal was as good as RS10/11 on that pass and resulted in 4 contacts.

When we get a good set of Keps and if the transponder power problem is corrected, the satellite should at least give some improved coverage range.

Does anyone have new information on efforts to fix the transponder output power problem?

Ken K5MBV durham@lobby.ti.com

44. Satelite Receiver

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 15:13:07 UTC
From: brendan@exchange.datanet.net.au
Message-ID: <3eh2a3$4o4@exchange.datanet.net.au>
Source record: 25997
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew, rec.radio.amateur.space,alt.radio.pirate,alt.radio.scanner,sci.electronics,sci.geo.meteorology,sci.image.processing

If you have an interest in receiving real-time images from satelites
read on......

Equipment to receive these real-time images are manufactured in Queensland
Australia. This project began life as a research / recreational hobby by
a team of radio enthusists. The final outcome of the project was a system
to receive real-time images from polar orbiting weather satlites.

Images are available from American (NOAA), Russian (METEOR) and Chinese
(FENG-YUN) satelites as they traverse your geographical area. The
satelites transmit both visible light and infra-red images. Resolutions
vary from 2.4Kms to 5Kms per pixel.

The system comprises a simple omni-directional antenna, a suitable radio
receiver, demodulator card (AD converter) and viewing software suitable
for the viewing and manipulating images on IBM PCs.

An overall system price is in the order of $650 (Aust) with the possible
addition of a mast head pre-amp for $30. Various antenna equipment and
cabling is required and can be purchased for around $15. Detailed
diagrams are included for the construction of the antenna.

Please respond in e-mail if you are interested in obtaining more
information. Parts of the system are also available in kit form.

--
Brendan McLearie
brendan@datanet.net.au

45. Re: Info on FM to SSB conversion?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 15:56:40 UTC
From: zlau@arrl.org
Message-ID: <1995Jan5.155640.24360@arrl.org>
Source record: 25998

N7RWY William Roth (n7ryw@teleport.com) wrote:

: This would not work. SSB needs to be tuned in 10 Hz increments to be
: understandable, especially with Doppler. The 5200 tunes in 5000 Hz steps.
: A little too coarse.

If cost were no object, the technology exists to build a DSP
demodulator to replace the FM demodulator. As I understand
it, programming a DSP chip to interpolate frequencies is
quite do-able.

Rick KK7B, wrote a nice set of articles on phasing receivers
and transmitters. See the January, April, and May 1993 issues
of QST.

--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

46. Re: Ham-Space Digest V95 #5

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 19:42:21 UTC
From: sphillip@nyx10.CS.du.EDU
Message-ID: <Pine.SUN.3.90.950105124159.14311B-100000@nyx10>
Source record: 26003

I hope I got the right address...

unsubscribe Ham-Space

47. test

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 21:30:51 UTC
From: rich.evans@digcir.cts.com
Message-ID: <950105160329147@digcir.cts.com>
Source record: 25993

this is a test to see if this works!!!!

48. RS-15 personal AOS findings

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 21:32:14 UTC
From: kg5ai@w5ac.tamu.edu
Message-ID: <3ehogu$m04@news.tamu.edu>
Source record: 25994
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.misc

RS-15 just came over my location in College Station, TX at a pretty high elevation (around 80 deg). Using keps from orbit 76 for object 23439 and orbit 65 for object 23440, this was my finding. I began receiving the beacon more than 15 minutes into object 23439 being high overhead. This was a few minutes before 23440 was to come into view. At the point 23440 was supposedly overhead, I was already hearing the dopplar dropping. When 23440 was about 6 minutes to LOS, I already lost the beacon. So in conclusion, it appears that with the kep set I have, 23440 more closely matches with what I observed but is still 5 minutes behind.

Why is it so difficult to get reliable keps on this bird? NORAD claims to be able to pin point the location of an incoming ICBM but they can't track a satellite that has been up for over a week.

myles KG5AI

49. ARLS001 New satellite planned

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 22:52:47 UTC
From: w1aw@arrl.org
Message-ID: <$arls001.1995@ampr.org>
Source record: 25995
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB SPACE @ ARL $ARLS001
ARLS001 New satellite planned

ZCZC AS80
QST de W1AW
Space Bulletin 001 ARLS001
From ARRL Headquarters
Newington, CT January 4, 1995
To all radio amateurs

SB SPACE ARL ARLS001
ARLS001 New satellite planned

New satellite planned

A satellite now being designed in South Africa will include an
extensive Amateur Radio package and is scheduled for launch in
January 1996, according to South African amateur satellite
enthusiasts, as announced in a release from Henry Chamberlain,
ZS1AAZ.

Called Sunsat, the satellite is being designed and built by
engineering students at the Electronic Systems Laboratory at
Stellenbosch University.

In exchange for a US National Aeronautics and Space Administration
launch, Sunsat will carry a precision GPS receiver and a set of
Laser retro-reflectors, for NASA's use.

The Amateur Radio payload was approved at the SA-AMSAT Spacecon 91
Conference. It includes duplicate transmitters and receivers for
the 2-meter and 70-cm bands, a 24-cm (1260 Mhz) receiver and 13-cm
(2400-MHz) receiver. A number of uplink and downlink frequency
combinations are possible.

Sunsat will offer extensive digital communication capability. One
of the 2-meter receivers has four IF sections connected to 1200-baud
AFSK packet modems. The satellite carries three G3RUH-compatible
9600-baud modems that can be switched to various receivers and
transmitters. The designers say that ground-station requirements
are minimal. Data communication between stations running 10 W
transmitters and dipole antennas will be practical. Since large
quantities of data can be stored in the satellite, global data
transfer will be possible.
```

Sunsat carries a number of educational experiments, including a 2-meter ''parrot'' mode repeater intended for amateurs new to satellite operating. Uplinked speech will be digitally stored and retransmitted on the same frequency, enabling school users to hear the retransmission and know that they are getting through.
NNNN
/EX

50. Satellite Tracker

Newsgroup: rec.radio.amateur.space
Date: 1995-01-05 23:13:26 UTC
From: ajbutler@ins.infonet.net
Message-ID: <3ehuem$eg@insosf1.infonet.net>
Source record: 25996

In this newsgroup about a month ago there was a posting telling where to find a program on the Internet to track satellites. If I remember this information properly it was able to keep track of a large number of the satellites at the same time. Also it was able to depict the view of the earth as it would be seen from the satellite. If I am not mistaken this program may have come from Germany.

Can someone tell me where to find this program as I would like to get it and try it out. Also a friend at work without access to the Internet is interested in it.

Thanks for any help that can be provided.

A J Butler
AJButler@ins.infonet.net
KA0IES

51. RS-15 element experience

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 06:50:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A10596.14E60000C7.uuout@freddy.supernet.ab.ca>
Source record: 26013

Hello Reinhart,

Just a few notes on your suggestion about moving the cw up high on RS-15. Well I must disagree with this idea. The signals on this bird are already very hard to hear and adding cw on top of ssb signals is not smart!

I've worked over 50 stations on ssb and find that the guys running 100 watts ERP don't know the difference between ERP from the antenna and what comes out of the back of their amps. What I'm saying is not meant to be taken the wrong way, please. I do realize that this bird seems to be a little hard of hearing but those guys running 170 watts to their KLM-22Cs may want to reduce that power a bit (SSB and CW).

The satellite does appear to have a problem, namely the attenuator. I am not 100% sure what it is but have a hunch that it is very finicky about the uplink power levels. I find that when the bird is out west over the Pacific and usage decreases, it starts to sound better (barring that its not over the far east). This would indicate that we have to back down all our power levels to stop the attenuator from being pushed on.

Your comments are welcome, please.

73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

52. [TAPR] TrakBox Update

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 07:26:56 UTC
From: gjones@tcet.unt.edu
Message-ID: <3eirc0$7im@hermes.unt.edu>
Source record: 26000

TAPR: TrakBox Firmware Update 1/5/95

As most active TrakBox users must know by now, there is a bug in
firmware versions 3.30a through 3.30h. The problem relates to the
the clock settings - now that we are in the year 1995. New code is
available from various sources for the benefit of those users who
have programming capability. The code will be posted on ko-23 and
ko-25 as soon as the birds are back in normal service. You can
also find the code in DL5 of the Hamnet SIG on Compuserve. We
expect it will become available in many more places after that as
users spread the word.

Thanks to Sueo Asato, JA6FTL, for providing version 3.30i so quickly.

For the benefit of users not having programming capability, TAPR will
start taking orders starting on Friday, Jan 6th. New ROMS will cost
$12 + $2 for US Shipping/Handling. Shipping will start when the office
resumes normal operations on Tuesday, Jan 10th, 1995.

If you received a TrakBox from TAPR after Nov 1, 1994, then contact the
office about the procedure to get your EPROM replaced.

Jack Davis, WA4EJR - TAPR TrakBox Manager

Tucson Amateur Packet Radio
8987-309 E Tanque Verde Rd #337 * Tucson, Az * 85749-9399
Voice: 817-383-0000
Fax: (817) 566-2544

NOTE: The TAPR Office opens full-time again on Tuesday, Jan 10th.
The office has been taking orders by fax and voice mail during the
holiday break.

53. SatTrack for LINUX

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 08:11:00 UTC
From: hendrik@hotlegs.ping.de
Message-ID: <5dKKGuI4OTB@hotlegs.ping.de>
Source record: 26001

```
## Forwarded message of 17 Nov 94
## Origin : /a/sat
## Creator : manfred@isi5.ssl.berkeley.edu

## Archived message on 24.12.94
## Origin : /rec/radio/amateur/space

> From: hendrik@flydut.com (Hendrik Jassies)
> Subject: Re: Q: SatTracking for os Linux
>
> Please, can anyone tell me, on what ftp-server I can find a nice satellite-
> tracking program like Quiktrak, InstantTrack or PCTrack (all DOS), for
> os LINUX ?
> Many thanks for your answer.
> regards
> Hendrik Jassies.

Bob Kupiec was kind enough to provide an FTP site from which SatTrack V2.0
can be obtained. Do the following:

ftp ftp.jvnc.net (128.121.50.2)
login anonymous
binary (this line is important!)
cd /pub/priv/kupiec/sattrack
get sattrack.V2.0.tar.Z

Place this file into your Unix home directory, uncompress it, and then type
'tar xvpf sattrack.V2.0.tar'. This will unbundle the distribution file
and will create all necessary sub-directories. Then look into the documentation
file 'sattrack.doc' in SatTrack/doc for instructions how to compile sattrack
(and some other auxiliary programs). It should compile perfectly on at least
Sun-3's (SunOS 4.0.3), SPARCstation IPCs (SunOS 4.1.1) and i386 laptops
running Linux. Make sure the compiler and linker flags in the Makefile
are configured properly!

Future releases are expected to feature the SDP4 model for satellites with a
period of more than 225 minutes and X Window graphics with a color world map
tracking chart (V3.0).

Version 2.2 is an improved version of V2.0 and will be ready for release
very soon. Stay tuned ...

Please let me know how the installation went and if you encountered any
problems, bugs or imperfections.

Manfred --- W6/DL5KR
```

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720, USA
(510) 642-8497
manfred@ssl.berkeley.edu

54. sat03nov.zip - Fast Satellite Tracker by DL3HRT & DL3HZM

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 08:11:00 UTC
From: hendrik@hotlegs.ping.de
Message-ID: <5dKKHBo4OTB@hotlegs.ping.de>
Source record: 26002

```
## Forwarded message of 18 Nov 94
## Origin : /a/sat
## Creator : hansky@Igel.Physik.TH-Zwickau.DE

## Archived message on 24.12.94
## Origin : /rec/radio/amateur/space

I have uploaded to SimTel, the Coast to Coast Software Repository (tm),
(available by anonymous ftp from the primary mirror site OAK.Oakland.Edu
and its mirrors):

SimTel/msdos/hamradio/
sat03nov.zip Fast Satellite Tracker by DL3HRT & DL3HZM

This program allows to track up to 700 satellites. The tracking is done
eigther in real-time or in the delta-t mode. 16 satellites are presented
simultaneously in the real time table.

Features:
* up to 700 different satellites
* using AMSAT and NASA format
* optional calculation of AOS (Appearance Of Satellite) and maximum
elevation
* optional acustic signal triggered by AOS/LOS
* prediction protocol to textfile
* prediction also for two sites
* select the second observer from up to 2000 locations
* locator-coordinate-distance computation
* worldmap with spotlight
* azimuth-/elevation graphic with optional presentation of horizon
* information system for particular satellites
* bi-lingual (English and German)
* all data files are text-type files
* selecticve update of element sets when using NASA format
* display of the sun terminator

Minimum configuration:
* PC-AT 286 and above
* abt. 200kByte disc capacity
* abt. 400kByte free memory when using graphics
* EGA/VGA-graphic

Optional:
* Arithmeticprocessor
* Mouse

sat03nov.zip has replaced sat04aug.zip.
```

ShareWare. Uploaded by the author.

Karsten
- -
Karsten Hansky (DL3HRT)
e-mail: hansky@igel.physik.th-zwickau.de
AX25 : DL3HRT@DB0LPZ.#SAX.DEU.EU
Phone : +49 0375 536 1429

55. Re: NOAA 14 images and information

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 10:37:06 UTC
From: boyer@rd.bbc.co.uk
Message-ID: <D1zC5v.IM4@bbc.co.uk>
Source record: 26004
Cross-posted to: rec.radio.amateur.space,sci.geo.meteorology

Paul Ruscher (ruscher@met.fsu.edu) wrote:
: dew@antares.csi.lsu.edu (David E. Wilensky) wrote:
: > HEY Paul - is it just us gulf types who are so wired about this? :)
: Yes, it must be. Here are updated keps for NOAA 14; more operations
: information including the mysterious fix of the nitrogen gas leak
: is also found on the EXPLORES! home page, URL
: http://thunder.met.fsu.edu/explores/explores.html
: Included are more images (12/30 images were *not* NOAA 14, my bad!)
: and some operations reports from NOAA.
: Paul Ruscher

If by wired you mean excited. Then count me in.

I have had 2 or 3 passes a day from it everyday this year.

John B
John.boyer@rd.eng.bbc.co.uk

56. PSK Modem Description in QEX

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 15:54:46 UTC
From: magliaco@pilot.njin.net
Message-ID: <3ejp46$6s2@pilot.njin.net>
Source record: 26005

In response to the recent questions regarding PSK modulation and Pacsat operations, I would like to make reference to an article I wrote in the August 1994 issue of QEX that describes a Pacsat Modem I designed and built for digital satellite communications.

The article not only describes BPSK, but also how it is handled by the modem circuitry, and its interconnections with a TNC, and is my attempt at clearing the confusion and lack of information on this subject.

Copies of the August 1994 issue of QEX can be obtained by writing:

Maty Weinberg
American Radio Reley League
225 Main Street
Newington, CT 06111

Expect a small "bill" along with the issue to cover its cost.

Good luck!

73, de John, KD2BD

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

57. PSK Modems

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 16:11:33 UTC
From: ken@sislnews.csc.ti.com
Message-ID: <950106161133@ken_durham.linear.sc.ti.com>
Source record: 26008

Aside from the technical aspect of satellite packet, is there a source of information about commercial TNCs and modems? Like is there anyone other than PacCom building completely assembled packet interfaces for satellite use up to 9600 baud? Can a PSK TNC/Modem be bought for less than $200?

I don't want to build or assemble any more kits in the near future, but would like to try packet through the microsats in order to get ready for the big new bird and for Sunsat.

Could a 16 bit PC sound card do all of the packet functions? It works for me for 1200 baud reception with an 8 bit card.

Ken Durham K5MBV durham@lobby.ti.com

58. Sattelite Tracking program for X-windows (Unix)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 17:46:48 UTC
From: jeffw@mxim.COM
Message-ID: <199501061746.JAA03547@macs.mxim.com>
Source record: 26006

```
Does anyone know of an ftp site that is known to have
a sattelite tracking program for X-windows for Unix?
thx. Jeff W.
```

59. * SpaceNews 09-Jan-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 20:21:13 UTC
From: magliaco@pilot.njin.net
Message-ID: <3ek8np$j1k@pilot.njin.net>
Source record: 26007
Cross-posted to: rec.radio.amateur.space,rec.radio.info

```
SB NEWS @ AMSAT $SPC0109
* SpaceNews 09-Jan-95 *

BID: $SPC0109

=========
SpaceNews
=========

MONDAY JANUARY 9, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* NOAA-14 LAUNCHED! *
====================
NOAA -J (NOAA 14) was successfully launched on Friday 30-Dec-94 at
02:02 PST from Vandenberg AFB atop an Atlas-E booster. The burn was
nominal for a 870 km near polar orbit inclined 98 degrees.

Dallas Remote Imaging Group member Richard Allen, W5SXD, of Houston, Texas
provided the following report on NOAA-14:

The 1800Z pass of NOAA-14 was heard in Houston. The beacon on 137.770 MHz
was heard well and my HRPT system locked on at 1698.0 MHz for the first
half of the pass. It appears that the element set that I posted earlier
is very good. I manually rocked my antenna around the computer generated
position and the signal level dropped in all directions. I got carrier
lock and bit-sync but no frame sync. This is what I usually see when
NOAA-10 is transmitting LAC downlinks. I did not try to observe the eye
pattern but I'll do that on the next orbit. Nothing was heard on either
137.5 or 137.62 APT downlink frequencies. Dave Briggs at NOAA SatOps again
verified that the downlink should be 1698/ 137.5. This matches my HRPT
observation at least and is in agreement with the odd/even pairing used on
NOAA-9, 10, 11, 12, and 13.

The following element set was received from NOAA/GFSC for NOAA-14.
GCC DEC 30, 1994 12:48:35Z
NOAA-14
1 23455U 94 89 A 94364.46369541 -.00000019 00000-0 00000+0 0 17
2 23455 98.8951 303.4851 0010197 320.7071 39.3363 14.11138330 05

[Info via Jeff Wallach]

* AO-13 NEWS *
==============
```

QST *** AO-13 TRANSPONDER SCHEDULE *** 1994 Dec 19 - Feb 20
Mode-B : MA 0 to MA 100 | Omnis : MA 230 to MA 25
Mode-BS : MA 100 to MA 130 |
Mode-S : MA 130 to MA 132 |<- S beacon only
Mode-S : MA 132 to MA 155 |<- S transponder; B trsp. is OFF
Mode-S : MA 155 to MA 160 |<- S beacon only
Mode-BS : MA 160 to MA 180 | Alon/Alat 180/0
Mode-B : MA 180 to MA 256 | Move to attitude 230/0, Feb 20

[Info via Wayne, WA2N]

* RS-15 NEWS *
==========
The following data on RS-15's orbit came from Ken Ernandes N2WWD via Ray Soifer W2RS. Based on some AOS, TCA and LOS findings Ken made up a Keplerian element set to match the claimed Boxing Day launch. These have since been 'tweaked' a few times to correct the slight discrepancies found, but the latest set are are still running true within +/- 20 seconds after four days of use. The original state vector from which Ken derived the Keps came from his own modelling assuming a 26th December 1994 03:00 UTC launch time is as follows:

Vector format = 10107
Satellite Name: RS-15
Catalog Number: 99915
Epoch MET: 0.04004629630
0/00:57:40.000 MET
EFG E: -3698.189817 km
F: -4493.256940 km
G: -6027.203350 km
Edot: 5.466925217 km/s
Fdot: 0.509012470 km/s
Gdot: -3.733879490 km/s
ndot/2 (drag): 0.00000000458 rev/day^2
nddt/6: 0.00000E+00 rev/day^3
Bstar: 1.27563E-05 1/Earth Radii
Elset #: 2
Rev @ Epoch: 1.64733102495

The latest recommended working set, which should still hold well for a further ten days (until NASA/NORAD are able to sort out which specific object is being tracked) are:

RS-15 (Epoch) (Decay)
1 99915U 94360.16222500 .00000000 00000-0 13414-4 0 26
2 99915 64.5927 174.9040 0173416 233.4418 0.0000 11.27220872 13
(Incl) (RA) (Ecc) (A of P) (MA) (MM)

The latest NASA KEPS for the object we believe to be RS-15 (which is not the first that was listed as such) are:

RS-15
1 23440U 94361.79150546 -.00000043 00000-0 00000+ 0 26
2 23440 64.8297 172.1572 0188748 292.0126 66.1014 11.27113018 197

This set shows a lag behind the Doppler tracking by some 2.5 minutes, so it's best to keep to the first set given above e.g. 1 99915U for now.

The TLM beacon on 29.352 MHz is VERY strong, sending .."MMW14 INW11 ..etc.. RS15". The transponder uplink:downlink translation figure is ca. 116.504, e.g. f uplink - 116.504 = downlink, downlink + 116.504 = uplink.

At times the satellite (considering the distance and the inverse square law) is very sensitive, and the noise floor is clearly audible. 10w ERP provided G3IOR a downlink signal that was 6db above the noise. No more than 100w ERP (10w to 8 elements) is needed for uplink. Best and most QSB free downlink resulted by employing vertical polarization at most attitudes, and was even better than RHCP and LHCP, but this may change with time. Horizontal polarization gave by far the weakest signal and deepest fades. RS-15 is tumbling and toppling, showing spin fading at some 1 cps, sounding rather like AO-13 can. Despite RS-15 non-stabilization, this should slowly subside.

[Info via G3IOR]

* H-II LAUNCH DELAY *
==========
A NASDA press release issued on 27-Dec-94 reported that the launch of the Japanese H-II third vehicle has been postponed because a leakage was detected in a pipe of Reaction Control System (RCS).

The Institute of Space and Astronautical Science (ISAS), the New Energy and Industrial Technology Development Organization (NEDO) and the National Space Development Agency (NASDA) have been engaged in flight operation of the vehicle toward the launch on Feb. 1, 1995.

The new operation schedule would be decided early in January when the repair work would have been finished.

[Info via Yoshiro Yamada]

* SpaceNews ON-LINE! *
==========
There are several ways of accessing SpaceNews on the Internet. Those with e-mail capabilities can receive the latest issue of SpaceNews by sending an empty mail message to the following address:

infobot@infomania.com

The message must contain a subject line that reads:

#FINGER magliaco@pilot.njin.net

A ham-radio callsign look up can be performed by changing the subject to:

#CALLSIGN W6VIO

Those with direct access to the Internet can use the finger command to receive the latest SpaceNews issue:

finger magliaco@pilot.njin.net

SpaceNews may also be accessed using the File Transfer Protocol (FTP) by issuing the command:

ftp pilot.njin.net

Archives of past issues, satellite-related software, GIF images, and other information is available under the /pub/SpaceNews subdirectory. A new addition to this site is an education subdirectory that carries recent issues of "Education News" by Tom Davis, IK3WVJ/EA2CLS/KB7HTA.

* THANKS! *
==========
Thanks to all those who sent messages of appreciation and holiday greetings to SpaceNews, especially:

GM1KJF N1HID VU2LBW WA2GSY RK3KPK AA6TA KF8BEX

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

60. Any SASI Tracker Users Out Here???

Newsgroup: rec.radio.amateur.space
Date: 1995-01-06 21:58:48 UTC
From: Ken Terry <ken_terry@macmail.eng.gulfaero.com>
Message-ID: <3ekeeoINNbj5@gulfaero.com>
Source record: 26009

I just started using the new SASI sat tracker with RealTrak to catch HRPT data from NOAA sats. Has anyone out here used the automatic track mode on the SASI? It is supposed to be able to receive a batch of track cords from RealTrak and run by itself, allowing your cpu to work full time cramming the 665K of data coming in from the Oribiter onto your hard drive.

Ken
ken_terry@macmail.eng.gulfaero.com

61. Re: PSK Modems

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 02:57:44 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <5s+a4to.sak1@delphi.com>
Source record: 26010

Hi Ken.

What software do you use to receive Packet via your sound card?

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " sak1@delphi.com " \ / *
* \ __\/__ / Open Your Mind \/ *
**********************************************************************
```

62. MIR question...

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 04:54:56 UTC
From: cbdavis@ix.netcom.com
Message-ID: <3el6r0$rb1@ixnews3.ix.netcom.com>
Source record: 26011

The past several times that MIR has passed, I tried to connect but got bumped with message R0MIR BUSY. It seems that the mail box system was only transmitting not receiving. I have tried several times and MIR refuses to connect. If you have has success with MIR, let me know your secrets. I had MCOM and M on and all I saw were transmission FROM MIR to specific callsigns.

Thanks

Clint Davis
cbdavis@ix.netcom.com

63. Re: 400 MHz receiving: want to test, what to listen?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 13:59:57 UTC
From: "Richard B. Langley" <lang@unb.ca>
Message-ID: <3em6ot$co9@sol.sun.csd.unb.ca>
Source record: 26012

In article <brax.7.2F091ABD@ava.hut.fi> Matti Brax, brax@ava.hut.fi writes:
> I am building a receiving setup to dump data from a swedish microsatellite
> called Astrid, due to launch almost any minute now from Plesetsk, Russia. I
> would like to test my equipment, but I don't have any tables where I could
> find another satellite already in orbit that would send some signal around
400
> MHz, +-20 MHz. (BTW, why can't the beacon frequency be included in
> the two-line data sets that are so kindly published regularly?) Does somebody
> know a suitable target?
>
> Some weeks ago I posted a question about the mysterious FB in the preamp I
was
> constructing after the design of Chip Angle. Thanks to those who
> provided me not only with the answer but also with large amount of most
useful
> side information. The preamp is working fine, I have tested it with a HP
> network analyser and it shows adequate performance from 250 MHz to 550 MHz,
> with >12dB of gain and <1dB noise figure at the nominal frequency +-20 MHz.
> I also constructed a 7-turn axial-mode helix antenna for the station, which
> turned out to be a success with SWR <1.2 from 380 to 420 MHz and cost <$40.
If
> someone is interested, please feel free to mail or post.
>
> Matti Brax

The Transit and Csikada satellites transmit on frequencies just below 400 MHz.
E-mail me for further details.

==
Richard B. Langley Internet: LANG@UNB.CA or SE@UNB.CA
Geodetic Research Laboratory BITnet: LANG@UNB or SE@UNB
Dept. of Geodesy and Geomatics Engineering Phone: (506) 453-5142
University of New Brunswick FAX: (506) 453-4943
Fredericton, N.B., Canada E3B 5A3 Telex: 014-46202
==

64. Re: PSK Modem Description in QEX - abstract.txt [1/1]

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 16:45:33 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3emgfd$5fp@news.doit.wisc.edu>
Source record: 26014

In article <3ejp46$6s2@pilot.njin.net>, magliaco@pilot.njin.net (John Magliacane) says:
>
>In response to the recent questions regarding PSK modulation and Pacsat
>operations, I would like to make reference to an article I wrote in the
>August 1994 issue of QEX that describes a Pacsat Modem I designed and
>built for digital satellite communications.
>
>The article not only describes BPSK, but also how it is handled by the
>modem circuitry, and its interconnections with a TNC, and is my attempt at
>clearing the confusion and lack of information on this subject.
>
G3RUH also has a file that can be downloaed from FTP.AMSAT.ORG
that explains raised cosine modulation. It's a .ZIP file that contains
the text and several .GIF images of illustrations. He describes it
thus:

------------------- Cut Here -------------------

The Shape of Bits To Come Oscar News (UK) 1991 Apr No. 88 p 29-37

This article is about bits, about bandwidth and about control of both.
What is the "raised cosine modulation" used on microsats AO-16/18/19? And
what is the RSM-8 on Rudak/AO-21? What PSK modulation does Fuji-20 use?
Come to that, what is BPSK, and similar abbreviations? Substantial
tutorial article, copiously illustrated.

(snip reprint list)

It is available on-line from ftp.amsat.org as the file:

/amsat/articles/g3ruh/a108.zip

------------------ Cut There --------------------

Dave, N9LTD
Institute for Instant Intellectual Gratification Electronically

65. Mac SW for digital sats

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 18:05:29 UTC
From: pstmarie@nyx10.cs.du.edu
Message-ID: <3eml59$re7@nyx10.cs.du.edu>
Source record: 26015

Is there a suite of software like PB/PG/PFHADD/PHS or WISP
for the Mac??

Thanks,
Pete ka1pbc

66. Ham Equipment

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 19:21:36 UTC
From: ba606@FreeNet.Carleton.CA
Message-ID: <D21v40.JHt@freenet.carleton.ca>
Source record: 26016

For sale or trade Johnson Pacemaker and Courier transmitter for good used tras transceiver.

67. Re: Mac SW for digital sats

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 19:28:49 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0701951328490001@slip207.bga.com>
Source record: 26018

In article <3eml59$re7@nyx10.cs.du.edu>, pstmarie@nyx10.cs.du.edu (Peter St. Marie) wrote:

> Is there a suite of software like PB/PG/PFHADD/PHS or WISP
> for the Mac??
>
> Thanks,
> Pete ka1pbc

Suggest you contact Gil MacKall at mackall@han.unisysgsg.com.

He is working on such a beast. If you hear of others, I'd like to know.

Ron W5RKN

68. ARLK001 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 20:41:02 UTC
From: w1aw@arrl.org
Message-ID: <$arlk001.1995@ampr.org>
Source record: 26022
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK001
ARLK001 Keplerian data

ZCZC SK26
QST de W1AW
Keplerian Bulletin 1 ARLK001
From ARRL Headquarters
Newington, CT January 7, 1995
To all radio amateurs

SB KEP ARL ARLK001
ARLK001 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-63
1 99963U 95999A 95033.30211252 .00136628 00000-0 40709-3 0 16
2 99963 51.6699 114.9867 0040902 359.8331 0.2628 15.95289378 24
AO-10
1 14129U 83058B 94362.30354351 -.00000400 00000-0 10000-3 0 3330
2 14129 26.6502 290.8469 6024517 239.2864 48.4317 2.05884111 58816
RS-10/11
1 18129U 87054A 95002.54915628 .00000031 00000-0 17760-4 0 47
2 18129 82.9230 181.4865 0011018 185.2111 174.8928 13.72346552377251
UO-11
1 14781U 84021B 95001.47735020 .00000154 00000-0 33922-4 0 7642
2 14781 97.7806 11.8726 0011797 1.8722 358.2528 14.69289811579429
RS-12/13
1 21089U 91007A 95001.08607947 .00000025 00000-0 11013-4 0 7651
2 21089 82.9214 224.6819 0027857 279.2535 80.5468 13.74052134195828
AO-13
1 19216U 88051B 94365.65393296 -.00000317 00000-0 10000-4 0 34
2 19216 57.6380 211.8828 7254451 358.4040 0.3418 2.09726038 18655
UO-14
1 20437U 90005B 94364.72050450 .00000002 00000-0 17910-4 0 635
2 20437 98.5813 86.7319 0011085 338.8293 21.2423 14.29869578257677
RS-15
1 23439U 94085A 95001.89504153 -.00000042 00000-0 00000+0 0 118
2 23439 64.7986 164.1170 0224409 304.5122 53.4790 11.19236496 764
```

```
RS-15?
1 23440U 94085B 94365.87289886 -.00000042 00000-0 10000-4 0 30
2 23440 64.8314 165.5643 0188688 291.2440 66.8423 11.27115214 657
AO-16
1 20439U 90005D 94364.20885962 .00000005 00000-0 18802-4 0 8614
2 20439 98.5910 87.6821 0011586 341.1391 18.9362 14.29923549257615
DO-17
1 20440U 90005E 94364.77372365 .00000018 00000-0 24050-4 0 8623
2 20440 98.5911 88.6324 0011422 338.6804 21.3899 14.30064305257718
WO-18
1 20441U 90005F 94364.19293213 .00000013 00000-0 21928-4 0 8653
2 20441 98.5901 88.0448 0012227 340.5210 19.5507 14.30036727257639
LO-19
1 20442U 90005G 94364.78739875 .00000016 00000-0 23027-4 0 8619
2 20442 98.5929 88.9420 0012518 337.8695 22.1944 14.30136267257734
FO-20
1 20480U 90013C 94364.22091868 -.00000011 00000-0 56365-4 0 7584
2 20480 99.0619 119.2779 0539750 255.6286 98.4327 12.83229177229276
AO-21
1 21087U 91006A 95002.48441117 .00000093 00000-0 82657-4 0 5530
2 21087 82.9417 355.2131 0033748 248.4723 111.2834 13.74549415196960
UO-22
1 21575U 91050B 95003.19089037 .00000024 00000-0 22423-4 0 5684
2 21575 98.4135 78.4407 0008673 54.5092 305.6904 14.36952396181804
KO-23
1 22077U 92052B 94364.09429761 -.00000037 00000-0 10000-3 0 4608
2 22077 66.0779 229.8002 0013913 241.2790 118.6829 12.86289982111980
KO-25
1 22828U 93061F 94364.19788759 -.00000008 00000-0 14625-4 0 3367
2 22828 98.6330 77.9519 0010360 348.0472 12.0465 14.28081413 33757
KO-25?
1 22830U 93061H 94365.74023923 .00000009 00000-0 21111-4 0 3668
2 22830 98.5365 74.5748 0011245 321.5894 38.4482 14.28079072 65890
IO-26
1 22826U 93061D 94365.21366364 -.00000010 00000-0 13898-4 0 3570
2 22826 98.6369 78.9301 0009657 359.9045 0.2125 14.27753239 65805
AO-27
1 22825U 93061C 94364.19588153 -.00000002 00000-0 17069-4 0 3594
2 22825 98.6366 77.8557 0008724 2.5345 357.5880 14.27646793 65655
PO-28
1 22829U 93061G 94364.69735137 .00000010 00000-0 21625-4 0 3512
2 22829 98.6337 78.4684 0010280 347.2604 12.8312 14.28057833 65745
Mir
1 16609U 86017A 95001.87529069 .00003890 00000-0 56626-4 0 8847
2 16609 51.6478 271.4036 0002341 95.9473 264.1786 15.58408276506983

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
January 10, 1995, at 2330z on Baudot and AMTOR.
NNNN
```

/EX

69. Re: RS-15 personal AOS findings

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 20:47:05 UTC
From: joes@uunet.uu.net
Message-ID: <3en2f7$g6q@alterdial.UU.NET>
Source record: 26017
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.misc

Hi. You can easily hear these birds in advance of AOS because their 10 m downlink is affected by the F layer and will easily bounce thru hit the earth reflect upwards and downwards again....almost a double hop. I have heard this many times. Check the first LOS rather than the AOS. You can get a second LOS the same way. Hope that helps. Joe KO4EI

70. More RS-15 notes

Newsgroup: rec.radio.amateur.space
Date: 1995-01-07 22:33:29 UTC
From: reinhart=40marlboro#%forwarder@shipco.geis.COM
Message-ID: <199501072232.AA027527959@relay2.geis.com>
Source record: 26019

Here's another two cents worth on RS-15. I caught a 1115Z pass over my QTH in Shrewsbury, central Massachusetts, on 6 January 1995. Once again, AOS was about 10 minutes ahead of the RS-15? eleset from ARLK057. BTW, I'm using a G5RV for reception.
The transponder was very quiet. I was able to copy my downlink, very weakly, within two minutes of beacon AOS. Once again, best performance was with the bird approx. 30 degrees above my horizon. There was a very deep, long null when the bird approached maximum elevation. Copy resumed when the bird started back down. ERP is about 70 watts, and the pattern on my 3 element beam certainly isn't very tight
I managed one "partial" QSO. I heard several other stations on the downlink, including one on SSB, but was unable to copy callsigns.
I've read a lot of comments about "transponder power problems". As I read the specs, the *beacon* can put out twice the power of the *transponder*. That tells me that there is precious little power available per signal in the passband. Add the greatly increased altitude factor and it seems pretty obvious that a lot of RS-10 stations are going to come up short, me included (sigh).

David Reinhart
wa6ilt@amsat.org
WA6ILT@K1UGM.#EMA.MA.NA

71. FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-01-08 00:36:12 UTC
From: amsoft@epix.net
Message-ID: <3enc1s$of7@grape.epix.net>
Source record: 26020
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space

The Jan 95 "The World of Ham Radio" CD-ROM newsletter is now available.
This CD-ROM offers more ham programs than any of the others out there!
Over 20,000 IBM files for amateur radio are stored on this CD-ROM.
Including FCC CALLSIGN call book with US & Foreign listings current to
12/94, AMCALL the new logbook from AmSoft that will auto log from the CD
for you. Over 1,350 Radio Modifications. The latest HST, NASA & Space
images. Over 700 Megabytes of Amateur Radio Software packed into 1 CD.
This CD-ROM is published every 4 months without delay in JAN, MAY, & SEP.

If you would like to get a FREE newsletter about the January 1995 AmSoft
CD-ROM please leave me your Internet E-mail information at:
amsoft@epix.net

Note:
(Some E-mail was lost last week) If you requested this newsletter & did
not
hear from us then please resubmit your Internet Email information again.

Send E-mail to: amsoft@epix.net ,(Pete deVolpi, KC3TL)
Publisher of "The World of Ham Radio" Callsign CD-ROM
---

72. Re: MIR question...

Newsgroup: rec.radio.amateur.space
Date: 1995-01-08 02:35:09 UTC
From: andrew squires vk3dto <100033.1060@CompuServe.COM>
Message-ID: <3enj0t$ha4$1@mhade.production.compuserve.com>
Source record: 26021

clint, try asking maggie vk3cfi she speaks to them often and is
now in the states send her a message to 100033.615@compuserve.com
73 andy
vk3dto

73. Radio Meteor Obs Dec 1994 Geminids, Ursids

Newsgroup: rec.radio.amateur.space
Date: 1995-01-08 21:46:41 UTC
From: steyaert@vvs.innet.be
Message-ID: <steyaert.69.0015C77F@vvs.innet.be>
Source record: 26025

Radio Meteor Observation Bulletin No. 17 January 1995

1. FORWARD SCATTER METEOR OBSERVATIONS

Observer: Maurice De Meyere
Location: Deurle, Belgium (3 37' E, 51 00' N)
Frequency: 66.17 MHz
Transmitter Locations:
Katowice, PR3, Poland, 65.99 MHz, 14 kW, Distance 1100 km
P. Neant, PR3, Romania, 66.17 MHz, 40 kW, Distance 1400 km
Czestochowa, PR3, Poland, 66.23 MHz, 20 kW, Distance 1080 km
Gdansk, PR3, Poland, 66.29 MHz, 40 kW, Distance 1100 km

Antenna: crossed Yagi, 4 elements, Azimuth 270 o (=East), elevation 30 o
Antenna amplifier: 25 dB max level 90 dBmuV
Receiver: commercial, Progresson 447A, TESLA, Bratislava
Sensitivity: 8 muV for S/N = 26 dB (300 Ohm)
Observing method: automated setup, 150 samples/second, 8 bit resolution.
[Time and details of all individual meteor reflections are stored on file
in the University of Ghent format (Prometeos), and are available for
further analysis. Reduction software for DOS and Windows available].

Raw counts of reflections with a duration of at least 0.027 s
during one hour interval starting at UT:

December 1994
Geminids

Dec 1994	20h	21	22	23	00	01	02	03	04	05	06	07	08
1- 2	-	80	99	88	73	9%	7%	70	105	106	128	84	
2- 3	91	90	119	98	88	7%	4%	71	141	113	96	98	
3- 4	68	73	105	69	73	51	18%	10%	44%	111	99	89	
4- 5	69	91	78	75	45	18%	3%	78	80	89	85	73	
5- 6	67	81	107	70	74	10%	3%	52	88	87	82	91	
6- 7	72	101	129	96	87	78	43%	44%	115	109	97	112	
7- 8	72	80	109	83	67	22%	4%	80	98	95	82	95	
8- 9	72	95	105	117	73	5%	13%	0%	0%	0%	0%	0%	
9-10	69	107	78	79	72	12%	0%	69	-	-	-	-	
10-11	94	120	91	99	76	49	10%	5%	16%	88	105	100	
11-12	-	95	135	141	107	40%	26%	42%	81	95	116	130	115
12-13	139	149	184	146	117	83	4%	90	87	115	167	183	116
13-14	259*	218*	271*	221*	180	64%	2%	96	120	208	215	227	179
14-15	138	182	179	132	109	36%	5%	80	147	142	140	-	-
15-16	55	81	79	99	70	5%	3%	62	107	91	87	106	96

```
16-17 | 63 73 114 90 75 16% 7% 122 121 128 104 112
17-18 | 62 74 70 70 51 78 32% 3% 61% 123 66 72
18-19 | 60 92 75 128 114 50% 50% 56% 106 99 92 110
19-20 | 47 78 77 68 54 75 2% 45% 90 71 68 94
20-21 | - - - - - - - - - - - -
21-22 | 35 48 64 53 3% 0% 0% 56 77 71 69 83
22-23 | - - 66 52 43 3% 1% 26% 68 72 68 47
23-24 | 31 46 52 49 54 1% 0% 35% 28% 32% 12% 2%
24-25 | 44 55 27 67 62 66 4% 0% 1% 0% 0% 17%
25-26 | 45 48 55 63 69 5% 0% 0% 2% 56 19 0%
26-27 | 71 59 71 74 57 13% 6% 56 67 84 74 75
27-28 | 75 66 61 65 40 8% 1% 49 60 72 77 53
28-29 | - - - - - - - - - - - -
29-30 | 55 51 61 58 35 3% 0% 36% 63 52 69 51
30-31 | 46 68 68 67 54 9% 1% 43% 83 63 90 73
31-01 | - - - - - - - - - - - -
------|-------------------------------------------------------------------
1994 | 20h 21 22 23 00 01 02 03 04 05 06 07 08
Dec |
```

Notes:

. % : transmitter outage during the whole hour or a part of it. Low counts indicate that no other interference, which could be confused with meteors, is picked up.
Few transmitters are broadcasting between 2h-4h local time (Sat-Sun 3h-5h local time) or sometimes longer. (When winter hour is in use: local time = UT + 1h).

. * : strong Geminid around Dec 14.0.
Best forward scatter conditions for this setup around 4h - 5h UT.

Maurice De Meyere / Chris Steyaert

Observer: Michael Hann
Location: Broken Arrow, Oklahoma, USA (96 00' W, 35 45' N)
Frequency: 67.260 MHz
Transmitter Location: Dallas, Texas, USA (distance 420 km)
Transmitter Power: 100 kW in video signal, continuous broadcast
Antenna: Three element Yagi, Azimuth 200 degrees, Elevation 18 degrees
Receiver: Commercial, Yaesu FRG-9600 purchased used
Sensitivity: 1 uV for S/N = 15 dB (SSB mode) (50 Ohm)
bandwidth in SSB mode: 2.4 kHz
VHS Recorder: NEC DX-5000U Hi-Fi VCR frequency range 20 Hz to 20 kHz
dynamic range > 90 dB channel separation > 60 dB

Observing method: Listened to audio tape recorded from receiver output

GEMINIDS December 14, 1994

Counts of reflections AFTER subtracting imputed sporadic rate
during hour intervals starting at UT:

Time | 00 01 02 03 04 05 06 07 08

Count | 76 141 208 184 180 89 70 23 79

Time | 09 10 11 12 13 14 15 16 17

Count | 197 518 661 472 382 317 151 59 19
** ** **

Notes:

* I monitored meteors on the night of December 28/29 -- when no
shower was active -- over the intervals 6:00-6:30 PM, 10:00-10:30 PM,
2:00-2:30 AM, and 6:00-6:30 AM local time. I extracted meteor count
data from these intervals and applied a least squared error method to
develop a linear equation fitted to this data which ramped the sporadic
in-fall rate from a minimum at 6 PM local time to a maximum at 6 AM
local time. I then subtracted these in-fall rates from each of my
Geminid counts in producing the counts above.

**The data show a distinct peak of the shower at 11 UT. There is
an unaccountable drop of meteor rates between 3:00 and 9:00 UT.
The shower radiant passed directly between my transmitter and receiver
at about 9:00 UT; this is when the observability function is at a
minimum.

Michael Hann

Observer: Ilkka Yrjola
Location: Kuusankoski, Finland (26 35' E, 60 54' N)
Frequency: 87.360 MHz
Receiver: narrow band FM, detected signal level >-122dBm.
Antenna: 2 element Yagi with 4dBd gain to SW.
Antenna Azimuth: 45 o
Computer: T-1000SE
Data sampling system: threshold crossing detection is fed in binary
form (1 bit) from the receiver, to the computer.
Computer logs total hourly elapsed reflection time, number of
threshold crossings for the hour, the longest time the signal was
continuously above detection level for the hour.

Data stored in the Compact MS-Soft format. Software for viewing available
from FTP.FUNET.FI pub/ham/vhf-work/mssoft42.zip

Counts in one hour intervals starting at:

December 1994
Geminids, Ursids

UT | 12 Dec 13 Dec 14 Dec 15 Dec 20 Dec 21 Dec 22 Dec 23 Dec
----
0 | 403 896 1593* 583 344 372 315 346
1 | 247 537 856* 475 344 339 361 283

```
2 | 235 459 586 595 324 333 340 343
3 | 401 607 1026* 621 468 357 413 340
4 | 481 982 1189* 733 368 345 338 316
5 | 460 1051 1127* 495 331 361 321 331
6 | 442 853 1029 594 413 336 420 276
7 | 420 740 833 468 328 370 343 310
8 | 352 563 798 305 369 332 353 389
9 | 450 443 756 283 308 315 501& 281
10 | 257 408 557 244 344 256 527& 240
11 | 218 276 366 362 253 234 511& 250
12 | 257 255 296 196 224 210 594& 224
13 | 191 186 314 216 173 185 521& 205
14 | 225 249 307 165 180 166 524& 144
15 | 249 406 528 149 156 159 419& 154
16 | 278 377 477 150 147 176 474& 143
17 | 281 469 554 199 168 174 335& 132
18 | 417 700 676 210 157 173 243& 112
19 | 569 1023* 748 286 190 189 335& 142
20 | 704 1205* 857 282 209 203 344& 193
21 | 859 1403* 842 377 267 227 331& 244
22 | 1130 1481* 737 344 285 334 348 217
23 | 1037 1727* 688 468 252 351 306 292
-------------------------------------------------------------------
UT | 12 Dec 13 Dec 14 Dec 15 Dec 20 Dec 21 Dec 22 Dec 23 Dec

. * strong Geminid activity between Dec 13, 19h UT and Dec 14, 5h UT.

. & Ursid activity on December 22 between 9h UT and 21h UT.

Ilkka Yrlola / Chris Steyaert

-------------------------------------------------------------------
Observer: George J. Zay
Location: Descanso, California, USA (116 38' W, 32 50' N)
Height above sealevel: 1003 m
Frequency: 92.90 MHz
Transmitter Location: Flagstaff, Arizona Distance: 538 Km
Transmitter Power: 100 kW ; 24h/day and 7 days a week
Antenna Type: 6 element Yagi, Antenna Azimuth: 60 o, elevation: 45 o
Receiver: JVC RX-302BK Digital Receiver
Method of Observing: Listening

Raw counts of reflections during one hour interval starting at UT:

1994 | 03h 04 05 06 07 08 09 10 11 12
-----------------------------------------------------------
31 Oct| 09 09 08 19 24 26 23 23 25 49
01 Nov| 03 10 09& - - - - - - -
-----------------------------------------------------------
1994 | 03h 04 05 06 07 08 09 10 11 12

& : first 30 minutes of the interval
```

George J. Zay / Jeroen Van Wassenhove

2. QUESTIONS TO ALL

-Daniel E. Warren (Rome Laboratory ERSE, warrend@rl.af.mil) is in charge of running what is known as a HERP (high effective radiated power) meteor burst communications link at one of their sites. It links to another system in Charleston South Carolina, feeding 4 kW into a 25 dB gain antenna array and a similiar receive array.
He invites amateurs on the eastern United States coast to make use of their transmitted signals.

-Ilkka Yrlola tunes to pager (semaphone) signals at 87.36 MHz, most probably in Sweden or Germany. Great advantage of these signals compared with FM radio is their continuous broadcasting at constant power.
Ilkka is looking for the transmitter data (location, power).

[This is the Eurosignal system: its two carrier frequencies are 87.34 MHz and 87.365 MHz - CSt].

3. ABOUT THE RMOB

The RMOB is an independent initiative of some workers in the field of radio meteor scatter observations and data reduction. It started in August 1993 in order to spread rapidly the Perseid results via E-mail. Since then, it has appeared monthly, and has gradually been expanded.

Typically it contains: summaries of recent observations, first results of stream activity by radio methods, relations between radio and optical meteors, references to other publications in the field of meteor astronomy and radio scatter techniques, announcements of meetings, short questions and answers, non-commercial (second hand) sale of radio equipment, available software.

Contributors are mentioned, and interested persons are asked to contact them directly.

RMOB can be copied freely in unabridged and unmodified form. Extracts should indicate the source (Radio Meteor Obs Bulletin, month and year).

If you want to subscribe (or unsubscribe) to the E-mail distribution list, please send a message to C. Steyaert.
Those not having access to E-mail can obtain a printed copy free of charge from J. Van Wassenhove (current or back-issues).

4. CONTRIBUTORS / USEFUL ADDRESSES

Maurice De Meyere
Hullekensstraat 24, B 9831 Deurle, Belgium
tel: +32 (9) 282 35 26
Call: ON4NU, packet: ON4NU@ON4AWP
E-mail: via Chris Steyaert

Mike Hann
Broken Arrow, Oklahoma, USA
E-mail: mikeh@ssd.fsi.com

Chris Steyaert, VVS
Kruisven 66, B 2400 Mol, Belgium
tel: +32 (14) 31 51 04
fax: +32 (14) 22 13 73
E-mail: steyaert@vvs.innet.be

Jeroen Van Wassenhove, VVS
's Gravenstraat 66, B 9810 Nazareth, Belgium
tel: +32 (9) 385 61 09
E-mail: 100101.734@compuserve.com

Paul Vauterin, University of Ghent, Astronomical Observatory
E-mail: paul@izar.rug.ac.be

Ilkka Yrjola
Kuusankoski, Finland
tel: +358 (951)402 2797
E-mail: ILKKA.YRJOLA@915000.KY.KYMMENE.MEMONET.mailnet.fi

George J. Zay
3946 Paula Street
La Mesa, CA 91941, U.S.A.

--
Christian Steyaert (RMOB9412) 8 January 1995
--

74. Radio Meteor Obs Dec 1994 Geminids, Ursids

Newsgroup: rec.radio.amateur.space
Date: 1995-01-08 21:48:56 UTC
From: steyaert@vvs.innet.be
Message-ID: <steyaert.71.0015D111@vvs.innet.be>
Source record: 26023

Radio Meteor Observation Bulletin No. 17 January 1995

1. FORWARD SCATTER METEOR OBSERVATIONS

Observer: Maurice De Meyere
Location: Deurle, Belgium (3 37' E, 51 00' N)
Frequency: 66.17 MHz
Transmitter Locations:
Katowice, PR3, Poland, 65.99 MHz, 14 kW, Distance 1100 km
P. Neant, PR3, Romania, 66.17 MHz, 40 kW, Distance 1400 km
Czestochowa, PR3, Poland, 66.23 MHz, 20 kW, Distance 1080 km
Gdansk, PR3, Poland, 66.29 MHz, 40 kW, Distance 1100 km

Antenna: crossed Yagi, 4 elements, Azimuth 270 o (=East), elevation 30 o
Antenna amplifier: 25 dB max level 90 dBmuV
Receiver: commercial, Progresson 447A, TESLA, Bratislava
Sensitivity: 8 muV for S/N = 26 dB (300 Ohm)
Observing method: automated setup, 150 samples/second, 8 bit resolution.
[Time and details of all individual meteor reflections are stored on file
in the University of Ghent format (Prometeos), and are available for
further analysis. Reduction software for DOS and Windows available].

Raw counts of reflections with a duration of at least 0.027 s
during one hour interval starting at UT:

December 1994
Geminids

Dec 1994	20h	21	22	23	00	01	02	03	04	05	06	07	08
1- 2	-	80	99	88	73	9%	7%	70	105	106	128	84	
2- 3	91	90	119	98	88	7%	4%	71	141	113	96	98	
3- 4	68	73	105	69	73	51	18%	10%	44%	111	99	89	
4- 5	69	91	78	75	45	18%	3%	78	80	89	85	73	
5- 6	67	81	107	70	74	10%	3%	52	88	87	82	91	
6- 7	72	101	129	96	87	78	43%	44%	115	109	97	112	
7- 8	72	80	109	83	67	22%	4%	80	98	95	82	95	
8- 9	72	95	105	117	73	5%	13%	0%	0%	0%	0%	0%	
9-10	69	107	78	79	72	12%	0%	69	-	-	-	-	
10-11	94	120	91	99	76	49	10%	5%	16%	88	105	100	
11-12	-	95	135	141	107	40%	26%	42%	81	95	116	130	115
12-13	139	149	184	146	117	83	4%	90	87	115	167	183	116
13-14	259*	218*	271*	221*	180	64%	2%	96	120	208	215	227	179
14-15	138	182	179	132	109	36%	5%	80	147	142	140	-	-
15-16	55	81	79	99	70	5%	3%	62	107	91	87	106	96

```
16-17 | 63 73 114 90 75 16% 7% 122 121 128 104 112
17-18 | 62 74 70 70 51 78 32% 3% 61% 123 66 72
18-19 | 60 92 75 128 114 50% 50% 56% 106 99 92 110
19-20 | 47 78 77 68 54 75 2% 45% 90 71 68 94
20-21 | - - - - - - - - - - - -
21-22 | 35 48 64 53 3% 0% 0% 56 77 71 69 83
22-23 | - - 66 52 43 3% 1% 26% 68 72 68 47
23-24 | 31 46 52 49 54 1% 0% 35% 28% 32% 12% 2%
24-25 | 44 55 27 67 62 66 4% 0% 1% 0% 0% 17%
25-26 | 45 48 55 63 69 5% 0% 0% 2% 56 19 0%
26-27 | 71 59 71 74 57 13% 6% 56 67 84 74 75
27-28 | 75 66 61 65 40 8% 1% 49 60 72 77 53
28-29 | - - - - - - - - - - - -
29-30 | 55 51 61 58 35 3% 0% 36% 63 52 69 51
30-31 | 46 68 68 67 54 9% 1% 43% 83 63 90 73
31-01 | - - - - - - - - - - - -
------|-------------------------------------------------------------------
1994 | 20h 21 22 23 00 01 02 03 04 05 06 07 08
Dec |
```

Notes:

. % : transmitter outage during the whole hour or a part of it. Low counts indicate that no other interference, which could be confused with meteors, is picked up.
Few transmitters are broadcasting between 2h-4h local time (Sat-Sun 3h-5h local time) or sometimes longer. (When winter hour is in use: local time = UT + 1h).

. * : strong Geminid around Dec 14.0.
Best forward scatter conditions for this setup around 4h - 5h UT.

Maurice De Meyere / Chris Steyaert

Observer: Michael Hann
Location: Broken Arrow, Oklahoma, USA (96 00' W, 35 45' N)
Frequency: 67.260 MHz
Transmitter Location: Dallas, Texas, USA (distance 420 km)
Transmitter Power: 100 kW in video signal, continuous broadcast
Antenna: Three element Yagi, Azimuth 200 degrees, Elevation 18 degrees
Receiver: Commercial, Yaesu FRG-9600 purchased used
Sensitivity: 1 uV for S/N = 15 dB (SSB mode) (50 Ohm)
bandwidth in SSB mode: 2.4 kHz
VHS Recorder: NEC DX-5000U Hi-Fi VCR frequency range 20 Hz to 20 kHz
dynamic range > 90 dB channel separation > 60 dB

Observing method: Listened to audio tape recorded from receiver output

GEMINIDS December 14, 1994

Counts of reflections AFTER subtracting imputed sporadic rate
during hour intervals starting at UT:

Time | 00 01 02 03 04 05 06 07 08

Count | 76 141 208 184 180 89 70 23 79

Time | 09 10 11 12 13 14 15 16 17

Count | 197 518 661 472 382 317 151 59 19
** ** **

Notes:

* I monitored meteors on the night of December 28/29 -- when no
shower was active -- over the intervals 6:00-6:30 PM, 10:00-10:30 PM,
2:00-2:30 AM, and 6:00-6:30 AM local time. I extracted meteor count
data from these intervals and applied a least squared error method to
develop a linear equation fitted to this data which ramped the sporadic
in-fall rate from a minimum at 6 PM local time to a maximum at 6 AM
local time. I then subtracted these in-fall rates from each of my
Geminid counts in producing the counts above.

**The data show a distinct peak of the shower at 11 UT. There is
an unaccountable drop of meteor rates between 3:00 and 9:00 UT.
The shower radiant passed directly between my transmitter and receiver
at about 9:00 UT; this is when the observability function is at a
minimum.

Michael Hann

Observer: Ilkka Yrjola
Location: Kuusankoski, Finland (26 35' E, 60 54' N)
Frequency: 87.360 MHz
Receiver: narrow band FM, detected signal level >-122dBm.
Antenna: 2 element Yagi with 4dBd gain to SW.
Antenna Azimuth: 45 o
Computer: T-1000SE
Data sampling system: threshold crossing detection is fed in binary
form (1 bit) from the receiver, to the computer.
Computer logs total hourly elapsed reflection time, number of
threshold crossings for the hour, the longest time the signal was
continuously above detection level for the hour.

Data stored in the Compact MS-Soft format. Software for viewing available
from FTP.FUNET.FI pub/ham/vhf-work/mssoft42.zip

Counts in one hour intervals starting at:

December 1994
Geminids, Ursids

UT | 12 Dec 13 Dec 14 Dec 15 Dec 20 Dec 21 Dec 22 Dec 23 Dec
---
0 | 403 896 1593* 583 344 372 315 346
1 | 247 537 856* 475 344 339 361 283

```
2 | 235 459 586 595 324 333 340 343
3 | 401 607 1026* 621 468 357 413 340
4 | 481 982 1189* 733 368 345 338 316
5 | 460 1051 1127* 495 331 361 321 331
6 | 442 853 1029 594 413 336 420 276
7 | 420 740 833 468 328 370 343 310
8 | 352 563 798 305 369 332 353 389
9 | 450 443 756 283 308 315 501& 281
10 | 257 408 557 244 344 256 527& 240
11 | 218 276 366 362 253 234 511& 250
12 | 257 255 296 196 224 210 594& 224
13 | 191 186 314 216 173 185 521& 205
14 | 225 249 307 165 180 166 524& 144
15 | 249 406 528 149 156 159 419& 154
16 | 278 377 477 150 147 176 474& 143
17 | 281 469 554 199 168 174 335& 132
18 | 417 700 676 210 157 173 243& 112
19 | 569 1023* 748 286 190 189 335& 142
20 | 704 1205* 857 282 209 203 344& 193
21 | 859 1403* 842 377 267 227 331& 244
22 | 1130 1481* 737 344 285 334 348 217
23 | 1037 1727* 688 468 252 351 306 292
-------------------------------------------------------------------
UT | 12 Dec 13 Dec 14 Dec 15 Dec 20 Dec 21 Dec 22 Dec 23 Dec

. * strong Geminid activity between Dec 13, 19h UT and Dec 14, 5h UT.

. & Ursid activity on December 22 between 9h UT and 21h UT.

Ilkka Yrlola / Chris Steyaert

-------------------------------------------------------------------
Observer: George J. Zay
Location: Descanso, California, USA (116 38' W, 32 50' N)
Height above sealevel: 1003 m
Frequency: 92.90 MHz
Transmitter Location: Flagstaff, Arizona Distance: 538 Km
Transmitter Power: 100 kW ; 24h/day and 7 days a week
Antenna Type: 6 element Yagi, Antenna Azimuth: 60 o, elevation: 45 o
Receiver: JVC RX-302BK Digital Receiver
Method of Observing: Listening

Raw counts of reflections during one hour interval starting at UT:

1994 | 03h 04 05 06 07 08 09 10 11 12
-----------------------------------------------------------
31 Oct| 09 09 08 19 24 26 23 23 25 49
01 Nov| 03 10 09& - - - - - - -
-----------------------------------------------------------
1994 | 03h 04 05 06 07 08 09 10 11 12

& : first 30 minutes of the interval
```

George J. Zay / Jeroen Van Wassenhove

2. QUESTIONS TO ALL

-Daniel E. Warren (Rome Laboratory ERSE, warrend@rl.af.mil) is in charge of running what is known as a HERP (high effective radiated power) meteor burst communications link at one of their sites. It links to another system in Charleston South Carolina, feeding 4 kW into a 25 dB gain antenna array and a similiar receive array.
He invites amateurs on the eastern United States coast to make use of their transmitted signals.

-Ilkka Yrlola tunes to pager (semaphone) signals at 87.36 MHz, most probably in Sweden or Germany. Great advantage of these signals compared with FM radio is their continuous broadcasting at constant power.
Ilkka is looking for the transmitter data (location, power).

[This is the Eurosignal system: its two carrier frequencies are 87.34 MHz and 87.365 MHz - CSt].

3. ABOUT THE RMOB

The RMOB is an independent initiative of some workers in the field of radio meteor scatter observations and data reduction. It started in August 1993 in order to spread rapidly the Perseid results via E-mail. Since then, it has appeared monthly, and has gradually been expanded.

Typically it contains: summaries of recent observations, first results of stream activity by radio methods, relations between radio and optical meteors, references to other publications in the field of meteor astronomy and radio scatter techniques, announcements of meetings, short questions and answers, non-commercial (second hand) sale of radio equipment, available software.

Contributors are mentioned, and interested persons are asked to contact them directly.

RMOB can be copied freely in unabridged and unmodified form. Extracts should indicate the source (Radio Meteor Obs Bulletin, month and year).

If you want to subscribe (or unsubscribe) to the E-mail distribution list, please send a message to C. Steyaert.
Those not having access to E-mail can obtain a printed copy free of charge from J. Van Wassenhove (current or back-issues).

4. CONTRIBUTORS / USEFUL ADDRESSES

Maurice De Meyere
Hullekensstraat 24, B 9831 Deurle, Belgium
tel: +32 (9) 282 35 26
Call: ON4NU, packet: ON4NU@ON4AWP
E-mail: via Chris Steyaert

Mike Hann
Broken Arrow, Oklahoma, USA
E-mail: mikeh@ssd.fsi.com

Chris Steyaert, VVS
Kruisven 66, B 2400 Mol, Belgium
tel: +32 (14) 31 51 04
fax: +32 (14) 22 13 73
E-mail: steyaert@vvs.innet.be

Jeroen Van Wassenhove, VVS
's Gravenstraat 66, B 9810 Nazareth, Belgium
tel: +32 (9) 385 61 09
E-mail: 100101.734@compuserve.com

Paul Vauterin, University of Ghent, Astronomical Observatory
E-mail: paul@izar.rug.ac.be

Ilkka Yrjola
Kuusankoski, Finland
tel: +358 (951)402 2797
E-mail: ILKKA.YRJOLA@915000.KY.KYMMENE.MEMONET.mailnet.fi

George J. Zay
3946 Paula Street
La Mesa, CA 91941, U.S.A.

--
Christian Steyaert (RMOB9412) 8 January 1995
--

75. New Generation NOAA specs ??

Newsgroup: rec.radio.amateur.space
Date: 1995-01-09 06:12:01 UTC
From: sttlmb@puknet.puk.ac.za
Message-ID: <sttlmb.31.2F10D3B1@puknet.puk.ac.za>
Source record: 26024

I have heard that the so called new generation NOAA's will soon be in orbit. Can anyone please supply my with info on this subject (freq. , transmission formats, date of launch etc.).

Thanks

Louis Botha

76. Re: Radio Astronomy info

Newsgroup: rec.radio.amateur.space
Date: 1995-01-09 16:45:25 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Jan9.164525.6670@ke4zv.atl.ga.us>
Source record: 26026

In article <D1w6s0.G9I@cix.compulink.co.uk> wiselace@cix.compulink.co.uk ("Gary and Jean Peach") writes:
>
> I am pleased to see this question and the response that it
> has drawn. I was involved in some VLBI Radio Astronomy
> back in the 1960's with some eminent Astronomers. It has
> since been in my mind that a large apperature synthesised
> Radio Telescope could be achieved by taking the signals
> from widely distributed receivers recorded in some form to
> be decided and processed at a common point by computer
> This project would take vast resources and I doubt if it could
> be achieved by a professional body. As I see it many
> Amateur Short wave listeners and Radio Hams would need
> to participate. A special but easily constructed receiver
> would need to be designed, the specification yet to be
> decided, a timing system would need to be set up to re
> synchronise the data. A cheap recording system would
> need to be devised, a system with sufficient bandwidth
> to leave the data intact or at least recoverable.

I'd suggest using the signal from a geosynchronous TV satellite
as the timing reference, and a VCR as the recording system.
The relative timing of one station to another is then just a
matter of geometry.

>It may transpire that a broad spectrum of frequencies can
>be observed. The data received by a single station would
>of course be unintelligible as the practical limitations to the
>receiver temperature of an amateur station, however as the
>signals from many stations are combined the system noise
>temperature will reduce dramatically.

By stripping only the sync and burst from the TVRO source,
and inserting received signals in place of the video, a
VCR can record a 4 MHz segment of the spectrum as a single
chunk.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

77. GOES-8 receive question.

Newsgroup: rec.radio.amateur.space
Date: 1995-01-09 17:35:56 UTC
From: Chris Oesterling <chris@angus.mystery.com>
Message-ID: <Le0Nyc1w165w@angus.mystery.com>
Source record: 26027

I'm wondering if anyone has had a problem I'm having receiving
GOES-8. The IRO images come out quite well. The re-transmitted
Met5 images come out PERFECT. The VSO (I assume visual images)
come out very dark with only state/country borders visable.
Even the lines are not as clean. My receiver has been modified
for a wider bandwidth (50khz). When I use it for NOAA 9-12,
the images come out great too. Just the VSO's are bad. Is it me?

One other question I'd be pleased to find the answer to.
The identification bar at top of the GOES8 images display "US" for
United States view (obviously), NE - North East, NW - North West,
SE - South East, SW - South West, TE - ????? East, TW - ????? West.
What the heck does the "T" stand for?

Thanks for your help! It sure is nice to have people to ask questions
like this to.

- Chris Oesterling N8UDK (tech-lite)

--
Chris Oesterling (chris@angus.mystery.com)
Mystery Spot BBS, Royal Oak, MI --?--

78. Re: Sattelite Tracking program for X-windows (Unix)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-09 19:32:56 UTC
From: clifford@festival.ed.ac.uk
Message-ID: <D25Kyx.Gt5@festival.ed.ac.uk>
Source record: 26028

Jeff Williams (jeffw@mxim.COM) wrote:
: Does anyone know of an ftp site that is known to have
: a sattelite tracking program for X-windows for Unix?
: thx. Jeff W.

Jeff,

Archie out xsat e.g.

ftp://seds.lpl.arizona.edu/pub/software/unix/sat/xsat1.0.tar.Z

Or if you hang on Manfred Bester's excellent sattrack should see its
v3.0 incarnation shortly - this will have X11 graphics capability too.

regards,

--

INTERNET: clifford@festival.ed.ac.uk <> JANET: N.T.Clifford@uk.ac.ed
---

79. XTERM for Macs

Newsgroup: rec.radio.amateur.space
Date: 1995-01-09 23:31:08 UTC
From: spek@cse.ucsc.edu
Message-ID: <3esgvs$12e@darkstar.UCSC.EDU>
Source record: 26029

Does anybody around have any info on how I can get Xterm for Macs just
like on the PCs. I am used to using xterm on MsWindows, OS2 and linux.
I also need info on how to get ghostscript or any Postscript file
viewer for the Mac and maybe even a .dvi viewer. Any ideas???

jas

--
.signature?? Uh, um.....its in the mail!!

--
.signature?? Uh, um.....its in the mail!!

80. PC clock goofs up software

Newsgroup: rec.radio.amateur.space
Date: 1995-01-10 00:17:31 UTC
From: exuward@exu.ericsson.se
Message-ID: <3esjmr$na2@cnn.exu.ericsson.se>
Source record: 26030
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.space

The clock in our PC gets off about 2 minutes per hour. This causes a problem with the sat. tracking software. Is there a tsr that someone has written to correct this? There is no way to tune the crystal manually on the motherboard.

Thanks in advance,

Jerry Ward.

81. Re: New Generation NOAA specs ??

Newsgroup: rec.radio.amateur.space
Date: 1995-01-10 01:35:34 UTC
From: wnewkirk@bb.iu.net
Message-ID: <D261rB.D2K@zeno.fit.edu>
Source record: 26031

check (what i believe is called) bit.listserv.wx-talk.

the listserver is at listserv@vmd.csd.uiuc.edu...usually there's
discussion of the new birds in there when they're going to go up
and there was discussion of the status of goes 8 as it has been
brought up for service...

--

Bill Newkirk WB9IVR The Space Coast Amateur Technical Group
Melbourne, FL duty now for the future of amateur radio

82. Re: PC clock goofs up software

Newsgroup: rec.radio.amateur.space
Date: 1995-01-10 13:46:01 UTC
From: dave@rsd.dl.nec.com
Message-ID: <1995Jan10.134601.26495@rsd.dl.nec.com>
Source record: 26032
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.space

In article <3esjmr$na2@cnn.exu.ericsson.se>, exuward@exu.ericsson.se (Gerald Ward) writes:
|> The clock in our PC gets off about 2 minutes per hour. This causes a problem
|> with the sat. tracking software. Is there a tsr that someone has written to
|> correct this? There is no way to tune the crystal manually on the motherboard.

This is a problem common to all DOS machines. The crux of the problem
is that the PC's hardware clock is only read at boot time (by MS-DOS).
After that the Time-of-Day clock is updated by a software interrupt
which simply adds a clock tic to a counter which is, in fact the TOD
clock. If your system is 100% CPU bound, as it surely is running a sat
tracker, there is little spare time to update the TOD clock. A possible
solution would be to write a TSR to re-read the hardware clock and
update the TOD clock.

Another possible solution is to run your sat tracker under Linux,
Windows NT or OS/2 since they do not suffer from this brain damage.
I run SatTrak 3.8 under Linux and NT with no worries.

Best,

dave
==========
Dave Rogers Internet : dave@rsd.dl.nec.com
M & R Software, Inc. or : mandr@ix.netcom.com
Plano, Texas AMPRnet : kc5iye@dfwgate.ampr.org
CIS : 76672,2455

In the absence of leadership, we have decided to follow ourselves.

83. Oscar13 modes

Newsgroup: rec.radio.amateur.space
Date: 1995-01-10 15:17:05 UTC
From: sol@soleil.serma.cea.fr
Message-ID: <3eu8dh$7ca@anemone.saclay.cea.fr>
Source record: 26033

[No readable article body recovered]

84. Best log program for satellite use?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-10 18:41:56 UTC
From: Wayne_Estes@csg.mot.com
Message-ID: <9501101241.ZM18131@SALCIUS2>
Source record: 26034

I would like to convert to a computer logging program. I don't know the pros and cons of the available software. I would appreciate any suggestions and descriptions of preferred logging programs that work well for both HF and satellite contacts.

73 de Wayne Estes WD5FFH wayne@csg.mot.com

85. RS-15 KEPS

Newsgroup: rec.radio.amateur.space
Date: 1995-01-10 19:20:36 UTC
From: durham@lobby.ti.com
Message-ID: <3eumm4$8n7@superb.csc.ti.com>
Source record: 26035

The W1AW Keps published Saturday still have the same problems.
I've seen some 2 line elements that had been tweaked to work, but
they gave a checksum error message when loaded into Instantrack.
If I remember correctly, they were still off 20 seconds or so.

Is there a NORAD Home Page or ftp site that may have some corrected
data that could be used to generate some Keps?

This bird is pretty weak on some passes. It would seem that when this
situation exists, we could use as much ERP as it takes to cause the
transponder to hear our signal and repeat it. Using 10W ERP may work
on some passes, but I haven't heard a pass that good yet. I have only
been working the high (<30 deg) passes. Maybe the low passes are more
suited to low power for some reason.

86. Re: Mac SW for digital sats

Newsgroup: rec.radio.amateur.space
Date: 1995-01-11 12:57:53 UTC
From: bkobb@newsignals.com
Message-ID: <netnewsD28s0I.8w9@netcom.com>
Source record: 26036

In article <950108093643000032@g0oanint.demon.co.uk>
Sean Sharkey <sean@g0oanint.demon.co.uk> writes:

> In the mean time you may want to try having a look in,
>
> ftp.demon.co.uk /pub/ham/mac/

But ftp.demon.co.uk does not accept anonymous FTP. I have tried it
many times over the past few months, including today, and it always
rejects attempts to connect.

Bennett Z. Kobb bkobb@newsignals.com
Editor and publisher Spectrum Guide

87. Re: PC clock goofs up software

Newsgroup: rec.radio.amateur.space
Date: 1995-01-11 16:19:21 UTC
From: jcw@kd4dts.radio.org
Message-ID: <1995Jan11.161921.28476@kd4dts.radio.org>
Source record: 26037
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.space

dave@rsd.dl.nec.com (Dave Rogers) writes:

>In article <3esjmr$na2@cnn.exu.ericsson.se>, exuward@exu.ericsson.se (Gerald Ward)
writes:
>|> The clock in our PC gets off about 2 minutes per hour. This causes a problem
>|> with the sat. tracking software. Is there a tsr that someone has written to
>|> correct this? There is no way to tune the crystal manually on the motherboard.

This is not entirely correct. It doesn't matter if the machine is CPU bound
100%, the clock will update reliably. This is because the timer tick is
interrupt driven, from the Timer 0 channel, and is sourced by the 14.some_odd
megahertz clock that is used for bus timing, and in the old days, color burst
generation. The problem is someone is leaving interrupts turned off for too
long, and ticks are getting missed. This has NOTHING to do with the machine.
It's all in the code you're running (like any TSRs, heavy serial I/O without
using a 16550 SCC, etc). The only other scenerio that comes to mind is that
perhaps your oscilliator is off, but for that kind of drift, you'd most likely
have other (more severe) problems.

>This is a problem common to all DOS machines. The crux of the problem
>is that the PC's hardware clock is only read at boot time (by MS-DOS).
>After that the Time-of-Day clock is updated by a software interrupt
>which simply adds a clock tic to a counter which is, in fact the TOD
>clock. If your system is 100% CPU bound, as it surely is running a sat
>tracker, there is little spare time to update the TOD clock. A possible
>solution would be to write a TSR to re-read the hardware clock and
>update the TOD clock.

>Another possible solution is to run your sat tracker under Linux,
>Windows NT or OS/2 since they do not suffer from this brain damage.
>I run SatTrak 3.8 under Linux and NT with no worries.

>Best,

>dave
>==
>Dave Rogers Internet : dave@rsd.dl.nec.com
>M & R Software, Inc. or : mandr@ix.netcom.com
>Plano, Texas AMPRnet : kc5iye@dfwgate.ampr.org
> CIS : 76672,2455

> In the absence of leadership, we have decided to follow ourselves.

88. Re: PC clock goofs up software (long)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-12 04:55:16 UTC
From: tcj@netcom.com
Message-ID: <tcjD2A0C4.99@netcom.com>
Source record: 26038

Gerald Ward (exuward@exu.ericsson.se) writes:

> The clock in our PC gets off about 2 minutes per hour. This causes
> a problem with the sat. tracking software. Is there a tsr that
> someone has written to correct this?

Attached below is an excerpt from the documentation for STSORBIT PLUS which addresses this problem and provides a nicely detailed discussion of two programs that will fix the problem. I have no personal experience with either of these programs -- I just remembered reading about them in the STS+ docs when I saw Gerald's posting. Hope this helps....

KB6JXT, Todd

~ ~

Maintaining Accurate DOS Time

Just in case you missed the point earlier, accurately setting DOS time is only half the battle. Even if the DOS time is set very precisely as discussed above, all that assures is that the time is correct to the required accuracy at that instant. The problem then becomes one of knowing how the DOS clocks change or drift with time and how to compensate for those changes or, alternatively, checking the DOS time frequently enough that any drift on the part of the DOS clocks is acceptable for the intended application.
Of the two clocks in a typical personal computer, the hardware clock is considerably more consistent and reliable. I have checked perhaps a dozen PC hardware clocks in recent years, and almost all kept reasonably good time over a period of several days; as expected, none kept "perfect" time. Typical drift rates ranged from about 3 seconds per day to near zero seconds per day, with the magnitude and direction of the drift more or less constant over the period of measurement. The hardware clock is typically sensitive to both voltage and temperature, both of which undergo significant change when the computer is turned on or off. Complete calibration of the hardware clock requires knowledge of its performance under both circumstances. Once a hardware clock has been calibrated, its performance may be predicted with reasonable accuracy over periods of some weeks or more. Crystal aging rates suggest that calibration should be performed at least monthly.
The hardware clock is normally interrogated only when the computer is first started or rebooted. The correct time can therefore be predicted at that moment for a calibrated hardware clock, given the last time that clock was synchronized with an appropriate time standard. Microsoft provides no standard software tools for interrogating the hardware clock at other

times except for low level interrupt services. Quite the contrary; beginning with DOS Version 3.3, using the DOS TIME and DATE commands to set the DOS software clock will also set the hardware clock and effectively destroy its usefulness as a calibrated time reference. I am at a complete loss to understand the reasoning behind this change in DOS; I presume that users were being "confused" by differences between the hardware and software clocks; instead of either explaining or fixing the problem, Microsoft elected to "legislate" the problem away -- a process any politician would recognize instantly. The only mitigating consideration is that any really effective solution would probably require hardware as well as software changes. Blame IBM, I guess.

The software clock provides the only time information readily accessible to DOS using standard software. Since this clock is maintained entirely in software, with no reference to the hardware clock except at bootup, it is at the mercy of other software which may execute from time to time. The software clock increments its time using "interrupts", a technique which stops a software process in progress just long enough to do the required tasks and then resumes the interrupted process. These interrupts occur every 55 milliseconds. So long as none is missed, the software clock should keep accurate time -- if the software is written correctly and if the computer's crystal controlled oscillator is in turn accurate. It may be that neither of these conditions is true; certainly the crystal controlled oscillator (quite similar to the one which runs the hardware clock) was not designed for accuracy or stability. It's original purpose was solely to generate the necessary timing signals for the operation of the computer. Cost, not accurate time, was the primary consideration in its design.

Other software designers have contributed to the problem by writing software which, deliberately or inadvertently, prevents the software clock from being updated. Off-brand BIOS firmware can present occasional problems. Local Area Network (LAN) and high speed communications software are also frequent culprits in this respect. For example, a casual check of the clock while using a high speed computer-to-computer file transfer program indicated that the clock was effectively suspended when data transfers were in progress. In one relatively brief test, the DOS clock lost about 30 seconds.

As a result of all of these factors, the accuracy of the DOS software clock can vary wildly from one computer to the next and from one situation to another. One inexpensive "clone" computer that I'd rather forget couldn't manage to keep time to better than about 30 seconds per HOUR! Before planning to use a particular computer as a time reference with programs like STSPLUS, check the computer hardware and software you intend to use very carefully.

Programs TIMESET and RIGHTIME

Two fine programs, TIMESET by Peter Petrakis and RIGHTIME by Tom Becker, provide all the features required to accurately set and maintain the computer's hardware and software clocks. Development efforts on these programs have been carefully coordinated so that they cooperate with each

other. Both programs are copyrighted commercial software distributed as "shareware" and require registration after an initial evaluation period. I highly recommend these programs and encourage users to support the authors and their work. So far as I know, there are no other comparable programs available at any price!

TIMESET, Version 7.10 or higher, uses the telephone time services of NIST, USNO, and three European services to precisely set the computer clocks. The standard distribution also includes several additional time-related utility programs. It is available on many computer bulletin board systems or direct from:

Peter Petrakis
Life Sciences Software
8925 271st N.W., Suite 112
Box 1560
Stanwood, Washington 98292 USA

Telephone: (206) 387-9788

RIGHTIME, Version 2.5+, is a program to compensate for the various drift factors in a computer's hardware and software clocks. When used in conjunction with TIMESET and properly calibrated, RIGHTIME "learns" the warm and cool drift factors for a specific computer. As a result, the clock's can be maintained with an accuracy of a fraction of a second over long periods of time. It is available on many computer bulletin board systems or direct from:

Tom Becker
Air System Technologies, Inc.
14232 Marsh Lane, Suite 339
Dallas, Texas 75234 USA

Telephone: (214) 402-9660

Tom Becker and Peter Petrakis may be also contacted directly on the Air Systems Technologies computer bulletin board system in Dallas, Texas. The BBS always has the latest versions of TIMESET and RIGHTIME available for download:

Air Systems Technologies BBS
(214) 869-2780

STSPLUS is now "aware" of program RighTime and its use is recommended for accurate timekeeping. Audible alarms in prior versions would perform unpredictably when RighTime was active because they use the hardware clock's timer functions (which RighTime also uses). STSPLUS now detects RighTime and temporarily disables RighTime while an audible alarm is being generated and then re-enables RighTime after the alarm has completed, restoring precise timekeeping. With RighTime active, alarms are generated in foreground, which may cause a slight delay in screen updating.

****
* CAUTION *
****

STSPLUS expects RighTime Version 2.5+; performance with prior versions of RighTime may yield unpredictable results. If using a prior version of RighTime, do NOT enable audible alarms!

If RighTime is not present or is not detected, the audible alarms are generated in background as in prior versions. This usually causes the loss of several clock ticks in the DOS software clock for each audible alarm. Although the time loss per audible alarm is very small, the cumulative error may become significant over extended time periods.

The following descriptive text is extracted with permission from the documentation for the current versions of TIMESET and RIGHTIME; please consult the documentation for each program for full details. Although future versions of both programs are expected to remain compatible with STSPLUS, they should be tested carefully before regular use.

FEATURES OF TIMESET 7.10

TimeSet has been evolving steadily ever since the first version was released in the summer of 1987. That version and several subsequent ones could only set a computer's clock from the U.S. Naval Observatory (USNO) in Washington, D.C. Version 6.00, released in 1990, added ability to use telephone time signals from the National Institute of Standards and Technology (NIST) in Boulder, Colorado, making it the first program of its kind able to address more than one atomic time service. This made it possible for computer users in the eastern and western United States to keep down long distance bills by choosing the time service closest to them. Version 7.10 continues that evolution with a number of new features and supporting utilities:

o TimeSet can now access five atomic clock-based telephone time services on two continents: the USNO and the NIST in the United States, as before, and atomic time services in Sweden (National Time and Frequency Laboratory), Austria (Technical University of Graz), and Italy (National Electrotechnical Institute). People in European countries who want to set their computers to an atomic clock no longer need to make a trans-Atlantic phone call.

o TimeSet 7.10 is designed to interact closely with version 2.5+ of RighTime (tm), the excellent memory-resident regulator for computer clocks developed by Tom Becker of Air System Technologies, Inc., Dallas. RighTime learns the drift rate in the computer's clock and continuously applies a correction to compensate for it, and it refines the correction each time the computer clock is set. A computer with RighTime installed and trained can maintain system clock accuracy within a second for at least a week. Furthermore, version 2.46 provides true 0.01-sec resolution in the DOS clock, in contrast to the normal 0.055-sec resolution. This allows greater accuracy in

timesetting than ever before, indeed the maximum accuracy that can be obtained with a computer clock. Life Sciences Software and Air System Technologies cooperated closely during the development of TimeSet 7.10 and RighTime 2.46, with the result that TimeSet can access several RighTime functions directly.

"TIMESET" is a trademark of Life Sciences Software (TM)

The following is a screen dump of the data displayed by TIMESET:

```
+------------------- From NIST. Connect time: 11.97 sec. --------------------+
| DATA FOR TIME CALCULATIONS (all data pertain to Coordinated Universal Time) |
| Time data string: 49051 93-03-05 14:07:20 81 0 -.1 051.1 UTC(NIST) |
| Date: 03-05-1993 |
| Julian date: 2449051 |
| Day of year: 064 |
| Hour: 14 Minute: 07 Second: 20 |
| The United States mainland is on standard time. |
| U.S. daylight time begins on 04-04-1993 at 02:00:00 local time. |
+-----------------------------------------------------------------------------+
System clock set: 06:07:20.01
+-----------------------------------------------------------------------------+
| ACTION SUMMARY (at instant of timesetting) |
| Internal delay adjustment: .01 sec. (added to set time) |
| Line delay adjustment: .0511 sec. (precompensated by time service) |
| |
| Universal Time Coordinated: 14:07:20.01 (time at 0x longitude) |
| UTC Date: 03-05-1993, Friday (date at 0x longitude) |
| |
| Local computer time was: 06:07:20.01 (RighTime-assisted) |
| Set to: 06:07:20.01 Pacific Standard |
| Local computer date was: 03-05-1993 |
| Set to: 03-05-1993, Friday, Day 064 of 1993 |
+-----------------------------------------------------------------------------+
```

FEATURES OF RIGHTIME 2.5+

RighTime brings exceptional system time of day clock performance to the DOS-based AT-class-compatible PC computer with no additional hardware. With RighTime installed, the standard real time clock system becomes an Adaptive Mathematically Compensated Crystal-controlled Oscillator based clock. Under stable conditions, RighTime can produce a system clock that keeps time within one half second per week or better (some testers have reported accuracy of 0.07 second per week); this is about 0.8 parts per million error, or more than 100 times better than an unconditioned crystal time base alone, or 30 times better than a moderately conditioned one like a modern watch of quality.

o True one hundredth second DOS clock resolution: the 55-millisecond barrier is broken! The standard DOS clock resolves to only about 1/18 second; under RighTime v2, the new high resolution DOS clock resolves

to, and increments in, hundredths while the Int 08h and 1Ch tick rate remains standard.

o RighTime intrinsically sets the hardware clock and solves the midnight rollover date bug that exists in some DOS versions; this eliminates the need for other utility programs or drivers that perform these functions. Unlike DOS alone, the hardware clock seconds transition will be properly set by RighTime and the time will be set to hundredths of a second resolution, and these qualities will survive through rebooting.

o Each time you set the time, RighTime will improve the accuracy of the clock error corrections and will subsequently improve the accuracy of the clocks. It should be easy to achieve a worst-case error of less than 0.5 second per day and under good conditions, less than 0.5 second per week; typical results are much better. Command line options are provided that allow fine tuning the correction process to your system. A trimming option provides for offset adjustments in hundredths of a second.

The following is a screen dump of the data displayed by RIGHTIME:

RighTime: Indicated DOS clock date and time is 1993/03/05 06:04:45.66.
RighTime: Warm correction rate is +2.83 seconds per day.
RighTime: Cool correction rate is +4.27 seconds per day.
RighTime: Current applied DOS-CMOS RTC offset is +0.46 second.
RighTime: Last CMOS RTC adjustment was 0.00 hours ago.
RighTime: Last timeset was 23.33 hours ago.
RighTime: System has been warm 17% of the time since the last timeset.
RighTime: Stack A headroom is 92 bytes; Stack space used is 68 bytes.
Stack D headroom is 100 bytes; Stack space used is 60 bytes.
RighTime: /?=Help; Version 2.53
RighTime: Copyright 1991-93 GTBecker, Dallas 214/402-9660. All Rights Reserved.
RighTime: Resident and enabled.
RighTime: Selftest passed.

89. SatTrack V3.0 with X11 color graphics for Unix/Linux available now

Newsgroup: rec.radio.amateur.space
Date: 1995-01-12 07:45:54 UTC
From: manfred@sunspot.ssl.berkeley.edu
Message-ID: <3f2mni$mgu@agate.berkeley.edu>
Source record: 26039
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space,sci.geo.satellite-nav,rec.video.satellite.tvro

```
SatTrack V3.0 Release
January 11, 1995

SatTrack V3.0 is ready to be released. This new version is an improved
version of V2.0. The main addition is an X Window color graphics display.
The distribution file can be obtained via anonymous FTP. Do the following:

ftp 128.121.50.2 (ftp.jvnc.net)
Name: anonymous
Password: your_email_address
ftp> binary (this line is important!)

ftp> cd /priv/kupiec/incoming (do the 'cd' in ONE step!)
or
ftp> cd /priv/kupiec/sattrack (do the 'cd' in ONE step!)

ftp> get sattrack.V3.0.tar.gz
ftp> quit

WARNING: If you want to save some of your special resource files of a
previous SatTrack version, these will have to be saved somewhere else
temporarily, because the procedure described below will overwrite these.
However, the format of some of the resource files had to be changed to
allow for extra features. The format of the new files may not be compatible
any more with those from previous releases.

Place the distribution file into your Unix home directory, 'uncompress' it
(or, if the file name ends on 'gz', 'gunzip' it), and then type
'tar xvpf sattrack.V3.0.tar'. This will unbundle the distribution file and
will create all necessary sub-directories. Then look into the documentation
file 'sattrack.doc' in SatTrack/doc for instructions how to compile sattrack
(and some other auxiliary programs). It should compile perfectly on at least
Sun workstations with SunOS and Solaris, and on i386 laptops running Linux.
Make sure the compiler and linker flags in the Makefile are configured
properly!

Please let me know how the installation went and if you encountered any
problems, bugs or imperfections, of if you have other suggestions.

Manfred

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720, USA
(510) 642-8497
```

manfred@ssl.berkeley.edu

90. GOES-8 WEFAX Schedule

Newsgroup: rec.radio.amateur.space
Date: 1995-01-12 12:29:41 UTC
From: Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com>
Message-ID: <3f37bl$bn4@hpuerci.atl.hp.com>
Source record: 26040

For those folks interested in monitoring GEOS-8 WEFAX transmissions:

GOES-8 WEFAX TRANSMISSION SCHEDULELE

XMIT PRODUCT

0002 GOES-8 2245Z US IR
0006 MET-5 0000Z D3 IR
0010 MET-5 0000Z D4 IR
0014 MET-5 0000Z D5 IR
0018 MET-5 0000Z D6 IR
0022 MET-5 0000Z D7 IR
0026 MET-5 0000Z D8 IR
0030 MET-5 0030Z D2 IR
0034 MET-5 0030Z D9 IR
0038 MET-5 0030Z D1 IR
0042 MET-5 0030Z D3 IR
0046 GOES-8 2345Z US IR□

0050 W500 48 HR 250MB HT/TEMP/WND
0055
0100 W501 72 HR SLP/1000-500TK
0105 W502 72 HR 500MB HT/TEM/WND

0110 GOES-8 2345Z NE IR
0114 GOES-8 2345Z SE IR
0118 GOES-8 2345Z TE IR
0122 GOES-8 2345Z NW IR
0126 GOES-8 2345Z SW IR
0130 GOES-8 2345Z TW IR
0134 GOES-8 2345Z US WV
0138 GOES-8 2345Z NE WV
0142 GOES-8 2345Z SE WV
0146 GOES-8 2345Z TE WV
0150 GOES-8 2345Z NW WV
0154 GOES-8 2345Z SW WV
0158 GOES-8 2345Z TW WV
0202 GOES-8 0045Z US IR
0206
0210 NOAA-12 POLAR VIS NH 010E-080W W026
0214 NOAA-12 POLAR NIR SH 010E-080W W027
0218 NOAA-12 POLAR DIR NH 010E-080W W028
0222 NOAA-12 POLAR DIR SH 010E-080W W029
0226 NOAA-12 POLAR DIR MER 010E-060W W030

0230 NOAA-12 POLAR VIS MER 040W-110W W031
0235 GOES-8 0145Z US IR

0240 ICE CHART
0245 ICE CHART
0250 ICE CHART
0255 ICE CHART
0300 WO64 SIG WX PROG FL250-600
0305 SIG WX PROG FL250-600

0310 MET-5 0300Z D4 IR
0314 MET-5 0300Z D5 IR
0318 MET-5 0300Z D6 IR
0322 MET-5 0300Z D7 IR
0326 MET-5 0300Z D8 IR
0330 MET-5 0330Z D2 IR
0334 MET-5 0330Z D9 IR
0338 MET-5 0330Z D1 IR
0342 GOES-8 0245Z US IR
0346 GOES-8 0245Z NE IR
0350 GOES-8 0245Z SE IR
0354 GOES-8 0245Z TE IR
0358 GOES-8 0245Z NW IR
0402 GOES-8 0245Z SW IR
0406 GOES-8 0245Z TW IR
0410 MET-5 0400Z E1 MOIST
0414 MET-5 0400Z E2 MOIST
0418 MET-5 0400Z E3 MOIST
0422 MET-5 0400Z E4 MOIST
0426 MET-5 0400Z E5 MOIST
0430 MET-5 0430Z D2 IR
0434 MET-5 0430Z D1 IR
0438 MET-5 0430Z D3 IR
0442 MET-5 0430Z E6 MOIST
0446 MET-5 0430Z E7 MOIST
0450 MET-5 0430Z E8 MOIST
0454 MET-5 0430Z E9 MOIST
0458 GOES-8 0345Z US IR
0502
0506
0510
0514 NOAA-12 POLAR VIS NH 080W-170W W034
0518 NOAA-12 POLAR VIS SH 080W-170W W035
0522 NOAA-12 POLAR NIR NH 080E-010E W036
0526 NOAA-12 POLAR NIR SH 080E-010E W037
0530 NOAA-12 POLAR VIS MER 100W-170W W038
0534 NOAA-12 POLAR NIR MER 080E-010E W039
0538 NOAA-12 POLAR DIR NH 080W-170W W040
0542 NOAA-12 POLAR DIR SH 080W-170W W041
0546 NOAA-12 POLAR NIR MER 140E-070E W032
0550 NOAA-12 POLAR DIR MER 040W-110W W033

0554
0558 GOES-8 0445Z US IR
0602
0606 MET-5 0600Z C03 VS
0610 MET-5 0600Z D1 IR
0614 MET-5 0600Z D3 IR
0618 MET-5 0600Z D4 IR
0622 MET-5 0600Z D5 IR
0626 MET-5 0600Z D6 IR
0630 MET-5 0630Z D2 IR
0634 MET-5 0630Z C02 VS
0638 MET-5 0630Z C03 VS
0642 MET-5 0630Z C3D VS
0646 MET-5 0630Z C2D VS
0650 MET-5 0630Z D3 IR
0654 MET-5 0630Z D1 IR
0658 GOES-8 0545Z US IR
0702 GOES-8 0545Z NE IR
0706 GOES-8 0545Z SE IR
0710 GOES-8 0545Z TE IR
0714 GOES-8 0545Z NW IR
0718 GOES-8 0545Z SW IR
0722 GOES-8 0545Z TW IR
0726 NOAA-12 POLAR DIR MER 100W-170W W042
0730 NOAA-12 POLAR DIR NORTH POLE W043
0734 NOAA-12 POLAR DIR SOUTH POLE W044
0738 GOES-8 0645Z US IR
0742
0746
0750 W006 24 HR PRECIP ACCUM VT00Z
0755 W007 24 HR SFC/1000-500THK
0800 W008 24 HR 500MB HT/WD/TMP
0805 W009 24 HR 250MB HT/WD/TMP
0810 W014 24 HR 250 MB PROG.
0815 W015 24 HR 250 HT ISOTACHS
0820 W016 24 HR TROP PRESS/VWS
0825 W017 24 HR TROP PRESS/VWS
0830 W018 24 HR 300 STM/ISOTACHS
0835 W019 24 HR 300 STM ISOTACHS
0840 W020 24 HR 200 STM ISOTACHS
0845 W021 24 HR 200 STM ISOTACHS
0850 W022 24 HR 500 STM ISOTACHS
0855 W023 24 HR 500 STM ISOTACHS
0900 W010 24 HR 850 STM ISOTACHS
0905 W011 24 HR 850 STM ISOTACHS

0910 MET-5 0900Z D1 IR
0914 MET-5 0900Z D3 IR
0918 MET-5 0900Z D4 IR
0922 MET-5 0900Z D5 IR

0926 MET-5 0900Z D6 IR
0930 MET-5 0930Z D2 IR
0934 MET-5 0930Z C02 VS
0938 GOES-5 0745Z US IR

0945 W012 24 HR 700 STM/ISOTACHS
0950 W013 24 HR 700 STM ISOTACHS
0955 W100 00Z MSL PRES/1000-500TK
1000 W101 00Z MSL PRES/1000-500TK
1005 W102 24HR MSL PRES/1000-500TK
1010 W103 24HR MSL PRES/1000-500TK
1015 W104 48HR MSL PRES/1000-500TK
1020 W105 48HR MSL PRES/1000-500TK

1026 GOES-8 0845Z US IR
1030 GOES-8 0845Z NE IR
1034 GOES-8 0845Z SE IR
1038 GOES-8 0845Z TE IR
1042 GOES-8 0845Z NW IR
1046 GOES-8 0845Z SW IR
1050 GOES-8 0845Z TW IR
1054 OPERATIONS SCHEDULE PART-1
1058 OPERATIONS SCHEDULE PART-2
1102 OPERATIONS SCHEDULE PART-3
1106 GOES-8 0945Z US IR

1110 W503 48 HR SLP/1000-500TK
1115 W504 48 HR 500MB HT/TMP/WND

1122 NOAA-12 POLAR VIS NH 170W-100E W001
1126 NOAA-12 POLAR VIS SH 170W-100E W002
1130 NOAA-12 POLAR NIR NH 010E-080W W003
1134 NOAA-12 POLAR NIR SH 010E-080W W004
1138 NOAA-12 POLAR VIS MER 170W-120E W005
1142 NOAA-12 POLAR NIR MER 020E-050W W006
1146 NOAA-12 POLAR DIR NH 170W-100E W007
1150 NOAA-12 POLAR DIR SH 170W-100E W008
1154 NOAA-12 POLAR DIR MER 170W-120E W009
1158 GOES-8 1045Z US IR
1202
1206 MET-5 1200Z C03 VS
1210 MET-5 1200Z D1 IR
1214 MET-5 1200Z D3 IR
1218 MET-5 1200Z D4 IR
1222 MET-5 1200Z D5 IR
1226 MET-5 1200Z D6 IR
1230 MET-5 1230Z D2 IR
1234 MET-5 1230Z C02 VS
1238 MET-5 1230Z C03 VS
1242 MET-5 1230Z C3D VS
1246 MET-5 1230Z C2D VS

```
1250 MET-5 1230Z C1D VS
1254 MET-5 1230Z D1 IR
1258 GOES-8 1145Z US IR
1302 GOES-8 1145Z NE IR
1306 GOES-8 1145Z SE IR
1310 GOES-8 1145Z TE IR
1314 GOES-8 1145Z NW IR
1318 GOES-8 1145Z SW IR
1322 GOES-8 1145Z TW IR
1326 GOES-8 1145Z US WV
1330 GOES-8 1145Z NE WV
1334 GOES-8 1145Z SE WV
1338 GOES-8 1145Z TE WV
1342 GOES-8 1145Z NW WV
1346 GOES-8 1145Z SW WV
1350 GOES-8 1145Z TW WV
1354 GOES-8 1145Z US VS
1358 GOES-8 1245Z US IR
1402 GOES-8 1245Z US VS
1406
1410 TBUS NOAA-9
1415 TBUS NOAA-10
1420 TBUS NOAA-11
1425 TBUS NOAA-12
1430 W505 48 HR 250MB HT/TMP/WND
1435 GOES-8 1345Z US IR
1440 GOES-8 1345Z US VS
1445 W506 72 HR SLP/1000-500TK
1450 W507 72 HR 500MB HT/TMP/WND
1455 W508 72 HR 250MB HT/TMP/WND
1500 W066 SIG WX PROG FL250-600
1505 SIG WX PROG FL250-600

1510 MET-5 1500Z D1 IR
1514 MET-5 1500Z D3 IR
1518 MET-5 1500Z D4 IR
1522 MET-5 1500Z D5 IR
1526 MET-5 1500Z D6 IR
1530 MET-5 1530Z D2 IR
1534 MET-5 1530Z C02 VS
1538 GOES-8 1445Z US IR
1542 GOES-8 1445Z NE IR
1546 GOES-8 1445Z SE IR
1550 GOES-8 1445Z TE IR
1554 GOES-8 1445Z NW IR
1558 GOES-8 1445Z SW IR
1602 GOES-8 1445Z TW IR
1606 GOES-8 1445Z US VS
1610 GOES-8 1445Z NE VS
1614 GOES-8 1445Z SE VS
```

```
1618 GOES-8 1445Z TE VS
1622 GOES-8 1445Z NW VS
1626 GOES-8 1445Z SW VS
1630 GOES-8 1445Z TW VS
1634
1638 GOES-8 1545Z US IR
1642 GOES-8 1545Z US VS
1646
1650
1654
1658
1702
1706 NOAA-12 POLAR VIS MER 130E-060E W010
1710 NOAA-12 POLAR NIR MER 040W-110W W011
1714 NOAA-12 POLAR DIR MER 130E-060E W012
1718 NOAA-12 POLAR VIS NH 100E-010E W013
1722 NOAA-12 POLAR VIS SH 100E-010E W014
1726 NOAA-12 POLAR NIR NH 080W-170W W015
1730 NOAA-12 POLAR NIR SH 080W-170W W016
1734 NOAA-12 POLAR VIS MER 070E-000E W017
1738 NOAA-12 POLAR NIR MER 100W-170W W018
1742 GOES-8 1645Z US IR
1746 GOES-8 1645Z US VS
1750
1754
1758 MET-5 D2 1800Z D2 IR
1802 MET-5 D1 1800Z D1 IR
1806 MET-5 D3 1800Z D3 IR
1810 MET-5 D4 1800Z D4 IR
1814 MET-5 D5 1800Z D5 IR
1818 MET-5 D6 1800Z D6 IR
1822 MET-5 D7 1800Z D7 IR
1826 MET-5 D8 1800Z D8 IR
1830 MET-5 D2 1830Z D2 IR
1834 MET-5 D9 1830Z D9 IR
1838 GOES-8 1745Z US IR
1842 GOES-8 1745Z NE IR
1846 GOES-8 1745Z SE IR
1850 GOES-8 1745Z TE IR
1854 GOES-8 1745Z NW IR
1858 GOES-8 1745Z SW IR
1902 GOES-8 1745Z TW IR
1906 GOES-8 1745Z US VS
1910 GOES-8 1745Z NE VS
1914 GOES-8 1745Z SE VS
1918 GOES-8 1745Z TE VS
1922 GOES-8 1745Z NW VS
1926 GOES-8 1745Z SW VS
1930 GOES-8 1745Z TW VS
1934
```

1938 GOES-8 1845Z US IR
1942 GOES-8 1845Z US VS
1946
1950 NOAA-12 POLAR DIR NH P 100E-010E W019
1954 NOAA-12 POLAR DIR SH P 100E-010E W020
1958 NOAA-12 POLAR DIR MER 070E-000E W021

2005 W047 24 HR SFC/1000/500THK
2010 W048 24 HR 500MB HT/WD/TMP
2015 W049 24 HR 250MB HT/WD/TMP
2020 W054 250 HT ISOTACHS
2025 W055 250 HT ISOTACHS
2030 W056 24HR TROP PRES/VWS
2035 W057 24HR TROP PRES/VWS
2040 W058 24HR 300 STM/ISOTACHS
2045 W059 24HR 300 STM/ISOTACHS
2050 W060 24HR 200 STM/ISOTACHS
2055 W061 24HR 200 STM/ISOTACHS
2100 WO62 24HR 500 STM/ISOTACHS
2105 W063 24HR 500 STM/ISOTACHS

2110 GOES-8 1945Z US IR
2114 GOES-8 1945Z US VS
2118 MET-5 2100Z D6 IR
2122 MET-5 2100Z D7 IR
2126 MET-5 2100Z D8 IR
2130 MET-5 2130Z D2 IR

2135 W050 24HR 850 HT ISOTACHS
2140 W051 24HR 850 HT ISOTACHS
2145 W052 24HR 700 HT ISOTACHS
2150 W053 24HR 700 HT ISOTACHS
2155 W150 00Z MSL PRES/1000-500TK
2200 W151 00Z MSL PRES/1000-500TK
2205 W152 24HR MSL PRES/1000-500TK
2210 W153 24HR MSL PRES/1000-500TK
2215 W154 48HR MSL PRES/1000-500TK
2220 W155 48HR MSL PRES/1000-500TK
2225 W156 24HR PRECIP ACCUM VT 12Z

2230 GOES-8 2045Z US IR
2234 GOES-8 2045Z NE IR
2238 GOES-8 2045Z SE IR
2242 GOES-8 2045Z TE IR
2246 GOES-8 2045Z NW IR
2250 GOES-8 2045Z SW IR
2254 GOES-8 2045Z TW IR
2258 GOES-8 2045Z US VS
2302 GOES-8 2045Z NE VS
2306 GOES-8 2045Z SE VS
2310 GOES-8 2045Z TE VS

2314 GOES-8 2045Z NW VS

2320 W509 48 HR SLP/1000-500TK
2325 W510 48 HR 500MB HT/TMP/WND

2330 NOAA-12 POLAR VIS NH 010E-080W W022
2334 NOAA-12 POLAR VIS SH 010E-080W W023
2338 NOAA-12 POLAR NIR NH 170W-100E W024
2342 NOAA-12 POLAR NIR SH 170W-100E W025
2346 GOES-8 2045Z SW VS
2350 GOES-8 2045Z TW VS
2354 GOES-8 2145Z US IR
2358 GOES-8 2145Z US VS

#######

91. Meteor 3-5

Newsgroup: rec.radio.amateur.space
Date: 1995-01-12 14:08:59 UTC
From: boyer@rd.bbc.co.uk
Message-ID: <D2Apz0.ps@bbc.co.uk>
Source record: 26041

I heard Meteor 3-5 today transmitting visible pictures.

Yippie!

John B
John.boyer@rd.eng.bbc.co.uk

92. WXSAT - MAIL - LIST problem?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-12 14:56:47 UTC
From: fund@hdi.kfk.de
Message-ID: <3f3fvf$hkn@hdimsun1.kfk.de>
Source record: 26042

WXSAT - MAIL - LIST problem?

I missed the postings of WXSAT -LIST since about SAT 5 JAN.
I also did not get answer or bounce of email to wxsat-admin.

Email at my site (in/out) tested and works ok.

Responses greatly appreciated.
Thanks for Your effort!

Norbert
--
****
* norbert fund email: fund@hdi.kfk.de *
* karlsruhe nuclear research center *
* karlsruhe *
* germany *
****

93. Anyone heard XX9 station?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-12 15:58:19 UTC
From: Wayne_Estes@csg.mot.com
Message-ID: <9501120958.ZM25961@SALCIUS2>
Source record: 26043

Has anyone heard the XX9 dx-pedition station in Macau?

Oscar Satellite Report says this station should be on the air from 9-13 January. I didn't hear them the last two nights, and tonight is my last window.

Wayne Estes WD5FFH wayne@csg.mot.com

94. Re: PC clock goofs up software

Newsgroup: rec.radio.amateur.space
Date: 1995-01-12 19:20:42 UTC
From: ag381@FreeNet.Carleton.CA
Message-ID: <D2B4EI.KxH@freenet.carleton.ca>
Source record: 26044

In a previous posting, John C. Wren (jcw@kd4dts.radio.org) writes:
> dave@rsd.dl.nec.com (Dave Rogers) writes:
>
>>In article <3esjmr$na2@cnn.exu.ericsson.se>, exuward@exu.ericsson.se (Gerald Ward)
writes:
>>|> The clock in our PC gets off about 2 minutes per hour. This causes a problem
>>|> with the sat. tracking software. Is there a tsr that someone has written to
>>|> correct this? There is no way to tune the crystal manually on the motherboard.
>
> This is not entirely correct. It doesn't matter if the machine is CPU bound
> 100%, the clock will update reliably. This is because the timer tick is
> interrupt driven, from the Timer 0 channel, and is sourced by the 14.some_odd
> megahertz clock that is used for bus timing, and in the old days, color burst
> generation. The problem is someone is leaving interrupts turned off for too
> long, and ticks are getting missed. This has NOTHING to do with the machine.
> It's all in the code you're running (like any TSRs, heavy serial I/O without
> using a 16550 SCC, etc). The only other scenerio that comes to mind is that
> perhaps your oscilliator is off, but for that kind of drift, you'd most likely
> have other (more severe) problems.
>
>>This is a problem common to all DOS machines. The crux of the problem
>>is that the PC's hardware clock is only read at boot time (by MS-DOS).
>>After that the Time-of-Day clock is updated by a software interrupt
>>which simply adds a clock tic to a counter which is, in fact the TOD
>>clock. If your system is 100% CPU bound, as it surely is running a sat
>>tracker, there is little spare time to update the TOD clock. A possible
>>solution would be to write a TSR to re-read the hardware clock and
>>update the TOD clock.
>
>>Another possible solution is to run your sat tracker under Linux,
>>Windows NT or OS/2 since they do not suffer from this brain damage.
>>I run SatTrak 3.8 under Linux and NT with no worries.
>
>
>>Best,
>
>>dave
>>==
>>Dave Rogers Internet : dave@rsd.dl.nec.com
>>M & R Software, Inc. or : mandr@ix.netcom.com
>>Plano, Texas AMPRnet : kc5iye@dfwgate.ampr.org
>> CIS : 76672,2455
>
>> In the absence of leadership, we have decided to follow ourselves.

```
the following cobe may help for 'normal' clock errors
/*
Purpose;to adjust the CMOS clock to adjust for known drift which
at this writing is approx 1.6 seconds/day FAST
Method; check if a full day has past since last correction.
if so, add correction
if not,do nothing
Input; File c:\timechk.txt which contains ascii string for last time
this program ran
Output; File timechk.txt updated with current timestamp appended
Caveat; *This file will only work with PCs that don't ignore the
1\100 clock resolution ie the older ones.
*As it stands, this file corrects for an RTC which is FAST if
compiled with #define FAST, and #if defined SLOW for a slow RTC.
*/
#include <bios.h>
#include <io.h>
#include <direct.h>
#include <time.h>
#include <stdio.h>
#include <stdlib.h>
#include <sys\types.h>
#include <sys\timeb.h>
#include <string.h>
#include <dos.h>
/* the RTC is known to be about 1.6 seconds/day fast */
#define DAY 86400L //seconds in a day
#define SECOND 1 //determined experimentally.Drift in seconds/day
#define HSECOND 60 //Drift in 1/100 seconds/day
#define MAXSTRING 10
FILE *infile, *outfile;
fpos_t infile_end;
char outpath[] = "tmXXXXXX";
char now_time[MAXSTRING];
void quit( int error );

void main()
{
time_t ltime,last_time,elapsed_time;
struct timeb ;
struct dostime_t dtime;
char tmp[MAXSTRING];
unsigned char hour, minute, second, hsecond;
/* Set time zone from TZ environment variable. If TZ is not set,
* Eastern is used (Eastern standard time, daylight savings).
*/
tzset();

/* Get UNIX-style time , seconds since 01-01-1970 */
time( &ltime );
/*
find if time is more than a full day since program was last ran.
```

```
this info is on drive 'C' as c:\timechk.txt
*/

system( "cd c:\\");
/* if there is an argument this is taken to mean initialize diskfile */
/* not implemented */

if( (infile = fopen( "c:\\timechk.txt", "rt" )) == NULL )
quit( 1 );
mktemp( outpath ); //creates unique file name
if( (outfile = fopen( outpath, "wt" )) == NULL )
quit( 2 );

/* Get each line from input and write to output. */
/* This gives some kind of history;it is not really needed */
while( 1 )
{

if( fgets( tmp, MAXSTRING - 1, infile ) == NULL )
if( feof( infile ) )
break;
else
quit( 3 );
if( fputs( tmp, outfile ) == EOF )
quit( 3 );
}

if( fseek( infile,0l,SEEK_END ) != 0 )
quit( 3);
infile_end = ftell( infile) - (fpos_t)( MAXSTRING - 1);
fsetpos( infile, &infile_end );
/* read it */
fread( tmp, MAXSTRING ,1, infile ) ; tmp[9] = '\0';
last_time = atol(tmp);
elapsed_time = ltime - last_time ; //since last correction
if(elapsed_time/DAY) //true if at least one day
{
_dos_gettime( &dtime );
hour = dtime.hour;
minute = dtime.minute;
second = dtime.second;
hsecond = dtime.hsecond;
/* make corrections;these are not entirely correct but good enough */
#if defined (FAST)
dtime.hour = (unsigned char)hour;
dtime.minute = (unsigned char)minute;
if( second >= (unsigned char)(elapsed_time/(time_t)DAY) *(time_t) SECOND)
dtime.second = (unsigned char)second - \
(unsigned char)(elapsed_time/(time_t)DAY) *(time_t) SECOND;
else{
dtime.minute -=1;dtime.second +=59;
dtime.second = (unsigned char)second - \
```

```
(unsigned char)(elapsed_time/(time_t)DAY) *(time_t) SECOND;
}
if( hsecond >= HSECOND )
dtime.hsecond = (unsigned char) hsecond - (unsigned char)HSECOND;
else
dtime.hsecond = hsecond; //the hell with it
#if defined (SLOW)
dtime.hour = (unsigned char)hour;
dtime.minute = (unsigned char)minute;
dtime.second = (unsigned char)second + \
(unsigned char)(elapsed_time/(time_t)DAY) *(time_t) SECOND;
if( dtime.second <= 59) ; //it is ok
else{
dtime.minute +=1;
dtime.second -=59;
}
dtime.hsecond = (unsigned char) hsecond + (unsigned char)HSECOND;
if( dtime.hsecond > 99 )
{dtime.second +=1;dtime.hsecond -= 99;}

#endif
#endif
if(_dos_settime( &dtime ) != 0 )
puts("\nWARNING! Error setting time\n");
else puts("Time adjusted");

/* write current time to outfile */
if( fputs( (ltoa(ltime,now_time,10)), outfile ) == EOF )
quit( 3 );
}

else {fcloseall();remove( outpath );exit(0);}

/* Close files and move temporary file to original by deleting
* original and renaming temporary.
*/
fcloseall();
remove( "timechk.txt" );
rename( outpath, "timechk.txt" );
exit( 0 );
}

/* Handles errors */
void quit( int error )
{
switch( error )
{
case 1:
perror( "Can't open input file" );
break;
case 2:
perror( "Can't open output file" );
```

```
fclose( infile );
break;
case 3:
perror( "Error processing file" );
fclose( infile );
fclose( outfile );
remove( outpath );
break;
}
exit( error );
}
```

Hope this helps.My clock is within 2 sec/month as checked with WWV.

Herb.

95. Help: traksat v3.0

Newsgroup: rec.radio.amateur.space
Date: 1995-01-12 23:26:24 UTC
From: fjorozco@academ07.mty.itesm.mx
Message-ID: <FJOROZCO.95Jan12172624@academ07.mty.itesm.mx>
Source record: 26045

Hi all, I got a copy of Traksat v3.0 from oak.oakland.edu and I'm having some trouble with it. It runs, but when I try to use the ground tracks or orthogonal view options it kicks me back to DOS and then locks up with an "overvlow -- runtime error R6000" error, or a "divide by zero" error. I'm using a 486DX machine, and I've never had this problem before.

Any ideas??? please reply via email to fjorozco@academ01.mty.itesm.mx since I don't get to read the newsgroups too often.

thanks and 73 de Luis N5UHB

96. Re: New Generation NOAA specs ??

Newsgroup: rec.radio.amateur.space
Date: 1995-01-13 00:07:23 UTC
From: eareckso@netcom.com
Message-ID: <eareckso D2BHoB.92y@netcom.com>
Source record: 26046

Louis Botha (sttlmb@puknet.puk.ac.za) wrote:
: I have heard that the so called new generation NOAA's will soon be in orbit.
: Can anyone please supply my with info on this subject (freq. , transmission
: formats, date of launch etc.).

: Thanks

: Louis Botha

There was some discussion about them in '94. The new format is to be called
LRPT, a digital mode with compression and higher rez. The same frequencies
would be in use as now, 137mhz. band. Believe this format will be phased-in
during launches scheduled around 2002-2005, not during the '90s.

Bill Eareckson
eareckso@netcom.com

97. Re: GOES-8 receive question.

Newsgroup: rec.radio.amateur.space
Date: 1995-01-13 00:12:33 UTC
From: eareckso@netcom.com
Message-ID: <eareckso D2BHwy.9Hq@netcom.com>
Source record: 26047

Chris Oesterling (chris@angus.mystery.com) wrote:
: I'm wondering if anyone has had a problem I'm having receiving
: GOES-8. The IRO images come out quite well. The re-transmitted
: Met5 images come out PERFECT. The VSO (I assume visual images)
: come out very dark with only state/country borders visable.
: Even the lines are not as clean. My receiver has been modified
: for a wider bandwidth (50khz). When I use it for NOAA 9-12,
: the images come out great too. Just the VSO's are bad. Is it me?

The visible ones appeared normal to me up til Jan 7, which was the
last time I viewed them. Remember this time of year, solar illumination for
the US is lower, things will brighten up some as we approach summer.

:
: One other question I'd be pleased to find the answer to.
: The identification bar at top of the GOES8 images display "US" for
: United States view (obviously), NE - North East, NW - North West,
: SE - South East, SW - South West, TE - ????? East, TW - ????? West.
: What the heck does the "T" stand for?

TE="Tropical East"
TW="Tropical West"

Bill Eareckson
eareckso@netcom.com

98. FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-01-13 07:32:17 UTC
From: AMSOFT@EPIX.NET
Message-ID: <NEWTNews.9919.789986050.amsoft@amsoft.epix.net>
Source record: 26048
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

The Jan 95 "The World of Ham Radio" CD-ROM newsletter is now available. This CD-ROM offers more ham programs than any of the others out there! Over 20,000 IBM files for amateur radio are stored on this CD-ROM. Included are the FCC CALLSIGN call book with US & Foreign listings current to 12/94, and AMCALL the new logbook from AmSoft that will auto log from the CD for you. Over 1,350 Radio Modifications. The latest HST, NASA & Space images. Over 700 Megabytes of Amateur Radio Software packed into 1 CD. This CD-ROM is published every 4 months without delay in JAN, MAY, & SEP.

If you would like to get a FREE newsletter about the JAN 1995 AmSoft CD-ROM please send your Internet E-mail address to: amsoft@epix.net

99. Re: Meteor 3-5

Newsgroup: rec.radio.amateur.space
Date: 1995-01-13 10:53:32 UTC
From: mklee@actrix.gen.nz
Message-ID: <D2CBL9.MDx@actrix.gen.nz>
Source record: 26049

In article <D2Apz0.ps@bbc.co.uk>, boyer@rd.bbc.co.uk (John Boyer) says:
>
>
>I heard Meteor 3-5 today transmitting visible pictures.

Yes, received good images. But only trouble is that Meteor 3-5 is approx
13 minutes 'ahead' of NOAA 14. So if you wish to receive both, you
would have to truncate the Meteor 3-5 reception before it fills up the
monitor.

Regards

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

100. ARLS002 RS-15 launch a first

Newsgroup: rec.radio.amateur.space
Date: 1995-01-13 17:31:44 UTC
From: w1aw@arrl.org
Message-ID: <$arls002.1995@ampr.org>
Source record: 26050
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB SPACE @ ARL $ARLS002
ARLS002 RS-15 launch a first

ZCZC AS81
QST de W1AW
Space Bulletin 002 ARLS002
From ARRL Headquarters
Newington, CT January 13, 1995
To all radio amateurs

SB SPACE ARL ARLS002
ARLS002 RS-15 launch a first

The recently launched RS-15 Russian satellite was sent aloft on the
first successful test flight of a new launch vehicle.

RS-15 was the only passenger on the new ''ROKOT'' rocket, a joint
commercial venture between Germany and Russia. ROKOT is described
as a low cost launcher for small satellites into low-earth and
sun-synchronous orbits and will be available for commercial launches
by the end of 1996, according to Peter Guelzow, of AMSAT-DL.

ROKOT may also offer economical launch opportunities for Amateur
Radio satellites and experiments, Guelzow said, and the ''user's
manual'' for ROKOT will be made available to AMSAT-DL, he said.

RS-15 is now operational; Keplerian data is available on W1AW.
NNNN
/EX
```

101. * SpaceNews 16-Jan-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-01-13 21:48:23 UTC
From: magliaco@pilot.njin.net
Message-ID: <3f6sf7$et1@pilot.njin.net>
Source record: 26051
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.misc,rec.radio.info

SB NEWS @ AMSAT $SPC0116
* SpaceNews 16-Jan-95 *

BID: $SPC0116

=========
SpaceNews
=========

MONDAY JANUARY 16, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* RS-15 NEWS *
==============
Pat, G3IOR reports that in addition to a Mode 'A' transponder, RS-15 also
a Mode 'K' and 'T' transponder. However, UA3CR repoorted that it will be
kept in Mode 'A'.

Sadly, RS-15 will be the last RS satellite. The funding for future RS
satellites is gone. However, the UA facility will still build for future
AMSAT etc, satellites.

* H-II NEWS *
=============
The H-II Rocket with the Space Flyer Unit (SFU) and Geostationary
Meteorological Satellite-5 (GMS-5) aboard is scheduled to be launched
as follows:

1. Primary Launch Date: February 22, 1995

2. Launch Windows: 17:10 to 19:30 JST

3. Alternative Launch Period: February 23 to 28, 1995

While the SFU was being prepared and tested for launch by H-II
No. 3 at NASDA, Tanegashima Island Facility, a leak in the tubing
of the attitude control equipment was found December 21.

The leaking part was transported to MHI in Nagasaki plant December 27
for repair, and we found that the leak was caused by a crack (almost 2mm)
in the welding. We repaired the welding (rewelded) and returned the part
to NASDA Tanegashima Center on January 3, 1995.

[Info from NASDA via Yoshiro Yamada]

* NOAA-14 OBSERVATION *
=======================
Oded, 4Z5BS, reports copying NOAA-14 on 137.620 MHz with excellent picture quality, and found a close correlation between the published Keplerian data for the satellite and its actual orbit.

* MIR NEWS *
============
The following message from the cosmonauts on the Russian space station Mir recently appeared on their packet radio BBS and was copied by Toshio Tango, JR8XPV:

Stat : PR
Posted : 94/12/31 11:45
To : ALL
From : R0MIR
@ BBS :
BID :
Subject: HAPPY NEW YEAR

TO EVERY OF YOU, WHO CONGRATULATED US WITH 1995, OUR CREW WISHES HEALTHY, LUKY AND HAPPINESS YOU, YOURS FAMILY AND FRIENDS. 17TH BASIC MISSION ON THE RUSSIAN SPACECTATION "MIR": COMMANDOR - A.VICTORENCO, BOARDENGINEER - H.CONDACOVA, PHYSISHEN-COSCIAN-INVESTIGATOR - V.POLYAKOV. R0MIR.

Miles, WF1F, reports that the packet radio BBS on Mir is active and working well. The only problem is the TNC has only a 22 kilobyte message storage area and it fills up quickly. As a result, the crew has posted the following message:

Stat : PR
Posted : 95/01/13 08:37
To : ALL
From : R0MIR
@ BBS :
BID :
Subject: NOTE

DEAR HAMS! PLEASE, AFTER READING YOUR OWN MSG, KILL IT!

Miles reminds us that the Mir BBS should not be used in place of a Pacsat satellite or a terrestrial BBS. Terrestrial messages placed on the Mir BBS should include a packet radio return address, so responses can be directed by way of the packet radio network, and not the Mir space station.

Also remember that the Mir PBBS can only accept one connection at a time. All other stations must STOP calling the Mir PBBS while a station is actively using the Mir PBBS. Calling the Mir PBBS, while someone else is logged in and trying to transfer data is poor operating practice and could be considered "intentional interference".

And lastly, do not use computer software to automatically connect to R0MIR once packets have been received from Mir. Recently, tremendous interference was received from such an automated station after the

Cosmonauts switched off the TNC and (unsuccessfully) attempted to make
voice contacts.

* SAT TRACKING FOR UNIX/LINUX *
==============================
SatTrack V3.0 Release
January 11, 1995

SatTrack V3.0 is ready to be released. This new version is an improved
version of V2.0. The main addition is an X Window color graphics display.
The distribution file can be obtained via anonymous FTP. Do the following:

ftp 128.121.50.2 (ftp.jvnc.net)
Name: anonymous
Password: your_email_address
ftp> binary (this line is important!)

ftp> cd /priv/kupiec/incoming (do the 'cd' in ONE step!)
or
ftp> cd /priv/kupiec/sattrack (do the 'cd' in ONE step!)

ftp> get sattrack.V3.0.tar.gz
ftp> quit

WARNING: If you want to save some of your special resource files of a
previous SatTrack version, these will have to be saved somewhere else
temporarily, because the procedure described below will overwrite these.
However, the format of some of the resource files had to be changed to
allow for extra features. The format of the new files may not be
compatible any more with those from previous releases.

Place the distribution file into your Unix home directory, 'uncompress' it
(or, if the file name ends on 'gz', 'gunzip' it), and then type
'tar xvpf sattrack.V3.0.tar'. This will unbundle the distribution file and
will create all necessary sub-directories. Then look into the documentation
file 'sattrack.doc' in SatTrack/doc for instructions how to compile sattrack
(and some other auxiliary programs). It should compile perfectly on at
least Sun workstations with SunOS and Solaris, and on i386 laptops running
Linux. Make sure the compiler and linker flags in the Makefile are
configured properly!

The author asks that he be informed of how the installation went and if any
problems, bugs or imperfections were encountered, of if you have other
suggestions.

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720, USA
(510) 642-8497
manfred@ssl.berkeley.edu

* THANKS! *
==========
Thanks to all those who sent messages of appreciation and holiday
greetings to SpaceNews, especially:

KA2AEV N2JUX G3IOR IK3WVJ ZS6BMN PS7JN PS7RT TG9IKE
John Herndon

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any
of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

102. Re: PC clock goofs up software

Newsgroup: rec.radio.amateur.space
Date: 1995-01-13 22:11:51 UTC
From: tarzan@gate.net
Message-ID: <3f6tr7$17n0@tequesta.gate.net>
Source record: 26052
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.space

: Jerry Ward.
first of all let me suggest you look at the october 93 issue of
BYTE magazine, page 57 article "Keeping Time on Your PC" by Michael Lombardi.
this article addresses keeping time on your pc (DOH!) but also gets into
the accuracy of a pc real time clock. According to the article
the pc clock will generate a interrupt every 54.936 msecs and count these.
Now it can only display multiples of this value so you miss some times.
Thus it drifts 1 to 15 seconds per day with 5 to 6 seconds per day being
typical.

There is also a I'net site listed for some code and info on this
its 132.163.135.130 and you can ftp to it to get program code and such.
I looked at this code awhile ago but never used it.

My personal story is this, i was trying to set the pc clock using a GPS
receiver so that we could keep accurate time with the pc's and synchronize
multiple pc's. This never happened, i had to write some C code to constantly
read the gps time and keep it as the reference (kinda sucks) anyway, if you
really need a accurate clock in your pc i suggest you talk to some of the
companies that sell accurate clocks for the pc that replace the old RTC with
a plug in card and you can even connect this to a GPS receiver to keep it
completely accurate. Such a company is datum, inc try emailing them
at datum.com

also, note that the problem with the clock is based on the accuracy of the
RTC and the bios of the system so it is my impression that this problem
would prevail on any pc, unless you write some code to correct the offset
(which such code is on the above ftp site)

best of luck,
jess

ps the ip address above is alos time_a.timefreq.bldrdoc.gov (hey who better
to get correct time from than NIST?)

--
\\\|///
\\ ~ ~ //
(@ @)
--------------oOOo-(_)-oOOo------------
|Jess Coburn ,,,,,,,,,,,,,,,,,,,|
|NetCruising coburn@acc.fau.edu|
|among the elite. tarzan@gate.net |
|http://www.gate.net/~tarzan ````````````|
----------------------Oooo.------------

```
.oooO ( ) this sig stolen
( ) ) / from bits and
\ ( (_/ pieces of other
\_) sigs. BIG DEAL!
```

103. Re: Want new G5400 Rotator at a good price

Newsgroup: rec.radio.amateur.space
Date: 1995-01-14 01:52:47 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3f7apf$ldj@news.doit.wisc.edu>
Source record: 26053

faunt@netcom3.netcom.com (Doug Faunt N6TQS 510-655-8604) wrote:
>
> Well, I've given up on finding a used one, so does anyone know of
> a particularly good price on a new one?
> About the best I've found is $490.

Texas Towers had it for $479 in its October (the latest I have)catalog.

73,
Kevin

104. Should AMSAT-BB mailing list be sent here?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-14 16:52:54 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3f8vh6$em4@news.doit.wisc.edu>
Source record: 26054

As many of you may know, AMSAT has a mailing list, AMSAT-BB. I've
been a subscriber for a few months and I really like it. I think many
people here would like it too.

I think it would be possible to send all the AMSAT-BB messages to this
newsgroup - it would just require adding one of the email-to-newsgroups
addresses to the mailing list.

The question is, should it be done? The list is running about 30
messages a day recently, on topics ranging from how to align OSCAR
antennas to software for the pacsats to RS-15 and its orbit, plus
many, many more themes. The information seems to be very reliable -
some of the biggest names in amateur satellites subscribe to the list.

I haven't suggested this on the mailing list yet because I thought it
would be best to ask readers of this newsgroup first before doubling
or tripling the number of messages posted to it each day. Does anybody
have any comments, pro or con?

N9LTD - Dave Mullenix - djmullen@facstaff.wisc.edu
Listen to the EZSAT Report on This Week in Amateur Radio
Saturdays at 5:30 Eastern Time on Galaxy 3, Transponder 17, 5.8 MHz audio.
Questions, suggestions and criticisms to address above.

105. ARLK002 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-01-14 18:32:25 UTC
From: w1aw@arrl.org
Message-ID: <$arlk002.1995@ampr.org>
Source record: 26055
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK002
ARLK002 Keplerian data

ZCZC SK27
QST de W1AW
Keplerian Bulletin 2 ARLK002
From ARRL Headquarters
Newington, CT January 14, 1995
To all radio amateurs

SB KEP ARL ARLK002
ARLK002 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-63
1 99963U 95999A 95033.30285722 .00033600 00000-0 25200-3 0 25
2 99963 51.6484 115.2937 0066401 4.0320 356.1183 16.01425383 22
AO-10
1 14129U 83058B 95006.04310818 .00000320 00000-0 10000-3 0 3348
2 14129 26.6376 289.4177 6024995 241.6488 45.8361 2.05877045 58991
RS-10/11
1 18129U 87054A 95012.46477039 .00000023 00000-0 87783-5 0 121
2 18129 82.9236 174.1597 0011843 156.8050 203.3639 13.72346985378618
UO-11
1 14781U 84021B 95010.05809346 .00000121 00000-0 28312-4 0 7662
2 14781 97.7805 20.0464 0011589 333.9517 26.1102 14.69292503580680
RS-12/13
1 21089U 91007A 95009.53301461 .00000055 00000-0 43144-4 0 7676
2 21089 82.9205 218.4176 0027719 254.8596 104.9493 13.74053020196980
AO-13
1 19216U 88051B 95010.66707407 -.00000106 00000-0 10000-4 0 54
2 19216 57.6240 210.0694 7257503 359.1779 0.1714 2.09724426 18869
UO-14
1 20437U 90005B 95012.24626104 -.00000000 00000-0 16972-4 0 667
2 20437 98.5804 99.0727 0010637 301.6909 58.3230 14.29870937259468
RS-15
1 23440U 94085B 95009.47931908 -.00000042 00000-0 10000-4 0 53
2 23440 64.8343 151.6627 0188519 289.7470 68.3209 11.27116019 1626
```

```
AO-16
1 20439U 90005D 95012.22395704 -.00000008 00000-0 13975-4 0 8640
2 20439 98.5900 100.5197 0010961 302.2004 57.8117 14.29924820259479
DO-17
1 20440U 90005E 95012.78754129 -.00000003 00000-0 15635-4 0 8654
2 20440 98.5902 101.4732 0010888 299.0988 60.9103 14.30065615259571
WO-18
1 20441U 90005F 95011.78719172 .00000013 00000-0 22006-4 0 8686
2 20441 98.5894 100.4706 0011561 303.4151 56.5924 14.30037989259433
LO-19
1 20442U 90005G 95012.73059685 .00000010 00000-0 20708-4 0 8649
2 20442 98.5921 101.7170 0011951 299.6477 60.3505 14.30137783259581
FO-20
1 20480U 90013C 95011.85180990 -.00000016 00000-0 40975-4 0 7617
2 20480 99.0651 129.5575 0539966 227.0017 128.4617 12.83229333230894
AO-21
1 21087U 91006A 95012.89371316 .00000094 00000-0 82657-4 0 5563
2 21087 82.9431 347.5079 0034091 217.9918 141.8833 13.74549768198398
UO-22
1 21575U 91050B 95011.61634310 .00000040 00000-0 28085-4 0 5701
2 21575 98.4134 86.6772 0008646 31.4768 328.6939 14.36953866183014
KO-23
1 22077U 92052B 95012.54518118 -.00000037 00000-0 10000-3 0 4637
2 22077 66.0810 201.6402 0013425 238.1985 121.7727 12.86290249113710
KO-25
1 22828U 93061F 95013.21064288 .00000002 00000-0 18522-4 0 3392
2 22828 98.6318 91.7983 0009946 306.8409 53.1848 14.28083050 35754
KO-25?
1 22830U 93061H 95010.19888767 .00000001 00000-0 17898-4 0 3681
2 22830 98.5355 83.8167 0010985 292.7894 67.2130 14.28079487 67247
IO-26
1 22826U 93061D 95009.18388816 .00000012 00000-0 22832-4 0 3599
2 22826 98.6322 87.7892 0009343 334.3157 25.7564 14.27754305 67086
AO-27
1 22825U 93061C 95013.21290103 .00000011 00000-0 22274-4 0 3621
2 22825 98.6361 91.7054 0008595 322.4953 37.5609 14.27648264 67653
PO-28
1 22829U 93061G 95013.21988302 .00000004 00000-0 19465-4 0 3541
2 22829 98.6328 91.8322 0009812 307.8673 52.1610 14.28059489 67671
Mir
1 16609U 86017A 95013.22509275 .00006077 00000-0 84426-4 0 8935
2 16609 51.6468 214.4632 0002182 142.4471 217.6719 15.58521188508754

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
January 17, 1994, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

106. Anyone heard XX9 station?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-15 16:22:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A1A232.14E6000019.uuout@freddy.supernet.ab.ca>
Source record: 26056

Hi Wayne,
Sorry not what you want to hear. "NO"....been listening and
working AO-13 on the dates you said but not heard at all....also had
people inquire and looking.

I did work XX9AS (Albert) on Dec 31/94 06:58z but I don't think you want
to hear that either Hi Hi.

Good luck in the furture and I'm sure that XX9 will be on again.

73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

107. Need mod for IC-275

Newsgroup: rec.radio.amateur.space
Date: 1995-01-15 16:32:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A1A23C.14E600001A.uuout@freddy.supernet.ab.ca>
Source record: 26057

Hi, I'm looking for the mod that will make my IC-275H general coverage transmit (in other words transmit same as receive 138 to 174 Mhz).

I need this mod for "S" band transverter coverage....any info would be greatly accepted.

Thanks in advance.

73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

108. AMSAT-BB on this list

Newsgroup: rec.radio.amateur.space
Date: 1995-01-15 17:38:54 UTC
From: erik@ve7mdl.ampr.ORG
Message-ID: <1126@ve7mdl.ampr.org>
Source record: 26058

Dave suggested including AMSAT-BB on this list.

Dave and everyone,

My system receives this list via a 9600 Baud radio link. The link is flakey and adding 30 messages to it would likely cause me some problems. So I would vote against it.

73 de VE7MDL ....Erik.

109. Re: Meteor 3-5

Newsgroup: rec.radio.amateur.space
Date: 1995-01-16 14:41:22 UTC
From: eareckso@netcom.com
Message-ID: <eareckso D2I64z.91M@netcom.com>
Source record: 26059

: Not at my latitude. It turns off as soon as it gets near the daylight
: terminator. Thus I only get about 8 mins.

: John B

Have you noticed any faint occasional horizontal banding in the image? It does not appear in the sync bars; seems to be some variance in the sensitivity of their radiometer.

Bill Eareckson
eareckso@netcom.com

110. Re: RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-01-16 17:35:16 UTC
From: jma@ih4gp508.ih.att.com
Message-ID: <D2IE6s.14z@ssbunews.ih.att.com>
Source record: 26060

In article <3fds9o$jbf@mcrware.microware.com>,
Dennis Gabler <dennisg@microware.com> wrote:
>
>Well I listened for RS-15 this last weekend to see it I could hear the 10
>meter side of the link. I was able to hear the beacon at 29352 but I
>did not hear anything on the downlinks or the other beacon.
>
Well, I heard the beacon (real strong) and a fair amount of activity in
the passband (the 40 kHz or so above the beacon). Receiver is an IC-725
and a ground mounted quarter wavelength vertical or a 66 foot center fed
flat top.

>Being a seething greenhorn who has no way to uplink, is the other beacon
>functional? Is this bird typically quiet ?

Had QSOs on each of two passes. Many signals seem a little weaker than on
RS-10 but still plenty strong. My uplink, 60 watts into a J, which is
just adequate for RS-10 is marginal for RS-15. I suspect that signals from
folks with rigs like mine will seem weak until we get steerable directional
antennas or more power - but there seems to be lots of activity.
--
Ed Schaefer jma@ih4gp.att.com ham radio: K9JMA aviation: N97178

111. Re: Telebit DSP-Based Modems For Satellite Use

Newsgroup: rec.radio.amateur.space
Date: 1995-01-16 19:12:24 UTC
From: anna@win.tiho-hannover.de
Message-ID: <1995Jan16.191224.6293@newsserver.rrzn.uni-hannover.de>
Source record: 25811

In article <1995Jan15.160920.884@kd4dts.radio.org>, jcw@kd4dts.radio.org (John C. Wren) says:
>
>I was thinking (dangerous stuff!) the other day, and was wondering about
>the practicality of using a Telebit modem for Pacsat use. The WorldBlazer
>has a 320C25 DSP and a 68302 micro. If we could bypass the telco line
>interface section of the modem, and figure out the memory map in the
>thing, maybe it could be used... And if we used the older modems which
>have 320C10's (yucky!), modems would be cheap and plentiful.

112. Hello? AO-27?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-17 01:14:12 UTC
From: greg@core.rose.hp.com
Message-ID: <D2IzFp.JpC@icon.rose.hp.com>
Source record: 25812

Anybody heard AO-27 lately? Either I'm not listening at the right time,
or they're not transmitting. Has their schedule changed from weekend-daylight
only?

Greg KD6KGW

113. Satellite Bandpasses

Newsgroup: rec.radio.amateur.space
Date: 1995-01-17 02:34:05 UTC
From: jimn2ete@aol.com
Message-ID: <3ffaat$dda@newsbf02.news.aol.com>
Source record: 25813

Can anyone let me know the bandpasses for all of the ham satellites?

Jimbo N2ETE

114. APT-Satellites: Report JAN 15, 1995

Newsgroup: rec.radio.amateur.space
Date: 1995-01-17 08:39:05 UTC
From: peter.henne@gmd.de
Message-ID: <peter.henne-170195093902@oskar.gmd.de>
Source record: 25814

```
Observed 50.61 deg NLat, 7.55 deg ELon; JAN 15, 1995

Following the satellite-name you read the approx.
hour (local=sun-time) and motion-direction of the
pass (N=northbound, S=southbound).
This time +/-1.5h is valid for the next 10+ days
to expect the satellite to be visible in range of
northern-hemisphere-stations, add 11h and switch
S<->N for another pass to observe.

NOAA-9 10:S APT 137.62 MHz *OFF*
NOAA-10 16:N APT 137.50 MHz On
NOAA-11 16:N APT 137.62 MHz *OFF*
NOAA-12 19:N APT 137.50 MHz On
NOAA-14 13:N APT 137.62 MHz On
Meteor 2-21 20:N APT 137.85 MHz *OFF*
Meteor 3-5 15:N APT 137.85 MHz ON again
OKEAN 1-7 16:S APT 137.40 MHz *OFF*

APT of OKEAN 1-7 was off during all available
passes. NOAA-11 APT-transmitter is off. NOAA-10-APT
was active although due to TBUS the satellite is
in standby-mode. No APT from NOAA-9. New NOAA-14
transmits Ch.2 and Ch.1 until outgassing of the
Th.IR-sensors is completed and Ch.4 will be on
instead of Ch.1. Excellent imaging over the dark
northern winter-hemisphere! Meteor 3-5 is back,
taking over from poor Meteor 2-21.

+----------------------------------------+
|Peter Henne (peter.henne@gmd.de) |
| (henne@gmd.de) |
|German Nat.Research Center.f.Comp.Science |
|D-53754 St.AUGUSTIN, Germany |
+----------------------------------------+
```

115. Need Sat. Element Site

Newsgroup: rec.radio.amateur.space
Date: 1995-01-17 13:50:41 UTC
From: osburn@eskimo.com
Message-ID: <D2K1BD.JEH@eskimo.com>
Source record: 25815

Where do I get a up todate element set for sats.?
osburn@eskimo.com

116. Re: Ham-Space Digest V95 #16

Newsgroup: rec.radio.amateur.space
Date: 1995-01-17 19:11:35 UTC
From: bstaffor@dialin.INd.NET
Message-ID: <Pine.SUN.3.91.950117140949.2699B-100000@dialin.ind.net>
Source record: 25816

I agree that if there should probably be no duplication of the AMSAT-BB
if it is already available elsewhere. Question is: How do I subscribe to it?
Tnx & 73 Bob, N9USD

==
| Bob Stafford Email Alias: Bob.Stafford@dialin.ind.net
|
|
| 826 N Queen Road
|
| Walkerton, IN 46574
| Phone: FAX:
==

117. Re: Need Sat. Element Site

Newsgroup: rec.radio.amateur.space
Date: 1995-01-18 01:18:28 UTC
From: christopher.l.carson@jpl.nasa.gov
Message-ID: <3fhq94$pd0@marsupial.jpl.nasa.gov>
Source record: 25817

>Where do I get a up todate element set for sats.?
>osburn@eskimo.com
>
Two-Line Orbital Element Sets are posted weekly on
sci.space.news and rec.radio.amateur.space

cc

118. WVARA presents amateur radio home page

Newsgroup: rec.radio.amateur.space
Date: 1995-01-18 05:32:47 UTC
From: "Travis A. Wise" <twise@sparta.sjsu.edu>
Message-ID: <Pine.SUN.3.90.950117212940.23245B-100000@jobe.shell.portal.com>
Source record: 25818
Cross-posted to: rec.radio.amateur,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.ham-radio,rec.ham-radio.swap

PRESS RELEASE

JANUARY 17, 1995

WVARA ANNOUNCES WEB PAGE

The West Valley Amateur Radio Association (WVARA) is announcing the development of it's own home page. WVARA joins the ranks of many other amateur radio clubs in having a home page with links to other points of interest to other hams. This includes links to other clubs, the FCC gopher server, all of the amateur radio related UseNet groups and other Web points of interest to hams.

The WVARA home page is run in conjunction with a law-oriented home page, providing links to most legal-related web points of interest.

The WVARA home page can be visited at:
http://www.portal.com/~twise/

For more information, e-mail twise@sparta.sjsu.edu

Travis A. Wise
President, WVARA

119. Re: ORBITAL PAREMITERS

Newsgroup: rec.radio.amateur.space
Date: 1995-01-18 06:28:04 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3ficdk$2cn@news.cc.utah.edu>
Source record: 25819

David L Gahimer (gahimer@NeXTwork.Rose-Hulman.Edu) wrote:

: Could someone please post, or EMAIL to me where I can find them

Howdy,

Here's the greeting screen for the place I use. I believe it contains
the data you seek:

W E L C O M E T O T H E OIG BBS

This BBS contains two-line Element Sets (TLE'S) and other satellite related
reports and/or information. The BBS is continously accessible, except
for a
short time when the information is updated, Monday thru Friday from 7:30 a.m.
until 9:30 a.m. (USA Eastern Standard time)

You may gain access to the BBS by answering the prompts and completing the
questionnaire, or obtain a BBS Users Guide by sending a facsimile message to
(301) 805-3916; or by written request to:

NASA/Goddard Space Flight Center
Operations Management and Support Section/513.1
Attn: Orbital Information Group/OIG
Greenbelt, MD 20771 USA

E mail address for SySop: sysop@oig1.gsfc.nasa.gov
E mail address for BBS Manager: adam@oig1.gsfc.nasa.gov

Requests must contain your name, address and telephone number.

120. Re: Need Sat. Element Site

Newsgroup: rec.radio.amateur.space
Date: 1995-01-18 09:20:27 UTC
From: boyer@rd.bbc.co.uk
Message-ID: <D2LGM3.25n@bbc.co.uk>
Source record: 25820

osburn@eskimo.com wrote:

: Where do I get a up todate element set for sats.?
: osburn@eskimo.com

try archive.afit.af.mil/pub/space

John B
john.boyer@rd.eng.bbc.co.uk

121. Re: Want new G5400 Rotator at a good price

Newsgroup: rec.radio.amateur.space
Date: 1995-01-18 16:53:06 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3fjhg7$s3m@newshost.lanl.gov>
Source record: 25821

This issue of the AMSAT Journal has a homebrew
controller featured. It looks easy to build and takes
a slot in your PC. Sorry I don't have their phone number
with me. They are in suburban Maryland.

122. AMSAT-BB Mailing list - subscription info

Newsgroup: rec.radio.amateur.space
Date: 1995-01-20 00:27:34 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3fn01m$kbr@news.doit.wisc.edu>
Source record: 25822

Boy, talk about embarassing - I've had a half a dozen requests on how to sign up for the AMSAT-BB mailing list and I forgot how to do it! The directions were in the AMSAT newsletter some time ago and I can't find that issue. I sent a request for into to AMSAT-BB and was told:

Send subscribe and unsubscribe requests for amsat-bb to listserv@amsat.org, ans news bulitens and keps are also available

Give it a try an dlet me know if it doesn't work.

73, Dave, N9LTD

123. Need satellite tracking software or equations

Newsgroup: rec.radio.amateur.space
Date: 1995-01-20 08:13:03 UTC
From: kevin.jessup@mail.mei.com
Message-ID: <kevin.jessup.279.000FFD6A@mail.mei.com>
Source record: 25851
Cross-posted to: comp.sys.hp48,rec.radio.amateur.space,sci.geo.satellite-nav

I'm looking for any satellite tracking programs for the HP48 series calculators.

I'd like to track at least one, preferably multiple, satellites using Keplerian elements/satellite almanac data and display a rough graphic of satellite position (fish-eye view of the sky) based on my current time, longitude and latitude. More "exact" numeric data should be available as well.

Regardless of the availability of an HP48 program, I'd appreciate any references to the mathematical models/techniques which would allow me to write my own software. (I can program in HP48 RPL, C, C++, PASCAL, FORTRAN, numerous assembly languages and, if absolutely neccessary, BASIC ;-))

I am already aware of DOS-based programs that will do this.
I just want to learn more about the techniques/math for myself.

Thanks.

---

kevin.jessup@mail.mei.com
marquette electronics, inc
milwaukee, wi 53223

124. Re: Need satellite tracking software or equations

Newsgroup: rec.radio.amateur.space
Date: 1995-01-20 16:27:19 UTC
From: cmlong@mtu.edu
Message-ID: <3foo97$pnn@techsrv1.tech>
Source record: 25823
Cross-posted to: comp.sys.hp48,rec.radio.amateur.space,sci.geo.satellite-nav

Kevin Jessup (kevin.jessup@mail.mei.com) wrote:
:
: I'm looking for any satellite tracking programs for the HP48 series
: calculators.
:
: Regardless of the availability of an HP48 program, I'd appreciate
: any references to the mathematical models/techniques which would
: allow me to write my own software.

: I just want to learn more about the techniques/math for myself.
:
I would also be interested in the math/techniques and whether or not there is a program for the hp.

Please post here. Or email me at cmlong@mtu.edu

Thanks
Mike

125. Re: Need satellite tracking software or equations

Newsgroup: rec.radio.amateur.space
Date: 1995-01-20 16:41:00 UTC
From: rtm@newton.apple.com
Message-ID: <rtm-2001951741000001@kip-6.apple.com>
Source record: 25824
Cross-posted to: comp.sys.hp48,rec.radio.amateur.space,sci.geo.satellite-nav

In article <kevin.jessup.279.000FFD6A@mail.mei.com>,
kevin.jessup@mail.mei.com (Kevin Jessup) wrote:

> I'm looking for any satellite tracking programs for the HP48 series
> calculators.
>
> I'd like to track at least one, preferably multiple, satellites
> using Keplerian elements/satellite almanac data and display a
> rough graphic of satellite position (fish-eye view of the sky)
> based on my current time, longitude and latitude. More "exact"
> numeric data should be available as well.
>
> Regardless of the availability of an HP48 program, I'd appreciate
> any references to the mathematical models/techniques which would
> allow me to write my own software. (I can program in HP48 RPL,
> C, C++, PASCAL, FORTRAN, numerous assembly languages and, if
> absolutely neccessary, BASIC ;-))
>
> I am already aware of DOS-based programs that will do this.
> I just want to learn more about the techniques/math for myself.
>
> Thanks.

A great book is "Fundamentals of Astrodynamics" by Bate, Muller, and White
(also known as the BMW book). Published by Dover (ISBN 0-486-60061-0) for
$10 (yes, ten bucks! a great book, and cheap!).

I started with this book and my HP48 while on vacation in Mexico last
year; I've continued working on C code when I can get the time.

--

Bob Martin N6MZV * rtm@newton.apple.com
Apple Computer, Inc * #include <disclaimer.h>
--
This Green Card .sig is here to piss off Canter and Siegel.

126. Equipment help

Newsgroup: rec.radio.amateur.space
Date: 1995-01-20 19:37:52 UTC
From: Gary_Rogers@DGC.ceo.dg.COM
Message-ID: <9501201937.AC00036@rtp41.rtp.dg.com>
Source record: 25825

CEO document contents:

It looks like it may be about time to upgrade the satellite station, and I'm looking to the group for input. I'm one of those unfortunate people who's operating has some constraints, so I want to maximize what I have available. If anyone can help me out, it will be greatly appreciated.

My first limiting factor is my housing. I'm in a single family dwelling in a rural neighborhood. That's not a problem, but I am renting and there are a good many trees around. My landlord and I have a good relationship, and he has allowed me to string up some dipoles and erect an R-7. I also have Eggbeaters for 2M and 70cM. A tower is OK with him, but I can't imagine where it would go, so I'm pretty much stuck with the LEO's. Again, not a problem. I'm on AO-16, LO-19, and RS-12 with no problems whatever.

My second limiting factor is money, but that's probably not uncommon, is it?

Here's the real puzzler: It seems the IC-251A has developed a transmit problem. My RS-10 downlink sounds horrid, so I'm off that bird. In all likelihood, repair would be more than it's worth. Besides, I'm not really happy with the 100Hz tuning; 10HZ is more like it. Also, I've got a 9600 baud modem that would get me on the other digital satellites nicely, so it seems a new rig is in order.

If you've followed me this far, you can see what's coming next: Please send your suggestions, advice and/or experiences with 2M radios that I could get for < $800-1000. I think if I have to choose, I would go with SSB/CW and limit myself to 1200 baud/PSK on the digital side, but it sure would be nice to have that 9600 baud available! (All of my digital uplink now is with a reactance modulated mobile, no good for 9600.) I have a 10W in/80W out Mirage pre-amp/amp, so high power is not a necessity with the radio, but it's not out of the question to sell it and just get a pre-amp for use with a rig in the 75-100W class. I won't rule out used equipment, either.

Well, that's the story and my urgent plea. I will be glad to take all suggestions. If I get enough responses, I'll publish what I've learned so others can share.

Thanks again es 73,

Gary WA4YMZ FM05 Apex, NC Gary Rogers@DGC.CEO.DG.COM

AO-16, LO-19, RS-12 now and RS-10, RS-15 soon, I hope.
(UO-22, KO-23, KO-25 wouldn't be bad either)

127. RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 00:29:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A1F419.14E6000035.uuout@freddy.supernet.ab.ca>
Source record: 25839

Hi Dennis,

-> Well I listened for RS-15 this last weekend to see it I could hear
-> the 10 meter side of the link. I was able to hear the beacon at
-> 29352 but I did not hear anything on the downlinks or the other
-> beacon.
->
-> Being a seething greenhorn who has no way to uplink, is the other
-> beacon functional? Is this bird typically quiet ?

Well, I think we need to help you out a bit here....You should be able
to hear the downlink if you can hear the beacon at reasonable signal
levels. I hope that you have the right downlink freqs. 29.358 to
29.398. Signals at close satellite ranges should produce upto 5x5
signals from your receiver on a dipole.

As far as the upper beacon, I've never heard it so I assume its off.

Sorry can't help with the uplink part.

Good luck on the birds.
73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

128. ORBITAL Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 00:37:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A1F421.14E6000036.uuout@freddy.supernet.ab.ca>
Source record: 25838

Hi Dave,
If you want newer keps just email to:

elements@drig.com

The body of the letter :

I'm requesting new keps....Please

You will receive your return email within about 24 hours.

73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

129. WISP

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 01:57:23 UTC
From: als@intac.com
Message-ID: <3fpthd$ss6@uucp.intac.com>
Source record: 25829

Well just having obtained WISP, I ran home and tried to install it and find that all runs well...until I try and run a Satellite Track, where I get a Floating Point: Divide By Zero error within windows...I followed the getstart instructions and modified/setup as per the text. I am running a 486/33 with 16 megs of ram and generic VGA, DOS 5.02, standard windows..

Any Ideas ??

Al WB0MPQ

als@intac.com

130. Re: Info wanted on off-the-shelf MIL-SPEC embedded controller boards

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 15:52:49 UTC
From: lacovara@ollie.jsc.nasa.gov
Message-ID: <lacovara.227.0078D738@ollie.jsc.nasa.gov>
Source record: 25855
Cross-posted to: comp.os.vxworks,comp.sys.m68k,alt.industrial.computing,sci.electronics,rec.radio.amateur.space

In article <3fi0d6$hbr@CUBoulder.Colorado.EDU> grusin@benji.Colorado.EDU (GRUSIN MICHAEL) writes:
>From: grusin@benji.Colorado.EDU (GRUSIN MICHAEL)
>Subject: Info wanted on off-the-shelf MIL-SPEC embedded controller boards
>Date: 18 Jan 1995 03:03:02 GMT

>We are looking for an off-the-shelf, MIL SPEC (883B), 68020/30/40,
>embedded system board for flight on a research satellite. If anyone
>has pointers to companies which supply such boards, I'd appreciate
>hearing about them!

>Thanks, -Mike Grusin (grusin@rintintin.colorado.edu)

There are some possibilities. Try Radstone. Let me know if you find a good one.
R. C. Lacovara, Ph. D.
Engineer
GeoControl Systems voice: 713 333 2561
1720 NASA Road 1 fax: 713 333 2966
Houston, Texas 77058

Texas is the largest and grandest State of the United States. It retains the right to fly its flag at the same height as that of the United States. Texas must not be abbreviated, like NJ or RI: NJ fits between Houston and San Antonio, with RI to spare. Al

131. Re: WISP

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 17:00:46 UTC
From: rparsons@bga.com
Message-ID: <rparsons-2101951100460001@ivy-b3.ip.realtime.net>
Source record: 25826

In article <3fpthd$ss6@uucp.intac.com>, als@intac.com wrote:

> Well just having obtained WISP, I ran home and tried to install it and
> find that all runs well...until I try and run a Satellite Track, where
> I get a Floating Point: Divide By Zero error within windows...I followed
> the getstart instructions and modified/setup as per the text. I am running
> a 486/33 with 16 megs of ram and generic VGA, DOS 5.02, standard windows..
>
> Any Ideas ??
>
>
> Al WB0MPQ
>
> als@intac.com

I hear this is usually caused by a bad set of Keps.

Ron W5RKN

132. ARLK003 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 17:08:29 UTC
From: w1aw@arrl.org
Message-ID: <$arlk003.1995@ampr.org>
Source record: 25834
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK003
ARLK003 Keplerian data

ZCZC SK28
QST de W1AW
Keplerian Bulletin 3 ARLK003
From ARRL Headquarters
Newington, CT January 21, 1995
To all radio amateurs

SB KEP ARL ARLK003
ARLK003 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-63
1 99963U 95999A 95033.30285722 .00033600 00000-0 25200-3 0 25
2 99963 51.6484 115.2937 0066401 4.0320 356.1183 16.01425383 22
AO-10
1 14129U 83058B 95015.75418777 -.00000484 00000-0 10000-3 0 3363
2 14129 26.6169 287.8250 6022447 244.2591 43.3774 2.05883955 59190
RS-10/11
1 18129U 87054A 95016.47476041 .00000039 00000-0 26191-4 0 131
2 18129 82.9241 171.1962 0011973 145.5050 214.6880 13.72347323379167
UO-11
1 14781U 84021B 95014.55276269 .00000123 00000-0 28714-4 0 7672
2 14781 97.7805 24.3280 0011325 319.2650 40.7707 14.69294042581343
RS-12/13
1 21089U 91007A 95013.61084915 .00000021 00000-0 60918-5 0 7685
2 21089 82.9201 215.3921 0027712 243.2651 116.5642 13.74052804197544
AO-13
1 19216U 88051B 95012.57430530 -.00000305 00000-0 10000-4 0 68
2 19216 57.6202 209.7202 7257713 359.3266 0.1526 2.09726584 18906
UO-14
1 20437U 90005B 95016.65476736 -.00000008 00000-0 14010-4 0 670
2 20437 98.5800 103.4155 0010409 287.9338 72.0712 14.29871218260090
RS-15
1 23440U 94085B 95013.82689249 -.00000042 00000-0 10000-4 0 66
2 23440 64.8340 144.6422 0188488 288.9402 69.1177 11.27116018 2116
```

```
AO-16
1 20439U 90005D 95016.70226973 -.00000005 00000-0 15082-4 0 8657
2 20439 98.5897 104.9367 0010793 288.4643 71.5370 14.29925191260117
DO-17
1 20440U 90005E 95017.19544705 -.00000003 00000-0 15993-4 0 8669
2 20440 98.5902 105.8232 0010745 285.3993 74.6007 14.30065926260202
WO-18
1 20441U 90005F 95016.19518213 .00000006 00000-0 19193-4 0 8695
2 20441 98.5895 104.8203 0011505 290.0020 69.9923 14.30038318260063
LO-19
1 20442U 90005G 95016.78846402 -.00000007 00000-0 14108-4 0 8654
2 20442 98.5918 105.7216 0011852 287.4576 72.5310 14.30138073260165
FO-20
1 20480U 90013C 95016.21810972 -.00000002 00000-0 72617-4 0 7626
2 20480 99.0655 133.1106 0540010 217.1105 139.1478 12.83229675231455
AO-21
1 21087U 91006A 95016.38774888 .00000094 00000-0 82657-4 0 5573
2 21087 82.9414 344.9202 0034044 208.1035 151.8285 13.74549638198879
UO-22
1 21575U 91050B 95015.65498707 .00000021 00000-0 21731-4 0 5718
2 21575 98.4139 90.6268 0008584 20.2228 339.9300 14.36954201183596
KO-23
1 22077U 92052B 95016.89922491 -.00000037 00000-0 10000-3 0 4643
2 22077 66.0808 192.5234 0013350 236.5895 123.3845 12.86290119114274
KO-25
1 22828U 93061F 95013.21064288 .00000002 00000-0 18522-4 0 3392
2 22828 98.6318 91.7983 0009946 306.8409 53.1848 14.28083050 35754
KO-25?
1 22830U 93061H 95014.68298882 -.00000039 00000-0 15858-5 0 3690
2 22830 98.5353 88.1986 0010823 278.6389 81.3557 14.28079342 67885
IO-26
1 22826U 93061D 95013.24851975 .00000010 00000-0 21679-4 0 3600
2 22826 98.6326 91.8056 0009301 322.4910 37.5618 14.27754646 67660
AO-27
1 22825U 93061C 95013.21290103 .00000011 00000-0 22274-4 0 3621
2 22825 98.6361 91.7054 0008595 322.4953 37.5609 14.27648264 67653
PO-28
1 22829U 93061G 95013.21988302 .00000004 00000-0 19465-4 0 3541
2 22829 98.6328 91.8322 0009812 307.8673 52.1610 14.28059489 67671
Mir
1 16609U 86017A 95016.87994313 .00002485 00000-0 38351-4 0 8979
2 16609 51.6463 196.1300 0002266 145.9651 214.1721 15.58546026509325

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
January 24, 1994, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

133. Reply to: Hamsats

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 19:02:49 UTC
From: Gary_Rogers@DGC.ceo.dg.COM
Message-ID: <9501211902.AC00031@rtp41.rtp.dg.com>
Source record: 25827

CEO comments:
From: Gary Rogers:DGC
Date: ## 01/21/95 14:02 ##
Hi, Omri, thanks for your reply. I find that the Eggbeaters do fine for me. Both the 2M and 70cM antennas are up at about 20 feet, and separated about 25 feet. Right now I'm working AO-16 and LO-19 at 1200 baud. I'm using the PacComm TNC96NB/PSK-1 pair. The uplink is a Kenwood TM-2550A set at low power driving a Mirage B-108G amp/pre-amp. Any radio you can use for terrestrial or MIR can be used for the 1200baud sats. The downlink from these birds is PSK, that's why you need a special modem. Note that the modem simply attaches to the disconnect header inside your present TNC-2 or compatible. My downlink radio is actually a Kenwood TS-670 with a Down East Micro xvtr. Works great! To work these satellites you'll need a special software package; regular packet stuff just won't do. I use WiSP, a shareware program from AMSAT. This is Windows based, but there is also the DOS pair PB/PG. (If you use either, please register them. The procedes go to keeping the satellite program alive.) A PSK modem will also gives you access to FO-20 when it's in digital mode; it operates almost just like an earth-bound BBS with just a few parameter changes.
Hope this helps. 73 de Gary WA4YMZ Gary Rogers@dgc.ceo.dg.com

Preceeding Message:
From: omris@cup.portal.com:dg-smtp
Date: ## 01/21/95 13:40 ##
See document for message.

134. Reply to: Hamsats

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 19:16:56 UTC
From: Gary_Rogers@DGC.ceo.dg.COM
Message-ID: <9501211916.AC00033@rtp41.rtp.dg.com>
Source record: 25828

CEO comments:
From: Gary Rogers:DGC
Date: ## 01/21/95 14:15 ##
Omri, seems I answered your second question about getting on the digital birds, but completely forgot to answer your request for my opinion on the Eggbeaters. Sorry. Here goes: I like them. Understand that they're not the optimal satellite antenna, but if you're like me and don't have the real estate to put up beams, they're hard to beat. It's also really convenient not having to track, especially if your computer lacks the ports or horsepower to use a rotator controller. Unlike the claims, I do tend to get nulls at high elevations, but they're brief. Mine are up about 20 feet and fed with RG-213. My horizon seems to be about 15 degrees. I've got the groundplane kit on both, so local stuff isn't as strong. I'm using the M2 stuff and am happy with the quality. They're a bit pricey, but "you get what you pay for."

P.S. My apologies to those reading this multiple times. I sometimes get replies and don't know which posting generated them.

Hope that answers your question, Omri. 73 es hope to see you on the birds.
Gary WA4YMZ

Preceeding Message:
From: omris@cup.portal.com:dg-smtp
Date: ## 01/21/95 13:40 ##
See document for message.

135. Re: AMSAT-BB Mailing list - subscription info

Newsgroup: rec.radio.amateur.space
Date: 1995-01-21 23:43:22 UTC
From: williams@maui.qualcomm.com
Message-ID: <williams.790731802@maui>
Source record: 25830

```
AMSAT.ORG Mailing List and Remailing Services
=============================================

revised: 10/31/94 kb5mu

AMSAT-NA (the Radio Amateur Satellite Corporation in North America)
operates the Internet host AMSAT.ORG to provide for efficient
communications between people interested in the amateur satellite
program. At this time two services are provided: a message remailing
service and a mailing list service.

In addition, the Internet host WWW.AMSAT.ORG provides interactive
access to a variety of information related to the amateur radio
satellite program. Use your Web browser program (e.g., Mosaic) to
access the URL <http://www.amsat.org/amsat/AmsatHome.html>.

Anonymous FTP is available on FTP.AMSAT.ORG. This archive contains
much of the same information as the WWW server. In addition,
various files and programs are available for anonymous FTP. To
access the archive, FTP to FTP.AMSAT.ORG, use the username
"anonymous", and give your email address as the password.
Look in the amsat subdirectory. This is a relatively new archive, so
the host FTP.UCSD.EDU still has lots of files not available there.

The message remailing service permits users to send each other mail
on the Internet without keeping track of each other's Internet
address. The remailing service allows each user to receive mail sent
to the address callsign@amsat.org, where callsign is that user's
amateur radio callsign, or other unique identifier. Mail sent to
that address will be routed first to the AMSAT.ORG host at UCSD in
San Diego, then remailed from AMSAT.ORG to the network address
specified by the user. In most cases, this process delays the
message by only a very few minutes.

The mailing list service groups subscribers into mailing lists to
receive certain types of messages. There are public mailing lists
available to anyone, and private mailing lists available only to
certain people (for example, AMSAT Board of Directors members or
PACSAT command stations). Currently the following public mailing
lists exist:

ANS AMSAT News Service

This mailing list carries official news releases from
the AMSAT News Service. These messages are posted in
a form suitable for direct posting to a packet radio
BBS system. Each message contains a Bulletin Identifier
```

(BID), which permits the message to be introduced into the packet network at many places without resulting in duplicate bulletins at any BBS. The primary purpose of this mailing list is to distribute ANS bulletins for redistribution (via the packet net or on AMSAT voice nets), but individuals may also subscribe for their own use. If your local packet BBS doesn't seem to get the ANS bulletins reliably, you are encouraged to post the ANS bulletins yourself.

Only authorized AMSAT News Service personnel should send messages to the ANS mailing list.

AMSAT-BB AMSAT bulletin board

This mailing list carries general AMSAT information. This information may NOT be suitable in content for transmission via amateur radio, so automatic reposting of AMSAT-BB messages to packet radio BBS's is discouraged. The purpose of this mailing list is to provide a forum for general discussion of any satellite-related topic.

Anyone may send messages to the AMSAT-BB mailing list. Simply address your message to amsat-bb@amsat.org, and it will be automatically forwarded to all subscribers to the AMSAT-BB mailing list.

Editors of publications should ask permission of the sender before publishing anything seen in AMSAT-BB elsewhere, unless the posting was obviously a public press release. However, posters should realize that anything posted to AMSAT-BB is essentially public.

KEPS Keplerian Elements mailing list

This mailing list carries official postings of Keplerian element sets for satellites of interest to radio amateurs. Like the ANS bulletins, these messages are posted in a form suitable for direct posting to a packet radio BBS.

Only authorized AMSAT News Service personnel should send messages to the KEPS mailing list.

NASAINFO NASA related information mailing list

This mailing list contains information about current and planned NASA space missions. Be forewarned: at times this mailing list delivers many large messages.

SAREX Shuttle Amateur Radio Experiment mailing list

This mailing list contains information and press releases pertaining to SAREX missions.

To obtain any of these services, just send a message to the address

listserv@amsat.org

This address may be reached from CompuServe MAIL as:

>INTERNET:listserv@amsat.org

For the moment, the maintenance of the AMSAT.ORG mailing lists and remailing aliases is done manually. Later, this service will probably be automated and you will have to follow a strict message format. For now, you may send requests in free format. They will usually be processed within a few days. In general, you will not receive an explicit reply to your request. Be sure you specify:

1. Which mailing list(s) you want to receive

2. Your callsign, if any

3. The Internet address to be used, if different from the one in your From: header.

You should not send messages about your subscriptions to any of the mailing lists. Send them to listserv@amsat.org instead. This includes questions, requests for changes, requests for information about mailing services, and complaints.

The list of amateurs who may be reached via the message remailing service may be obtained by requesting the "address book". Note that the address book as distributed contains only the callsigns of the available addressees, not their actual Internet addresses. The address book is updated occasionally, and does not necessarily contain the very latest information.

You may request to be added to the list, to be deleted from the list, or to have your Internet address changed on the list. Please include your callsign if you have one. If you don't have a callsign, that's OK, but please say so. If you have more than one Internet address you want to have available on the AMSAT.ORG remailer, you may so specify. For instance, if you have a regular Internet address and a CompuServe account, you may appear in the address book as both w1xyz and w1xyz-cis. Mail sent to w1xyz would go to your Internet address, and mail sent to w1xyz-cis would go to CompuServe. MCImail accounts have the form w1xyz-mci, and so on.

You may also subscribe or unsubscribe to any of the public mailing lists described above. Send a message to listserv@amsat.org, specifying clearly which mailing list(s) you want to add or drop, and giving your callsign if you have one. When you subscribe to a mailing list, you will automatically be added to the remailing service as well, because the mailing lists are maintained by callsign. If you have more than one address listed in the remailing service, please indicate which one(s) you want the mailing list messages sent to.

Additional mailing lists, public or private, can be set up as needed.
Send mail to listserv@amsat.org for details.

Questions about any service offered by AMSAT.ORG may be directed to
listserv@amsat.org as well.

Frequently-asked Questions and Complaints (and Answers):

1. Why do I get "MCI Mail Rejected a Message" responses each time I
send a message?

MCI won't accept mail from CompuServe via the Internet. This is just
corporate policy. There isn't anything we can do about it, short of
banning MCImail addresses from the mailing lists.

(Is this still true?)

2. Why did the mailing list messages suddenly stop coming to me a
few weeks ago?

Something may have been temporarily wrong with mail delivery to your
site. If a message to you bounces back to the list maintainer, you
may be removed from the mailing list without notice. If you think
this has happened to you, send a message to listserv@amsat.org and
ask.

3. I never get an answer from w1xyz when I send him mail via AMSAT.ORG.

If his mail isn't getting delivered, you *should* receive some kind of
automatic message indicating there has been a delivery problem. If you
don't get such a message within a few days of sending your message,
chances are that your message made it to the addressee's mailbox.
However, the addressee may be behind on reading email, or may simply
not bother to reply, and there isn't much we can do about that.

Another possibility is that the message you sent contains a bad "From:"
address. This will prevent the recipient from replying to your message.
If you suspect this may be happening, include your real Internet address
in the text of the message. If you find that this is happening, please
complain to your system administrator.

4. My computer says "unknown host" whenever I try to reach AMSAT.ORG.

This indicates a problem with domain name service. AMSAT.ORG *is* a
fully official domain name, and your host should be able to find it.
Check with your local network administrator (tell him to check the
nameserver at ucsd.edu). As a workaround, you may be able to use an
address of the form
callsign%amsat.org@ucsd.edu
to force the message to pass through the UCSD mail host on its way to
AMSAT.ORG. If your local system can't find ucsd.edu, you're in trouble!

5. I have an important announcement I'd like to make. Can I send it
to the ANS mailing list?

Not unless you're an official ANS station. You may send it to AMSAT-BB, and/or submit it to the ANS editor (wd0hhu@amsat.org) for possible inclusion in the next issue of ANS.

And no, the computer doesn't enforce this rule. You're on your honor.

6. I can't get Internet access!

Yes, you can. It may not be very easy or cheap, but you can. You have a number of alternatives:

* find a local connection. Most hams have inside connections they don't even know about. If you know somebody at the local university or at a high-tech company, ask them if there's any way for you to have access to the Internet through their system. Sometimes the answer will be yes. If you are in a position to grant access, *please* make this service available to local AMSAT folks.

* check with your local BBS. Some telephone BBS systems have access to a mail gateway that will allow you to send and receive Internet mail. This may not be the fastest way to receive the mailing lists, but it is probably the cheapest if you don't have free access.

* subscribe to a pay service. There are several systems that offer Internet access for a fee. CompuServe subscribers can find a list in the Internet library of the TELECOM Forum. AMSAT does not maintain a current list of public Internet providers.

* subscribe to a commercial service that provides Internet access. America Online, Genie, and Delphi are among such services. Check around to find the one with the rate structure that best matches the way you expect to use the system.

* subscribe to CompuServe. Many subscribers to the mailing lists receive their mail via CompuServe. This is an expensive choice, but it is very easy and available in most developed parts of the world. CompuServe is often a local telephone call, and they have an 800 number for people in the less-populated areas of the US. CompuServe starter kits are available at computer stores, and there's often one included free when you buy a modem.

CompuServe users can send mail to Internet addresses by adding
>INTERNET:
before the address. The ">" and the ":" are required, and "INTERNET" must be in uppercase. For example, to send mail to w1xyz, you can use the address
>INTERNET:w1xyz@amsat.org
from CompuServe MAIL. Note that there is no way to communicate between Internet and a CompuServe forum like HamNet. The Internet gateway only works for CompuServe MAIL.

There may be an additional surcharge for receiving messages from the Internet on CompuServe. As a CompuServe subscriber, your mail may also be subject to additional delays. Worse, CompuServe limits

the amount of mail you can have pending in your mailbox, so you must read your mail frequently. Check with CompuServe for details.

7. There's too much XYZ being posted to mailing list ABC!

It's not possible for the mailing lists to contain exactly what you find interesting. If we are to share information freely, all subscribers must be prepared to cope with a certain amount of traffic they find boring or useless.

Sometimes it becomes a clear problem, with one subject generating so much traffic that it becomes a burden on a more general mailing list. In those cases, a new mailing list can be created to make it possible for only those who are interested to receive the information. However, there is a practical limit.

8. I posted a message to mailing list ABC, and I got a bunch of bounce messages back.

Most automatically-generated problem report ("bounce") messages should be automatically routed to the list administrator. These messages usually signal a transient problem somewhere in the network. Often, the problem is at the receiving end. If a particular subscriber generates repeated bounce messages, that subscriber will be removed from the mailing lists.

If by some mischance a bounce messages comes back to you, the poster of a message to one of the mailing lists, please forward the bounce message (or a sample if many arrive) to listserv@amsat.org. Please forward the entire message including headers as received. If the echoed text is large, you may edit it down, but preserve all headers and bounce message text.

Do NOT forward bounces resulting from sending messages from CompuServe to MCImail. There's nothing to be done about that.

9. How do I get a password for AMSAT.ORG?

You don't. There are no user accounts on AMSAT.ORG. When you get an alias on AMSAT.ORG, that only allows others to send mail to you as yourcall@amsat.org. It doesn't mean you have an account on AMSAT.ORG.

10. How do I log in to AMSAT.ORG?

You don't. There are no interactive services on AMSAT.ORG.

11. Is there anonymous FTP on AMSAT.ORG?

No, there is not. But there IS anonymous FTP service on FTP.AMSAT.ORG.

12. Do I have to be a member of AMSAT to take advantage of the services of AMSAT.ORG?

No, the services are available to anyone. Of course, you're encouraged to join your national AMSAT organization.

13. Is there any charge for AMSAT.ORG services?

No.

14. Please send me info on AMSAT. Please change my mailing address or phone number on AMSAT's records. Please send me X.

The AMSAT office is separate from mailing list maintenance. You may address requests like these to martha@amsat.org, or send them by mail, phone, or fax to AMSAT headquarters:

AMSAT-NA
850 Sligo Avenue
Silver Spring, MD 20910
USA

voice: (301) 589-6062
fax: (301) 608-3410

136. next shuttle flight carrying SAREX?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-22 02:59:33 UTC
From: jim@n5ial.mythical.com
Message-ID: <1995Jan22.025933.2659@n5ial.mythical.com>
Source record: 25833
Cross-posted to: rec.radio.amateur.space,sci.space.shuttle

NOTE: Reply-To set to a faster path to me...if your mailer doesn't like bang-paths, and you're replying via e-mail, jim@n5ial.mythical.com will get to me...just not as fast.

Does anyone know when the next shuttle mission carrying SAREX will be? I've been watching the newsgroups recently for information on this, and I keep getting conflicting information (first it was early February, then early March, and now the first thing I see on Spacelink says April).

Better yet, if anyone has a schedule of missions in 1995 that will carry any SAREX operations, I'd *REALLY* like to see that!

Thanks,
--jim

PS: e-mail replies preferred (and followups set to poster), since I don't get rec.radio.amateur.space at home, and my newsfeed that gets sci.space.shuttle has been having trouble (a few sites upstream) lately. I will, of course, try to keep an eye on both groups, either way. And if there is any interest, I will post a summary if I get any info.

--
73 DE N5IAL (/4) MiSTie #49997 < Running Linux 1.0.9 >
jim@n5ial.mythical.com ICBM: 30.23N 86.32W
|| j.graham@ieee.org Packet: --OFFLINE-- (Ft. Walton Beach, FL)
E-mail me for information about KAMterm (host mode for Kantronics TNCs).

137. FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-01-22 05:15:12 UTC
From: AMSOFT@EPIX.NET
Message-ID: <NEWTNews.18260.790755434.amsoft@amsoft.epix.net>
Source record: 25831
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

The Jan 95 "The World of Ham Radio" CD-ROM newsletter is now available. This CD-ROM offers more ham programs than any of the others out there! Over 20,000 IBM files for amateur radio are stored on this CD-ROM. Included are the FCC CALLSIGN call book with US & Foreign listings current to 12/94, and AMCALL the new logbook from AmSoft that will auto log from the CD for you. Over 1,350 Radio Modifications. The latest HST, NASA & Space images. Over 700 Megabytes of Amateur Radio Software packed into 1 CD. This CD-ROM is published every 4 months without delay in JAN, MAY, & SEP.

If you would like to get a FREE newsletter about the JAN 1995 AmSoft CD-ROM please send your Internet E-mail address to: amsoft@epix.net

138. NEED: satellite bandpasses

Newsgroup: rec.radio.amateur.space
Date: 1995-01-22 06:36:36 UTC
From: jimn2ete@aol.com
Message-ID: <3fsudk$hhd@newsbf02.news.aol.com>
Source record: 25832

I need to know, does anybody have the bandpasses for the hamsatellites?
Please e-mail me if you have them

Mucho Gracias!!

Jim N2ETE

139. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-01-22 15:49:06 UTC
From: bob@texas.net
Message-ID: <3ftupi$plu@cactus.texas.net>
Source record: 25844
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <NEWTNews.18260.790755434.amsoft@amsoft.epix.net>, AMSOFT@EPIX.NET says:
>
>
>The Jan 95 "[deleted]" CD-ROM newsletter is now
>available. This CD-ROM offers more ham programs than any of the
>others out there! blah blah blah bullcrap

/\/\/\/\/\/\/\ Chainsaw inserted here /\/\/\/\/\/\/\/\/\/\

I, for one, do not wish to see the internet become a medium which
presents a non-hostile environment for those who wish to use it to
spew forth electronic junk mail. Many other would-be advertisers
have had their mailers crashed by angry replies to such electronic
fecal matter. I wish the same on the hoseheads at AMSOFT.

Bob | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

140. Re: Radio Astronomy info

Newsgroup: rec.radio.amateur.space
Date: 1995-01-22 18:27:43 UTC
From: wietlispac@aol.com
Message-ID: <3fu82v$lch@newsbf02.news.aol.com>
Source record: 25835

Why not look at using some of the popular data acquisition
hardware/software to record and analyze events? Files could then be
exchange using the Internet. Once a common storage location was
determined many people could analyze the same data and compare relults.
A/D converters are cheap and software is not hard to find.

Tim N9RO

141. Re: Need Sat. Element Site

Newsgroup: rec.radio.amateur.space
Date: 1995-01-22 20:54:20 UTC
From: chrisl@SEDS.LPL.Arizona.EDU
Message-ID: <3fugls$8cq@news.CCIT.Arizona.EDU>
Source record: 25836

I mirror a number of element set and make them available at
SEDS.LPL.Arizona.EDU in /pub/sat/elements. There are also some satellite
software packages in this area.

John Boyer (boyer@rd.bbc.co.uk) wrote:
: osburn@eskimo.com wrote:

: : Where do I get a up todate element set for sats.?
: : osburn@eskimo.com

: try archive.afit.af.mil/pub/space

: John B
: john.boyer@rd.eng.bbc.co.uk

--

Chris Lewicki + (602) 621-9790 + (602) 621-4662 + Chrisl@LPL.Arizona.EDU
Maintainer of SEDS.LPL.Arizona.EDU
Near Earth Asteroid Rendezvous (NEAR) XRS/GRS Team
UA SEDS President SEDS-USA Director of Special Projects
---

142. Re: FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-01-22 23:20:51 UTC
From: bob@texas.net
Message-ID: <3fup8j$s21@cactus.texas.net>
Source record: 25845
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <NEWTNews.18260.790755434.amsoft@amsoft.epix.net>, AMSOFT@EPIX.NET says:
>
>
>The Jan 95 "[deleted]" CD-ROM newsletter is now
>available. This CD-ROM offers more ham programs than any of the
>others out there! blah blah blah bullcrap

/\/\/\/\/\/\/\ Chainsaw inserted here /\/\/\/\/\/\/\/\/\/\

I, for one, do not wish to see the internet become a medium which
presents a non-hostile environment for those who wish to use it to
spew forth electronic junk mail. Many other would-be advertisers
have had their mailers crashed by angry replies to such electronic
fecal matter. I wish the same on the hoseheads at AMSOFT.

-

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

143. FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-01-23 02:59:59 UTC
From: JRLewis@Skypoint.Com
Message-ID: <3fv63f$pg1@stratus.skypoint.net>
Source record: 25837

I was told that there was a FM sattelite that one could use with
something as simple as a dual band tranciever in the mobile.
I know that the new Phase 3D bird will do this, but I was told that
there is already a bird up there that does this part time.

Anyone have any insight?

de N0YPR

144. Re: Need satellite tracking software or equations

Newsgroup: rec.radio.amateur.space
Date: 1995-01-23 10:26:14 UTC
From: jpeschie@cs.ruu.nl
Message-ID: <D2uszr.L26@cs.ruu.nl>
Source record: 25840
Cross-posted to: comp.sys.hp48,rec.radio.amateur.space,sci.geo.satellite-nav

In <3foo97$pnn@techsrv1.tech> cmlong@mtu.edu (Mike) writes:

>Kevin Jessup (kevin.jessup@mail.mei.com) wrote:
>:
>: I'm looking for any satellite tracking programs for the HP48 series
>: calculators.
>:
>: Regardless of the availability of an HP48 program, I'd appreciate
>: any references to the mathematical models/techniques which would
>: allow me to write my own software.
>
>: I just want to learn more about the techniques/math for myself.
>:
>I would also be interested in the math/techniques and whether or not there is a program
for the hp.
>
>Please post here. Or email me at cmlong@mtu.edu

Try to get SATTRACK. It can track satellites.

JPSOFT
--
Jarno Peschier, jpeschie@cs.ruu.nl, 125:3101/100.1@WEM, X:X8X/X1X.X@XiXo,
8X:X5X/X.X@XaXiXNXt, 27:2331/214.1@SigNet, 74:3108/102.1@QuaZie

_____
What was was, before was was was? Before was was was, was was is.

145. Re: Need satellite tracking software or equations

Newsgroup: rec.radio.amateur.space
Date: 1995-01-23 10:28:53 UTC
From: jpeschie@cs.ruu.nl
Message-ID: <D2ut46.L3M@cs.ruu.nl>
Source record: 25841
Cross-posted to: comp.sys.hp48,rec.radio.amateur.space,sci.geo.satellite-nav

In <kevin.jessup.279.000FFD6A@mail.mei.com> kevin.jessup@mail.mei.com (Kevin Jessup) writes:

>I'm looking for any satellite tracking programs for the HP48 series
>calculators.

Try looking for SATTRACK.

>I'd like to track at least one, preferably multiple, satellites
>using Keplerian elements/satellite almanac data and display a
>rough graphic of satellite position (fish-eye view of the sky)
>based on my current time, longitude and latitude. More "exact"
>numeric data should be available as well.
>
>Regardless of the availability of an HP48 program, I'd appreciate
>any references to the mathematical models/techniques which would
>allow me to write my own software. (I can program in HP48 RPL,
>C, C++, PASCAL, FORTRAN, numerous assembly languages and, if
>absolutely neccessary, BASIC ;-))

What's wrong with Basic?! I still use it regularly (oke, that's PowerBasic: a *real* programminglanguage).

>I am already aware of DOS-based programs that will do this.
>I just want to learn more about the techniques/math for myself.

If I remember correctly SATTRACK is a (Sys/User?)RPL program that was based on something for the PC written in C. If that's the case (I could be thinking about some other program here) then that sattrack.c source was included with the RPL program and docs. Maybe that should help?

JPSOFT

--
Jarno Peschier, jpeschie@cs.ruu.nl, 125:3101/100.1@WEM, X:X8X/X1X.X@XiXo, 8X:X5X/X.X@XaXiXNXt, 27:2331/214.1@SigNet, 74:3108/102.1@QuaZie

---
What was was, before was was was? Before was was was, was was is.

146. Re: Need satellite tracking software or equations

Newsgroup: rec.radio.amateur.space
Date: 1995-01-23 14:49:50 UTC
From: gerheim@PROBLEM_WITH_INEWS_GATEWAY_FILE
Message-ID: <3g0fme$ln5@hatch.sonalysts.com>
Source record: 25842
Cross-posted to: comp.sys.hp48,rec.radio.amateur.space,sci.geo.satellite-nav

Bob Martin N6MZV (rtm@newton.apple.com) wrote:
> In article <kevin.jessup.279.000FFD6A@mail.mei.com>,
> kevin.jessup@mail.mei.com (Kevin Jessup) wrote:

> > I'm looking for any satellite tracking programs for the HP48 series
> > calculators.
> >
> > I'd like to track at least one, preferably multiple, satellites
> > using Keplerian elements/satellite almanac data and display a
> > rough graphic of satellite position (fish-eye view of the sky)
> > based on my current time, longitude and latitude. More "exact"
> > numeric data should be available as well.
> >
> > Regardless of the availability of an HP48 program, I'd appreciate
> > any references to the mathematical models/techniques which would
> > allow me to write my own software. (I can program in HP48 RPL,
> > C, C++, PASCAL, FORTRAN, numerous assembly languages and, if
> > absolutely neccessary, BASIC ;-))
> >
> > I am already aware of DOS-based programs that will do this.
> > I just want to learn more about the techniques/math for myself.
> >
> > Thanks.

> A great book is "Fundamentals of Astrodynamics" by Bate, Muller, and White
> (also known as the BMW book). Published by Dover (ISBN 0-486-60061-0) for
> $10 (yes, ten bucks! a great book, and cheap!).

> I started with this book and my HP48 while on vacation in Mexico last
> year; I've continued working on C code when I can get the time.

> --

> Bob Martin N6MZV * rtm@newton.apple.com
> Apple Computer, Inc * #include <disclaimer.h>
> --
> This Green Card .sig is here to piss off Canter and Siegel.

I wrote fisheye and sked prediction programs for the HP-48 some
time ago. I sent them to AMSAT, where they were "filed". I still
have them in storage on my home PC. They are based on the NORAD
SGP algorithm described in Spacetrack Report No. 3, Models
for Propagation of NORAD Element Sets, which is available from
Department of Commerce
National Technical Information Service

5285 Port Royal Road
Springfield VA 22161

The HP-48 programs use an abbreviated version of the SGP tracker
but are still spectatularly accurate. Better than InstaTrack.

If you're interrested, send a 360K 5-1/4" floppy (realy, my PC
is a relic from a bygone age), plus self addresses, stamped
envelope, and I'll send you whatever I can find.

Possible contents:
HP-48 programs
PC program which parses 2-line NASA kep files into HP-48 kep files
Program Performance Spec describing the mathematics in WordPerfect

The versions that AMSAT may still have are in error. I have no
interest in communicating with AMSAT again.

I wrote some pretty impressive satellite tracking programs in
C, but they are the property of my employer. We are incorporating
them into larger weather and aviation software products, and
we have no plans to market them separately. Sorry.

73 - AL

--
****
Al Gerheim, N4QN |Opinions expressed here| Sonalysts, Inc.
gerheim@sonalysts.com |are my own. | 215 Parkway North
Work: (203)442-4355 | | Waterford CT 06385
****

147. Re: SPECIAL EVENTS STATION!!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-23 14:56:50 UTC
From: cmlong@mtu.edu
Message-ID: <3g0g3i$jue@techsrv1.tech>
Source record: 25843

Hello Everyone,

The W8YY Winter Carnival Special Event Station is being set up for
this year. As of now we are planning to operate W8YY for 24 hours
straight from Thursday Feb. 2nd until Friday Feb. 3rd. The times will be
from 6am Thursday to 6am Friday. The following frequencies will be used:
>From 6am to 6pm Thursday, 14.255 Mhz. From 6pm to 11pm Thursday, 7.255
Mhz. From 11pm to 4am Friday, 3.805 Mhz, and the last 2 hour will be held
on 7.255 Mhz again. We will also be monitoring 146.58 Mhz during the
operation period. Anyone wishing to contact us via Packet can log in on
144.09 Mhz to the MTUBBS. Certificates will be awarded to all stations
contacting W8YY during this period. Please send a large self
addressed stamped envelope, certificate sized if you don't want any
creases. The certificate is 8.5 x 11 inches.

--

Michael Long Public Relations Manager for HARC
234 West McNair email majordomo@mtu.edu with
1801 Townsend Dr. subscribe harc-l (for amateur radio)
Houghton, MI 49931
Electrical Eng. Tech. Major
email: cmlong@mtu.edu Electromechanical Eng. Tech Major
Phone: (906)487-0204 Michigan Technological University
----

148. rs15 keps?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-23 15:34:38 UTC
From: blazina@juncol.juniata.edu
Message-ID: <1995Jan23.103438.1454@juncol.juniata.edu>
Source record: 25846

Have been getting keps from afit.af.mil for RS15 and they are not giving me anything close to real tracking data. Does anybody have good keps for RS15?
Thanks
Bill K3EAV
blazina@juncol.juniata.edu

149. SATTRACK V3.0.1 UPGRADE AVAILABLE

Newsgroup: rec.radio.amateur.space
Date: 1995-01-23 22:38:21 UTC
From: manfred@sunspot.ssl.berkeley.edu
Message-ID: <3g1b4t$7j4@agate.berkeley.edu>
Source record: 25847
Cross-posted to:
sci.space.shuttle,rec.radio.amateur.space,sci.geo.satellite-nav,rec.video.satellite.tvro,comp.windows.x.apps,sci.astro

Subject: SatTrack V3.0.1 Upgrade
January 23, 1995

Since the SatTrack V3.0 release a few bugs have been discovered by several users and by the author. One is a glitch in the calculation of the sidereal time. Another one is a potential zero divide problem in the graphics display section. These are fixed in the 3.0.1 patch. Other issues like the crashes that can occur on certain machines when the graphics display is turned off and back on again, and inconveniences related to the environmental variables DISPLAY and TERM will be fixed in the V3.1 release.

For now, the 3.0.1 patch needs to be installed on top of the existing V3.0 installation. The distribution file 'sattrack.V3.0.1.patch.tar.gz' can be obtained via anonymous FTP from ftp.jvnc.net/priv/kupiec/sattrack. As usual, place the distribution file into your UNIX home directory, 'gunzip' and 'untar' it. This will replace the following two files in your present SatTrack/src/sattrack directory:

satgraph.c
sattime.c

This procedure should not affect any customization of the code and its resource files. After installing the new files, type 'make clean' and 'make all' in the src directory.

SatTrack is a very complex program, and I'm trying to do my best to make it as user friendly and robust as possible on a variety of systems, but it apparently takes a few iteration steps. Stay tuned ...

Manfred Bester

150. Re: rs15 keps?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-23 23:06:39 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3g1cpv$s7r@news.doit.wisc.edu>
Source record: 25848

In article <1995Jan23.103438.1454@juncol.juniata.edu>, blazina@juncol.juniata.edu says:
>
> Have been getting keps from afit.af.mil for RS15 and they are not giving me
>anything close to real tracking data. Does anybody have good keps for RS15?
> Thanks
> Bill K3EAV
> blazina@juncol.juniata.edu

Have you tried recently? The booster that carried RS-15 into space
blew up a few hours after releasing the satellite and the US Space
Command was tracking one of the pieces of debris instead of RS-15.
They are reported to be tracking the right blip on their screens since
some time last week. Try getting new elements and giving them a try.

Dave, N9LTD

151. Re: rs15 keps?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-24 06:49:30 UTC
From: ljs@rain.org
Message-ID: <3g27tq$161@news.rain.org>
Source record: 25854

In article <1995Jan23.103438.1454@juncol.juniata.edu>, blazina@juncol.juniata.edu says:
>
> Have been getting keps from afit.af.mil for RS15 and they are not giving me
>anything close to real tracking data. Does anybody have good keps for RS15?
> Thanks
> Bill K3EAV
> blazina@juncol.juniata.edu

Check out the latest edition of SPACENEWS (dated Monday Jan 23, 1995)
and use the keps that were generated by G3IOR. They are reported to
be accurate within +/- 5 seconds. You can contact SPACENEWS editor
at kd2bd@amsat.org, or magliaco@pilot.njin.net. Good luck !

152. Satellite store and forward

Newsgroup: rec.radio.amateur.space
Date: 1995-01-24 12:23:22 UTC
From: ashtona@lgwct.logica.com
Message-ID: <ashtona.45.000C640F@lgwct.logica.com>
Source record: 25857

I would be grateful if anyone could point me at sources of information on techniques and practises used to effect store and forward facilities on satellites.
Thanks in anticipation.
Tony Ashton - All views expressed are personal ones.

153. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-01-24 15:51:31 UTC
From: zlau@arrl.org
Message-ID: <1995Jan24.155131.31682@arrl.org>
Source record: 25849

N0YPR John R. Lewis (JRLewis@Skypoint.Com) wrote:
: I was told that there was a FM sattelite that one could use with
: something as simple as a dual band tranciever in the mobile.
: I know that the new Phase 3D bird will do this, but I was told that
: there is already a bird up there that does this part time.

While possible, FM voice operation will be strongly discouraged
on the Phase 3D bird, just as it is on Oscar 13 and Oscar 10.
Unlike previous satellites, there will be an automatic notcher
to prevent stations from running too much power.

Instead of using the bigger antennas and more powerful amplifiers
to accomodate a handful of FM users, SSB/CW users will be able to
get satisfactory performance out of the new satellite with modest
fixed beam antennas (100 watt+ bricks not needed). The orbit will
be such at it returns to the same spot in the sky every two days,
reducing the need for a $500 Az/El rotator.

There are 3 difficulties with FM, particularly if you need to
use 2 meters.

1. Finding the band space (less of a problem if you don't mind
using microwaves)

2. 100% duty cycle--virtually all satellites are power limited.

3. At low S/N ratios needed to accomodate lots of users FM is
at a significant disadvantage--probably by a factor of at least
4--so you probably need a solar array something like 12 to 20
times bigger.

Unfortunately, Satellite builders have to get the money
first--they can't build huge satellites first and pay for
them later. Thus, unless someone with very deep pockets
(your typical Billionaire) steps forward, I don't see
a Phase 3D FM voice satellite. Such a satellite would
probably have to use microwaves to avoid the political
problems of 2 meters--there have been squabbles over
FM frequencies for the Astronauts to use... 10 channels
isn't much if you cover the entire USA simultaneously.

--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

154. Re: Meteor 3-5

Newsgroup: rec.radio.amateur.space
Date: 1995-01-24 16:37:27 UTC
From: peter.henne@gmd.de
Message-ID: <peter.henne-240195173054@oskar.gmd.de>
Source record: 25850

In article <earecksoD2I64z.91M@netcom.com>, eareckso@netcom.com (William A. Eareckson) wrote:

> Have you noticed any faint occasional horizontal banding in the image? It
> does not appear in the sync bars; seems to be some variance in the
> sensitivity of their radiometer.
>
> Bill Eareckson
> eareckso@netcom.com

The Meteor's have an "exposure-control". There are small b/w strips (not the synch) adjacent to the greyscale. This binary value corresponds to the opening of the iris. Sometimes ("sudden" bright clouds) there is a little fluctuation in the brightness, exspecially on the darker parts of the orbit (prior to switching off in darkness).

+--+
|Peter Henne (peter.henne@gmd.de) |
| (henne@gmd.de) |
|German Nat.Research Center.f.Comp.Science |
|D-53754 St.AUGUSTIN, Germany |
+--+

155. Re: SPECIAL EVENTS STATION!!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-24 21:33:30 UTC
From: cmlong@mtu.edu
Message-ID: <3g3rna$650@techsrv1.tech>
Source record: 25852

Mike (cmlong@mtu.edu) wrote:
: Hello Everyone,
:
: operation period. Anyone wishing to contact us via Packet can log in on
: 144.09 Mhz to the MTUBBS. Certificates will be awarded to all stations
: contacting W8YY during this period. Please send a large self
: addressed stamped envelope, certificate sized if you don't want any
: creases. The certificate is 8.5 x 11 inches.
:
Sorry about the inconvience everyone, but the packet
freq should be 145.09 Mhz instead of 144.09 Mhz.

Sorry
Mike

--

Michael Long Public Relations Manager for HARC
234 West McNair email majordomo@mtu.edu with
1801 Townsend Dr. subscribe harc-l (for amateur radio)
Houghton, MI 49931
Electrical Eng. Tech. Major
email: cmlong@mtu.edu Electromechanical Eng. Tech Major
Phone: (906)487-0204 Michigan Technological University
---

156. Re: Need satellite tracking software or equations

Newsgroup: rec.radio.amateur.space
Date: 1995-01-24 21:47:56 UTC
From: dfk@col.hp.com
Message-ID: <3g3sic$rgb@nonews.col.hp.com>
Source record: 25853
Cross-posted to: comp.sys.hp48,rec.radio.amateur.space,sci.geo.satellite-nav

Kevin Jessup (kevin.jessup@mail.mei.com) wrote:

: I'm looking for any satellite tracking programs for the HP48 series
: calculators.

I'll post the SATTRACK program I wrote for the HP48 last year
in the group comp.sys.hp48. STS-63 is supposed to be launched
February 2, so there will probably be an increase in interest
for all.

Dave Kurth N0UVR
dfk@col.hp.com

157. Are RS-15 Keps "On"?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-24 23:04:32 UTC
From: jrybak@mesa5.Mesa.Colorado.EDU
Message-ID: <3g4120$6p9@mesa5.mesa.colorado.edu>
Source record: 25858

My InstantTrack program gives me very accurate information for all satellites except RS-15. That satellite comes over the horizon 15 minutes earlier than the program predicts. Is anyone else having this problem?

158. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-01-25 01:49:00 UTC
From: amsoft@epix.net
Message-ID: <3g4amc$16t@grape.epix.net>
Source record: 25856
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3ftupi$plu@cactus.texas.net>, bob@texas.net says...
>
>In article <NEWTNews.18260.790755434.amsoft@amsoft.epix.net>,
AMSOFT@EPIX.NET says:
>>
>>
>>The Jan 95 "[deleted]" CD-ROM newsletter is now
>>available. This CD-ROM offers more ham programs than any of the
>>others out there! blah blah blah bullcrap
>
>/\/\/\/\/\/\/\ Chainsaw inserted here /\/\/\/\/\/\/\/\/\/\
>
>I, for one, do not wish to see the internet become a medium which
>presents a non-hostile environment for those who wish to use it to
>spew forth electronic junk mail. Many other would-be advertisers
>have had their mailers crashed by angry replies to such electronic
>fecal matter. I wish the same on the hoseheads at AMSOFT.
>___
>Bob | Roses are red, Violets are blue
>bob@texas.net | I'm schizophrenic, And so am I

What we offer on the Internet is "A FREE HAM NEWSLETTER" and nothing
more. The purpose of the newsletter is to inform the interested
Amateur Radio public that our product will provide them with useful
information about the hobby of Amateur Radio. The decision for
another individual on the Internet to receive a NEWSLETTER is the
readers decision, not yours. My post gives the reader the choice
if they wish to continue by requesting our newsletter. In the case
of yourself, you did not need to respond.

The ease of posting Usenet News articles causes many inappropriate
articles to be sent to the network.
An article can be inappropriate if it:

-- Is devoid of useful information or ideas.
-- Is sent to inappropriate newsgroup(s).
-- Is really intended for a particular individual,
rather than the entire Usenet community.
-- Contains rude or insulting remarks.

Articles should be composed thoughtfully. Consider sending an
electronic mail message rather than posting an article, if
appropriate. Be aware of the fact that many sites must pay long-
distance telephone charges to receive your article. Also be aware

of the fact that some of the popular newsgroups have tens of thousands of readers. 10,000 people each reading your article for 20 seconds spend a total of 55 hours reading your article. At the end of most articles there is usually a small blurb called a signature or sig. This usually comes from a file in the person's login directory and is appended automatically to the message by the news reader. Some people get carried away with their signature and place complex ASCII drawings or cute sayings at the bottom of their messages. These signatures bother most people and it is considered poor "netiquette" to ave signatures larger than about 4 lines. Please remember to save your signature file as plain ASCII text, since vendor dependent binary files (such as Microsoft Word files) are not portable across the entire Internet community.

Many new users wish to test their ability to post before they actually say anything of any interest to anyone. Don't post test type messages to an active newsgroup. This will interrupt quite a number of people and is considered poor "netiquette". There are usually a number of "Test" newsgroups (they usually have the word "TEST" in their name) that can be used to verify that posting from your host will be successful. Some test newsgroups (like ALT.TEST) have automatic E-Mail responding software. A post to those groups will cause electronic mail from all over the world to be sent back to you as your post gets forwarded from site to site.

The "Newsgroups:" line in a news header isn't limited to just one group. If a note makes sense to more than one area you can cross-post it to other newsgroups by just separating the newsgroups with a comma on the Newsgroups line. It is considered poor "netiquette" to cross-post to more than several newsgroups.

When posting new articles to News, please remember that News runs on many different hosts and operating systems. The majority of posts from the Usenet are viewed by people running non-DOS/Windows operating systems. Inserting graphics or non ASCII text (such as different fonts, underlining, color changes etc.) in an article will appear as unintelligible garbage to almost everyone else. When responding to articles, use the Follow-up Article option instead of the New Post option. This will maintain a reference link between your message and the article you were reading at the time of your posting. People reading your message from other "thread based" news readers, will be able to understand how your message fits into the rest of the conversation. Intersperse your comments between the quoted text and delete any large quoted sections that do not pertain to your response. Someone can always find the original text by clicking on the unique Message ID. Also, use Message ID's when referring to other articles and never refer to another article by it's article number. Article Numbers are never the same from system to system so only people reading news on your own local system will know to which article you are referring.

Try to keep your text in a generic format. Many (if not most) of the people reading Usenet do so from 80 column terminals or from work-stations with 80 column terminal windows. Try to keep your lines of text to less than 80 characters for optimal readability. If people quote part of your article in a follow-up, each line gets indented a few characters and gets proceeded with a ">". Thus, standard lines of 75 characters or less are best for later readability. Be careful when using proportional style fonts since they allow you to place more characters per line than fixed style fonts.

Last but not least BOB, your suggestion that persons should be asked to CRASH MAILERS WITH ELECTRONIC FECAL MATTER will be met with a strong challenge here at EPIX.NET!
Should such an occourence happen we will refer the matter directly to your commander, you are under the Uniform Code of Military Justice!
Furthermore any damages caused by your suggestion will be dealt with in a court of Civil Law.

159. FM sat answer

Newsgroup: rec.radio.amateur.space
Date: 1995-01-25 20:00:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A2430C.14E6000054.uuout@freddy.supernet.ab.ca>
Source record: 25859

Hi John,

-> I was told that there was a FM sattelite that one could use with
-> something as simple as a dual band tranciever in the mobile.
-> I know that the new Phase 3D bird will do this, but I was told that
-> there is already a bird up there that does this part time.

Yes this is a bird that has a part time FM transponder. It is supposed
to be on, on weekend (AO-27, uplink 145.850 MHZ, downlink 436.800 MHZ),
but as of late, it has not been on or heard. Word has it that this bird
is under new management (probibly not HAMS). Who only knows when they'll
turn it on....soon I hope!

Good Luck and C U on the birds
73 de Ernie VE6LU

160. Re: Are RS-15 Keps "On"?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-25 21:58:19 UTC
From: durham@lobby.ti.com
Message-ID: <3g6hhr$jm5@superb.csc.ti.com>
Source record: 25860

In article <3g4120$6p9@mesa5.mesa.colorado.edu>, jrybak@mesa5.Mesa.Colorado.EDU (James P. Rybak) says:
>
That satellite comes over the horizon 15 minutes
>earlier than the program predicts. Is anyone else having this problem?

Yep, the best I have found are 11 minutes slow for AOS. All the updates appear to have the same error. There were some TLE's on this group a few weeks ago that had been tweaked to work, but produced a checksum error when I tried to autoload them into Instantrack.

Ken K5MBV durham@lobby.ti.com

161. NOAA 14

Newsgroup: rec.radio.amateur.space
Date: 1995-01-26 02:04:33 UTC
From: geret@gov.nt.ca
Message-ID: <1995Jan26.020433.28805@gov.nt.ca>
Source record: 25861

The APT shots from NOAA 14 seem higher resolution than similar shots from
the other NOAA birds. My software hasn't changed. Is this my imagination?
Is there anything different about this satellite that would account for this?

Larry
geret@inukshuk.gov.nt.ca

162. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-01-26 02:35:57 UTC
From: gbrown@unlinfo.unl.edu
Message-ID: <3g71qe$hc5@crcnis3.unl.edu>
Source record: 25862
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

I find your (AMSOFT) reply as innappropriate, perhaps more innappropriate, than Bob's comments, and a substantial waste of "bandwidth".

Perhaps what Bob should have said is that it is contrary to Internet's policy for Internet to be used as a vehicle for commercial advertisement. That is a fact. While I can not say that the policy is a legally binding one (that is for others to say), it certainly is followed by the vast majority of commercial enterprises, and for good reason. They realize that they run the risk of alienating potential customers who may not appreciate such a blatant disregard for net etiquette and policy. Like Bob. And like me. Mind you, it is no big deal to me personally. But I don't like advertising here either, and there are plenty of alternatives to AMSOFT.

You seem to be aware of some internet policy judging from your long quoted (though not attributed) "lesson" to Bob. Perhaps you would find a more complete review of policy personally enlightening as well as commercially "prudent".

Greg Brown

163. Help -- where is GPS newsgroup??

Newsgroup: rec.radio.amateur.space
Date: 1995-01-26 05:05:40 UTC
From: gary_mart@bendnet.com
Message-ID: <3g7aj4$i3s@news0.rain.rg.net>
Source record: 25863

I am looking for a newsgroups that carries discussions
about the Global Positioning System (GPS).

Thanks

Gary Mart
gmart@bendnet.com

164. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-01-26 12:31:12 UTC
From: rlong@magnus.acs.ohio-state.edu
Message-ID: <rlong-260195072315@slip2-2.acs.ohio-state.edu>
Source record: 25864

In article <1995Jan24.155131.31682@arrl.org>, zlau@arrl.org (Zack Lau (KH6CP)) wrote:

> N0YPR John R. Lewis (JRLewis@Skypoint.Com) wrote:
> : I was told that there was a FM sattelite that one could use with
> : something as simple as a dual band tranciever in the mobile.
> : I know that the new Phase 3D bird will do this, but I was told that
> : there is already a bird up there that does this part time.
>
There were two. Now there is one or none. The first was
AO-21 but it is no longer operational. The other is AO-27.
It is a satellite that is sometimes on commercial frequencies
and sometimes on ham bands. It used to be on ham on weekends
and when the satellite is in sunlight. I haven't heard
much talk about it recently. The uplink is 145.85 FM and the
downlink is 436.80 FM.

73, Ron w8gus.

165. Re: NOAA 14

Newsgroup: rec.radio.amateur.space
Date: 1995-01-26 17:42:56 UTC
From: Chris Oesterling <chris@angus.mystery.com>
Message-ID: <02qJZc3w165w@angus.mystery.com>
Source record: 25865

geret@gov.nt.ca (Larry Horlick,Iqaluit,9795366,) writes:

> The APT shots from NOAA 14 seem higher resolution than similar shots from
> the other NOAA birds. My software hasn't changed. Is this my imagination?
> Is there anything different about this satellite that would account for this?
>
> Larry
> geret@inukshuk.gov.nt.ca
>

I don't know Larry but this last Sunday (1/22) I got a perfect 12 minutes
of NOAA 14 APT. Best I've ever gotten from any NOAA's. - Chris

--
Chris Oesterling (chris@angus.mystery.com)
Mystery Spot BBS, Royal Oak, MI ----------?--

166. Introducing...

Newsgroup: rec.radio.amateur.space
Date: 1995-01-26 22:53:14 UTC
From: jerry.gontang@digcir.cts.com
Message-ID: <950126160018136@digcir.cts.com>
Source record: 25866

Hi there guy,
Just wanted to drop you a line and see if this BBS flows as fast as some of the others. I have been waiting for my new communications program and now that I have it I am looking forward to being able to write more often and to more people.

Hope all went well with the after party and there wasn't much clean up for you guys. I hated to leave so abruptly but when my other girlfriend showed up I figured we didn't need to get into it there. Please forgive me.

We will be down at Seaport Village all weekend if yo want to drop by and say hello, otherwise I'll see you at the Superbowl Party and this time no girlfriends!!! C'ya

167. RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-01-27 00:15:42 UTC
From: kd4cim@vulcan.com
Message-ID: <VksJZc2w165w@vulcan.com>
Source record: 25867

/ex

168. Re: Radio Astronomy info

Newsgroup: rec.radio.amateur.space
Date: 1995-01-27 17:30:38 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Jan27.173038.11080@ke4zv.atl.ga.us>
Source record: 25868

In article <3fu82v$lch@newsbf02.news.aol.com> wietlispac@aol.com (Wietlispac) writes:
>Why not look at using some of the popular data acquisition
>hardware/software to record and analyze events? Files could then be
>exchange using the Internet. Once a common storage location was
>determined many people could analyze the same data and compare relults.
>A/D converters are cheap and software is not hard to find.

To be meaningful, Tim, the data must preserve the phase information
of the signals. The idea with many small receiving sites is to combine
them coherently so that a much larger aperture is synthesized. This
allows signals that would be buried in the noise at a small receive
terminal to be resolved by use of correlation with the signals received
by other small terminals. It also allows a much narrower effective
beamwidth to be synthesized from the data, and allows that narrow
beam to be scanned across the heavens. That doesn't have to happen
in realtime *if some method to preserve the phase information is used*.
That requires a common time reference, a common down conversion oscillator
reference, and a data capture method that doesn't destroy the phase
coherence that has been so carefully preserved. The "popular" PC data
acquisition hardware/software doesn't do that.

There are ways to accomplish the goal fairly inexpensively, but they
don't use unmodified off the shelf items. A geosync TV sat can be
used as a timing and frequency reference for the radio astronomy
terminal via a modified TVRO setup. Temporary storage of a 3-4 MHz
chunk of spectrum can be done using a modified VCR. And a coherent
sampling system feeding a PC can convert the data on tape to digital
in non-realtime in the same way that frame grabbers get a still from
a TV picture. By repeatedly playing the tape, the signals can
eventually all be converted into digital form for transmission to a
central site. The amounts of data involved would be *huge* for even
a short duration receiving session, however. Using an 8-bit sampler,
about 80 megabits/sec of data would be generated for a 4 MHz wide
chunk of spectrum. And that would have gaps of about 15 uS every
63 uS. (Using professional grade recorders, and CTDM, the gaps
could be eliminated, but that would be cost prohibitive.)

What would make this an interesting project is that the radio
astronomy terminals could be operated in the upper HF spectrum,
using simple wire dipoles. A continent wide array of such terminals
could offer a synthesized aperture that could be easily "steered" in
non-realtime by the data correlation software. Right now, fine
resolution at HF is impossible for existing radio astronomy
sites. Thus, amateurs could make a real original contribution
to the science.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

169. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-01-27 17:47:04 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Jan27.174704.11273@ke4zv.atl.ga.us>
Source record: 25869

In article <1995Jan24.155131.31682@arrl.org> zlau@arrl.org (Zack Lau (KH6CP)) writes:
>
>3. At low S/N ratios needed to accomodate lots of users FM is
>at a significant disadvantage--probably by a factor of at least
>4--so you probably need a solar array something like 12 to 20
>times bigger.

This is probably true in the limit case, where the passband is
filled completely, and operations are at the limits of detectability,
but that hasn't yet been the case with amateur satellite operations.
Typically, signals are in the range of 12-20 db SNR for amateur
operations on P3 birds (AO-10 and AO-13). To achieve a similar
SNR for FM voice, the CNR can be lower due to the FM threshold
effect. CNR and SNR are identical for amplitude modulated signals
such as keyed CW carriers and SSB voice, but they are not identical
for FM voice. (I'd note, however, that to get significant threshold
improvement, a higher modulation index than is typically used in
amateur terrestrial operations would be required.)

P3D will have a power budget about 10x that of AO-10 and AO-13,
yet both of those satellites have been able to support FSK and
SSTV operations, both high duty cycle modes. Limited FM operations
should be possible on P3D without significantly impacting the
power budget.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

170. Re: Help -- where is GPS newsgroup??

Newsgroup: rec.radio.amateur.space
Date: 1995-01-28 14:09:52 UTC
From: Greg.Price@f1.n328.z1.fidonet.org
Message-ID: <c9d_9502010144@trisoft.com>
Source record: 25870

From: greg@defcen.GOV.AU (Greg Price)
Date: 28 Jan 1995 09:09:52 +1100
Message-Id: <3gbqvg$g3s@helotrix.defcen.GOV.AU>

In <3g7aj4$i3s@news0.rain.rg.net> gary_mart@bendnet.com (Gary Mart) writes:

>I am looking for a newsgroups that carries discussions
>about the Global Positioning System (GPS).

Try sci.geo.satellite-nav

Greg

171. Re: Help -- where is GPS newsgroup??

Newsgroup: rec.radio.amateur.space
Date: 1995-01-28 15:57:49 UTC
From: Stephen.McNeill@f1.n328.z1.fidonet.org
Message-ID: <ba7_9502010140@trisoft.com>
Source record: 25871

From: mcneills@landcare.cri.nz (Stephen McNeill)
Date: Sat, 28 Jan 1995 10:57:49 LOCAL
Message-Id: <mcneills.7.00260C2D@landcare.cri.nz>

In article <3g7aj4$i3s@news0.rain.rg.net> gary_mart@bendnet.com (Gary Mart)
writes:
>From: gary_mart@bendnet.com (Gary Mart)
>Subject: Help -- where is GPS newsgroup??
>Date: 26 Jan 1995 05:05:40 GMT

>I am looking for a newsgroups that carries discussions
>about the Global Positioning System (GPS).

>Thanks

>Gary Mart
>gmart@bendnet.com

Try sci.geo.satellite-nav. I hope I have the spelling right.

Stephen

172. ARLK004 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-01-28 17:33:05 UTC
From: w1aw@arrl.org
Message-ID: <$arlk004.1995@ampr.org>
Source record: 25872
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK004
ARLK004 Keplerian data

ZCZC SK29
QST de W1AW
Keplerian Bulletin 4 ARLK004
From ARRL Headquarters
Newington, CT January 28, 1995
To all radio amateurs

SB KEP ARL ARLK004
ARLK004 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-63
1 99963U 95999A 95033.30079147 .00130549 00000-0 12842-3 0 36
2 99963 51.6490 114.5633 0080613 5.0856 355.0928 16.04842332 25
AO-10
1 14129U 83058B 95022.06637884 .00000188 00000-0 10000-3 0 3378
2 14129 26.6077 286.7997 6021742 245.9578 41.7464 2.05877067 59324
RS-10/11
1 18129U 87054A 95024.85928341 .00000014 00000-0 -12722-5 0 159
2 18129 82.9248 165.0004 0012621 123.4455 236.7907 13.72347198380312
UO-11
1 14781U 84021B 95023.54209286 .00000114 00000-0 27175-4 0 7698
2 14781 97.7803 32.8913 0010929 288.9459 71.0561 14.69296734582667
RS-12/13
1 21089U 91007A 95022.49470899 .00000059 00000-0 47037-4 0 7701
2 21089 82.9194 208.8025 0027826 217.6072 142.3133 13.74053335198762
AO-13
1 19216U 88051B 95024.49461999 -.00000195 00000-0 10000-4 0 84
2 19216 57.6127 207.5729 7261098 0.2413 359.9315 2.09725217 19150
UO-14
1 20437U 90005B 95025.19187340 .00000028 00000-0 27907-4 0 691
2 20437 98.5792 111.8250 0010223 261.5235 98.4792 14.29872406261313
RS-15
1 23439U 94085A 95025.17305041 -.00000039 00000-0 10000-3 0 234
2 23439 64.8154 126.2803 0167711 286.6267 71.6313 11.27524471 3393
```

```
AO-16
1 20439U 90005D 95025.16907879 .00000033 00000-0 29765-4 0 8673
2 20439 98.5889 113.2869 0010537 261.8578 98.1409 14.29926421261325
DO-17
1 20440U 90005E 95021.25351844 .00000014 00000-0 22284-4 0 8674
2 20440 98.5901 109.8276 0010697 272.8047 87.1909 14.30066450260786
WO-18
1 20441U 90005F 95024.73129097 .00000015 00000-0 22587-4 0 8716
2 20441 98.5886 113.2406 0011212 262.1421 97.8482 14.30039194261280
LO-19
1 20442U 90005G 95025.25401331 .00000023 00000-0 25631-4 0 8676
2 20442 98.5869 114.0722 0011604 261.2468 98.7396 14.30139305261377
FO-20
1 20480U 90013C 95024.79484614 -.00000015 00000-0 39590-4 0 7647
2 20480 99.0666 140.0905 0540060 197.6981 160.4648 12.83229535232553
AO-21
1 21087U 91006A 95023.37581935 .00000094 00000-0 82657-4 0 5591
2 21087 82.9427 339.7496 0034656 187.9503 172.1108 13.74549842199837
UO-22
1 21575U 91050B 95024.21969082 .00000040 00000-0 27912-4 0 5739
2 21575 98.4131 98.9965 0008322 356.6864 3.4261 14.36955661184822
KO-23
1 22077U 92052B 95021.48652052 -.00000037 00000-0 10000-3 0 4658
2 22077 66.0806 182.9191 0013357 234.3275 125.6502 12.86290201114864
KO-25
1 22828U 93061F 95022.24886841 .00000010 00000-0 21537-4 0 3414
2 22828 98.6310 100.7283 0009709 280.7329 79.2756 14.28083889 37049
IO-26
1 22826U 93061D 95022.21874081 .00000012 00000-0 22563-4 0 3627
2 22826 98.6325 100.6675 0008923 296.4141 63.6124 14.27755365 68943
AO-27
1 22825U 93061C 95022.67438736 .00000030 00000-0 29877-4 0 3646
2 22825 98.6348 101.0496 0008251 294.5682 65.4643 14.27649062 69006
PO-28
1 22829U 93061G 95022.74871047 .00000013 00000-0 22864-4 0 3565
2 22829 98.6314 101.2454 0009415 278.3542 81.6571 14.28060617 69034
Mir
1 16609U 86017A 95025.53583445 .00005100 00000-0 71581-4 0 9062
2 16609 51.6458 152.6933 0001412 164.2374 195.8663 15.58639897510653

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
January 31, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

173. FREE HAM NEWSLETTER!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-28 17:56:12 UTC
From: AMSOFT@EPIX.NET
Message-ID: <NEWTNews.19038.791320464.amsoft@amsoft.epix.net>
Source record: 25873
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

A Free newsletter from AmSoft, a leader in Amateur Radio CD-ROM's is available by sending your E-Mail address to amsoft@epix.net. The newsletter contains the entire listing of the January 95 CD-ROM software library, and a one page description of the Amsoft CD-ROM. Please respond via E-Mail only.

This message is cross-posted in the rec.radio.amateur.* usenets, please do not respond to this message on the usenet. A response to this message gets cross-posted to all 7 rec.radio.amateur.* usenets automatically

Note: Recent usenet message streams regarding our newsletter has drawn some unfavorable response. For those who are offended by our decision to offer a newsletter via the Internet I am sincerely sorry they are offended. My position on Newsletters is that the end reader has a choice to receive a private newsletter by sending private E-Mail. Likewise, if a reader is offended by the offering of a private newsletter I would expect their response via Private E-mail as well. Future postings for this newsletter will only contain the top 2 paragraphs.

174. Re: FREE HAM NEWSLETTER!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-28 19:34:54 UTC
From: bob@texas.net
Message-ID: <3ge68u$gqi@empire.texas.net>
Source record: 25874
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <NEWTNews.19038.791320464.amsoft@amsoft.epix.net>, AMSOFT@EPIX.NET says:

/\/\/\/\/\/\ Chainsaw Inserted Here /\/\/\/\/\/\/\/\/\/\/\

>Note: Recent usenet message streams regarding our newsletter has drawn some
>unfavorable response. For those who are offended by our decision to offer a
>newsletter via the Internet I am sincerely sorry they are offended.
>My position on Newsletters is that the end reader has a choice to receive a
>private newsletter by sending private E-Mail. Likewise, if a reader is
>offended by the offering of a private newsletter I would expect their response
>via Private E-mail as well. Future postings for this newsletter will only
>contain the top 2 paragraphs.
>

This is an offer for a private newsletter which is an advertisement, right?
An offer to subscribe to advertising is, IMHO, an advertisement in its
own right. The real crux here is the motive behind your postings--it's to
market a product, plain and simple. As far as responding via private e-mail,
well, I hope that my postings will prompt others to complain about what you
are trying to do here. If we let you get started, then we may as well open
the floodgates net-wide. Wouldn't that be a pretty sight--junk e-mail by
the megabyte...

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

175. Re: FREE HAM NEWSLETTER!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-28 22:57:52 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3gei5g$9os@news.doit.wisc.edu>
Source record: 25875
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

I recently posted a reply to the AMSOFT spam telling them that
instead of asking for a copy of their thinly disguised advertisement
for their CD-ROM, I was sending a copy of their message to their
system administrator.

I sent that message to all the newsgroups AMsoft spammed because most
everywhere their original message went, there are people talking about
burying the instigators under a deluge of email. This will clog the
network and may well cause the people doing it to lose their access.

As I said in the message, the thing to do is to send a message
to their system administrator, which I did, with a copy to AMSOFT.
(The ALL CAPS warning not to send me their ad was to prevent them
from sending me more of their junk mail because of that copy.)

I presume that most people already know this, but a cursory review of the
responses to their luncheon meat attack shows that a lot of people don't.

To repeat (and clarify), the proper response to any kind of spamming
and especially to a _commercial_ spam is to send a copy of the
message to the miscreant's system administrator along with a note
describing the problems they're causing. This is almost always
effective, whereas a reply to the newsgroup just wastes bandwidth and
an email attack will just get the sender in trouble.

Dave Mullenix, N9LTD

176. Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-01-28 23:32:05 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3gek5l$9os@news.doit.wisc.edu>
Source record: 25876

I don't think a ham balloon FAQ has been written so far. I wrote this for the Wheaton Illinois Hamfest (Jan 29, 95) and thought I'd post it too. It's nowhere near complete, but it's all I've got so far. Comments, additions and corrections are welcome.

BEGIN --- CUT HERE --- Cut Here --- cut here ---

Ham Ballooning FAQ
or
"What little I know about ham ballooning, by N9LTD"

This is mostly stuff I learned from Joe, WB9SBD, who got me into this mess. I've chased a half dozen of his Near Space Science (NSS) balloons, helped him launch several of them and balloonmeistered two launches for the High Altitude Radio Project (HARP). This is version 1.0 of the FAQ, so please excuse any mistakes or omissions.

THE MOST IMPORTANT RULE

Rule #1 for those interested in getting into ham ballooning: Join a group that's already launching balloons to learn the ropes. I can't tell you everything you need to know in a FAQ. Don't try to learn it all yourself by trial and error, learn it from someone who's actually doing it! Start by volunteering to chase the balloons. Chasers are ALWAYS welcome. Special DF equipment is not necessary. There comes a point in every flight where the balloon is laying on the ground and its range is so short that nobody can hear it. That's when lots and lots of people are needed to drive around until they pick up the signal. Once the balloon can be heard, people with DF gear can start tracking it down. Balloons often land in trees and marshes, so hunters and tree climbers are always welcome on chase crews. Bring your hip boots.

Then help with a few launches. See what's involved in filling and launching a weather balloon. Get a look inside the payload box to get an idea of the construction required.

Then find out who in the FAA the group contacts when arranging flights. The regional FAA office will probably have one person who handles most of the ham flights and he will be MUCH more comfortable with your request to launch if you tell him you've been working with a group that's had several safe and successful flights and are following their procedures.

Here's a list of what our group has been using for ham balloons and where we find what we need. As I said above, I got most of this information from WB9SBD.

BALLOONS

We use Totex weather balloons. They seem to be the best quality. We purchase them from:

Kaymont Consolidated Industries, Inc.
21 Sprucetree Lane
P.O. Box 348
Huntington Station, NY 11746
Phone (voice): 516 424-6459
Phone (fax): 516 549-3076

Balloons are sized by their weight in grams. Kaymont currently carries two sizes, 800 and 1200 grams. The 800 gram size will lift 3-4 lbs to 100,000 feet. The 1200 gram size will take a full six pound payload to 100,000 feet. Prices are about $45.00 each for the 1200 gram balloons. Kaymont accepts telephone orders and credit cards.

BATTERIES

Only one type of battery will do: lithium. Nothing that is available on the commercial market approaches lithium's power per pound. We normally purchase military surplus lithium battery packs. They contain 10 D cells in a series/parallel arrangement that produces 15 volts. The packs come apart very easily into two 5 cell strings. The D cells themselves are connected with welded tabs that can be easily cut and soldered into whatever voltage and amp/hour combination you need. The D cells are 3 volts each, so 3 will give you 9 volts, 4 will give 12 and 5 cells will give 15 volts. The cells in the battery packs will typically be out of date, but lithium cells have an excellent shelf life and we've never been disappointed. You can expect 6 AMP hours from each 3 volt D cell.

I connected a single 3 volt lithium D cell to a 10 Ohm resistor, put a Radio Shack RS-232 VOM (lent by Don, K9LYE) across it and let my computer log its progress. The voltage _rose_ slightly for the first half hour to 2.81 volts and it then stayed there for 22 hours before it started to drop! It didn't drop to 2.5 volts until 24 hours after starting the test. I put a 5 ohm resistor across a second D cell and the voltage stayed at 2.78 volts for 12 hours. That's 6000+ mah per cell! A 5 D-cell pack will provide about 3.3 watts for 24 hours or 6 watts for 12 hours. You really need about 12 hours of capacity. That gives you four to six hours for the flight and another six hours to recover the payload when it lands.

Here are our results for various resistances across a single 3 volt lithium D-cell:

Life Watts Watts
Peak Peak in per per
Ohms Volts Amps Hours cell 5 cells Notes
10 2.8 .28 24 .78 3.9 (Lifetime measured to 2.5 V)
5 2.78 .55 12 1.53 7.6 " " " "

3.3 2.75 .82 8 2.25 11.2 " " " "
2.5 2.71 1.08 6 2.92 14.6 " " " "
0.77 2.46 3.20 2:14 7.87 39.4 (Lifetime measured to 2.0 V)

(That 0.77 ohm load was a mistake. I thought I had 4 10 ohm / 10 watt resistors in parallel. One of them turned out to be 1 ohm. Boy, did it get hot!)

We order our lithium batteries from:

S & G Electronics
618 S. 62nd St.
Philadelphia, PA 19143
Phone (voice): 215 474-7663

Prices run around $15.00 per pack of 10 cells.

S&G accepts phone orders, but not credit cards. They will ship C.O.D., however. S&G is a real mom and pop outfit and very nice people to do business with.

GAS

We use Hydrogen because it's cheaper (about $20.00 per cylinder versus $40.00 for helium) and has more lift. Also, we're not too bright. Hydrogen has two drawbacks: it burns and it explodes. On the other hand, it's not super vicious. Your balloon will be delivered with no air in it. Don't let any get in while you're filling it and the hydrogen can't explode in your balloon. If the balloon bursts while filling it indoors, get out and let the hydrogen dissipate for a while. Don't flip the light switch on the way out. Try to do your inflation in an old, leaky building just in case the balloon pops. An old barn with lots of holes in the roof is ideal for working with hydrogen.

Buy hydrogen (or helium) at any welding supply shop. You will need the biggest tank they have, size K or T, which will typically come up to about your shoulder. Put another way, it will just barely fit into the back seat of a Ford Taurus. Try not to get into any accidents when you have a tank full of high pressure hydrogen in your back seat. In the event of a serious traffic accident, you needn't worry about being injured. You will die.

Either size tank will fill a 1200 gram balloon with gas left over.

You should have a regulator for your tank to lower the 2000 pound plus pressure to a few pounds, although in an emergency you can tape the filling hose to the outlet of the tank and then open the valve _very_ carefully. I've seen it done, but I don't recommend it.

You can rent regulators at the same welding shop you buy your hydrogen at. If they don't have hydrogen regulators, you can use a nitrogen regulator with a $15.00 adaptor the welding store can sell you. Helium is used a lot, so they will probably have helium

regulators in stock. ARRANGE FOR YOUR GAS PURCHASE AT LEAST TWO WEEKS BEFORE FLIGHT. The welding shop may need time to do a credit check on you. If not, they will require a $50 - $100 deposit on the tank. You have to rent the tank, they won't sell it to you. Regulators typically rent for about $5.00 a week. You'll also have to rent the tank at about a dime a day. The welding shop will give you a hazardous material form that MUST be carried in your vehicle at all times the gas tank is on board or you are liable for a multi-thousand dollar fine.

INSTRUMENTATION

The best instrumentation is a GPS receiver sending its data to a packet TNC and a transmitter. This will send you the balloon's latitude, longitude and altitude. They're wonderful! Note, however, that many GPS receivers won't work above 60,000 feet. This is because of export regulations designed to keep Saddam Hussain or somebody like him from using a GPS receiver to improve the accuracy of a Scud missile. The actual regulations ban export of GPS receivers that can measure speeds in excess of several hundred miles per hour at altitudes above 60,000 feet. Motorola GPS boards are reputed to work above 60K feet at typical balloon speeds. Most manufacturers can provide you with versions of their firmware that will work above 60k feet, but you will have to sign a non-export agreement.

Note also that the accuracy of GPS signals is purposely degraded to about 100 yards horizontally and 300-500 feet vertically to keep Russian ICBMs from using them to achieve the +/- 10 yard accuracy necessary to take out a hardened missile silo. This will make your readings, especially altitude, jump around a bit.

Make sure your GPS receiver has a NEMA output. This is a 4800 baud RS-232 ASCII output in a standardized format. It was originally designed for use on boats, to let things like LORAN receivers work with autopilots. If the GPS receiver can be programmed to send lat, long. and altitude every minute or so, you can connect this output directly to the TNC input and let her rip. APRS programs are designed to handle this data format. However, if the receiver sends its data constantly, you will have some overflow problems feeding a 1200 baud TNC.

CHEAP ALTIMETER

Thanks to Kevin, WB9YHB, we now have a cheap electronic altimeter. He spotted a Microswitch pressure transducer in a MECI surplus catalog that provides a 1 to 6 volt output that is linearly proportional to pressure. The catalog blurb:

PRESSURE TRANSDUCER Absolute pressure sensor for 0-15 PSI range. 45PSI maximum overpressure with 0.333 volts per PSI sensitivity, .75% linearity. Three wire PC mount. Mount holes 2-1/16 O.C.

Includes spec sheet. Mfg: Microswitch Mfg P/N: 142PC15A
MECI PART NUMBER: 540-6206F

It's a whopping $2.95, unless you order 10 or more when it drops to $2.50 ea. It's small, light and runs off 8 to 12 volts. It only requires one resistor. I ordered ten of them in Dec, 1994 and they had about 700 left. Hurry and get yours now. :)

MECI
340 East First St.
Dayton, Ohio 45402
1-800-344-4465 9am-6pm EST Mon-Fri Visa/MC/Disc/AmEx

CHEAP FLIGHT COMPUTER

Computers don't come much cheaper than Parallax's BASIC Stamp. This $39.90 device is a printed circuit board the size of a large postage stamp containing a microprocessor, 256 bytes of EEPROM, 8 programmable I/O lines and a 5 volt regulator. One end of the board has a pair of sturdy clips for a 9 volt battery, which will run a STAMP for several days. Small as the board is, half of it is a prototype area containing a 10 x 14 array of isolated plated through holes for your circuitry.

The Stamp has a 4 MHz clock and comes with a built in Integer BASIC interpreter. You write your BASIC program on a PC using Parallax's special BASIC editor and then download it to the Stamp's EEPROM with a cable that connects to your parallel port. (Don't know if a Mac can use the BASIC Editor when running a PC emulator.) The program starts immediately and it restarts every time you connect power afterwards.

Each of the 8 I/O lines can be independently programmed as a TTL/CMOS compatable input or output. An output pin can source 20 ma and sink 25 ma. Each pin can also be an RS-232 input or output at speeds up to 2400 baud. (Note, the output is 0-5 volts, which isn't _true_ RS-232, but it works with everything I've tried so far.) The inputs work fine with standard RS-232. The "RS-232 interface" consists of a current limiting resistor.

Parallax's application notes show how to connect an ADC0831 8 bit analog to digital converter chip to the stamp. This is an 8 pin chip with a serial interface that connects to the Stamp with just 3 wires. We currently use two of them and two Radio Shack thermistors (p/n 271-110) to read inside and outside temps. The data is sent to the ground by Morse code, also generated by the Stamp. My next generation board will use a ADC0838 chip, which has 8 inputs. The Stamp also has a Radio Shack reed relay mounted on it which snaps pictures with a 35 mm camera after every ID. The 831s and 838s are available from Digi-Key.

A Cheaper Flight Computer

Parallax has actually found a way to make a BASIC Stamp for even less money! The BS1-IC is a 1.4 x .4 inch PCB with surface mounted parts and 14 pins sticking out of one side so it can plug into a socket like a SIP. (Single Inline Package) It contains EVERYTHING a standard Stamp has except the 9 volt battery clips and it's only $29.95!

A More Powerful Flight Computer

Parallax is promising the Super Stamp (or Stamp II as they call it) in Feb 1995. (It was originally promised for Nov 94.) This is another surface mount board, with the form factor of a 24 pin DIP. It will have 16 I/O pins, a 20 mhz clock, 2k EEPROM, 9600 baud RS-232, DTMF encoding and decoding, built in A/D and more. Time will tell if they deliver it all. The price is to be $49.95.

Parallax BBS and FTP site

The Stamp manual, application notes and programs are available on the Parallax BBS at (916) 624-7101 or by anonymous FTP from PARALLAXINC.COM

Avoid the BASIC Stamp Programming Kit

Parallax will be happy to sell you a BASIC Stamp programmer's kit for $99.00. It contains a cable to connect the Stamp to your PC's parallel port, a manual, a set of application notes and a disk with software. The manual, application notes, software and pin out for the cable are available for free download on their BBS and FTP site. On the plus side, the programmer's kit comes in a really neat cardboard box, which I've gotten a lot of use from.

PINOUT for the PARALLEL PORT to BASIC STAMP CABLE

DB 25 BASIC BS-1C
Connector STAMP (Stamp SIP)
2 3 5
11 2 4
25 1 <<< 3 (GROUND - Marked <<< on Stamp)

All of the BASIC Stamp products are available from Digi-Key or you can order from Parallax at (916) 624-8003.

35mm CAMERA

What's the world look like from 100,000 feet? A camera can tell you. A few 35 mm cameras can automatically snap a picture every ten minutes, but we couldn't find one. Next best is triggering a camera electrically with a reed relay driven by a BASIC Stamp output pin. We use a "Canon Sureshot esprit".

If you remove the bottom screw nearest the tripod hole, you can remove a small plastic plate that uncovers a flexible printed circuit board. If you hold the camera upside down with the lens facing away from you, you will see a horseshoe shaped ring of circular solder

pads with one pad missing at the top. Number the pads counterclockwise starting with the pad to the left of the missing pad. Short pads 1 and 3 together and run a wire from pin 1 and pin 2 to the normally open contacts of the reed relay. Close the relay contacts for 1 second and you'll take a picture.

NOTE: You will have to either use wire thin enough so that you can replace the plastic plate or you'll have to cover the hole where the plate was with black electrical tape. If you don't, a light leak will fog one corner of each picture.

Which way to point the camera? Well ... if you point it down, you get great aerial photographs of the earth below you. It's a lot of fun spotting familiar places and just plotting the balloon's course after the flight by finding landmarks on the pictures. On the other hand, if you point the camera horizontally, you get some magnificent photos at high altitude. Your balloon will go so high that the sky will be black and you can see the curvature of the earth on the horizon. Your choice, I guess.

BASIC BALLOON CONSTRUCTION

The basic balloon setup is one weather balloon, five to ten feet of 50 lb test cord, one parachute tied to the cord at its apex, another five to ten feet of cord tied to the parachute shroud lines with a radar reflector attached to its middle and the payload. You HAVE to have the parachute and radar reflector - FAA regs. Ditto for the 50 lb (max) cord.

RADAR REFLECTORS: We now know for certain that just hanging a space blanket from the package won't work. They barely show up on FAA radars. Best bet: a styrofoam corner reflector covered with space blanket material. Look in a boating catalog for models. Hints: forget aluminum foil, it's too heavy. Ditto for cardboard. Space blankets (very thin aluminized mylar) work fine and are featherweight. Get them from sporting good stores.

Payloads

REDUNDANCY! Live by that word! Have at least two transmitters. Each transmitter should have its own, totally separate power supply. If your package isn't transmitting when it lands, you aren't going to find it. One transmitter can be a milliwatt rig running from a 9 volt battery. Hint: you can buy oscillator modules from Digi-Key for a few bucks each that have frequencies in various HF ham bands. They run on five volts and draw next to no power.

It gets down to 60 below zero Fahrenheit at 40,000 feet. An insulated package is necessary. A styrofoam beer cooler is light, cheap and a great insulator. If it's well sealed, things will stay quite toasty inside. Our lowest inside temps have been about 32 F. with a leaky package (lots of antennas sticking out through holes that weren't sealed with goop) to about 70 F. with very tight

packages. Our HIGHEST internal temp was 132 degrees F with a very tight package containing two transmitters that used a total of about ten watts from two battery packs. Remember, about 1/2 of all the power your transmitter draws stays inside as heat.

Put an audio beeper on the outside of the package. This will help you zero in on it if it lands in dense brush or woods. MAKE SURE THE BEEPER CAN BE TURNED OFF FROM THE OUTSIDE AND PUT PROMINENT INSTRUCTIONS FOR DOING SO ON THE OUTSIDE OF THE PACKAGE! We had a farmer find our package and take it back to the farmhouse. The beeping was so annoying that he put it in a metal granary to muffle the sound - and the signal we were tracking went to zip! Luckily, we had our address on the package.

PUT YOUR ADDRESS AND PHONE NUMBER ON THE OUTSIDE OF THE PACKAGE! Mention a $50.00 reward to the finder. So far, we've had one package found by duck hunters, who promptly switched the transmitter off. A second package wound up in a metal granary and a third had its single set of batteries die on the way down. (Remember what I said above about trial and error? These are some of the errors.) We got all three back because people found them and called us.

DON'T PUT AN ON/OFF SWITCH FOR THE TRANSMITTERS ON THE OUTSIDE. You WANT that signal to stay on so you can track it down!

Put "HARMLESS HAM RADIO TRANSMITTER" on the outside. After all, many people get concerned when a package bristling with antennas and going "BEEP BEEP BEEP" parachutes into their bean field.

The Federal Aviation Administration (FAA)

Unmanned Free Balloons are covered under section 101 of the Federal Aviation Regulations (FARs) along with Moored Balloons, Kites and Unmanned Rockets. Call your local control tower and they will mail you a copy of this section. Be prepared to play some telephone tag.

NOTIFYING THE FAA: The FAA wants to know about your flight at least one week in advance. If this is your first flight, call them a month in advance and talk things over with them. You will typically want to call the local "Center". Here in Wisconsin, we call Chicago center. If you can't find their number in the yellow pages, under Department of Transportation, try calling the local airport control tower. Be prepared to play some telephone tag. If other people in your area are flying balloons, ask them who they talk to and get the number from them. (See The Most Important Rule above.)

The FAA center will want to know when you intend to launch, where from (distance and direction from a town on a map), how high you expect to go and what direction you expect it to travel in. This last part can be hard to answer a week in advance, but generally it will follow the prevailing winds in your area. Here in Wisconsin, we always guess that the balloon will travel to the south east. You should also leave your number in case they have questions. If the

person you want to speak to isn't in, be sure to leave your name and number so they can get back to you.

24 hours before launch, you have to call your local Flight Service Station (FSS) and file a Notice to Airmen (NOTAM) giving the launch site, date and time, expected max altitude, expected rate of climb, expected direction of travel and landing spot. Your local FSS will have an 800 number. These people can also give you the winds aloft if you ask. Most pilots have no use for winds aloft over 30,000 feet, so tell the FSS that you're launching a balloon and ask for wind speed and direction for as high as they have data for. This will typically be about 50-60 thousand feet. Try to get the winds aloft for a reporting station to the west of you because 24 hours later, those winds will have likely moved to your location.

Call FSS the morning of the launch for current winds aloft. You can then get a pretty good idea of where it's going to go so your chase crew can position themselves accordingly.

Call the FSS as soon as you launch and give them your estimated climb speed. They probably won't need to hear anything else from you until the balloon goes above 60,000 feet. Once above 60k, you're in uncontrolled airspace and the FAA doesn't have to worry about you, so tell them when you pass 60k. Call them again when you descend below 60k and when you land.

The Launch Mechanics

First of all, you need to know how much gas to put into the balloon. What you want is enough gas to lift the balloon, your payload, radar reflector and parachute plus six ounces to one pound of extra lift. One pound of extra lift will give you about a 1000 foot per minute initial rate of climb. This will give you about a 2-3 hour ride to 100,000 feet. On a very calm day with slow winds aloft, you can put in six ounces of lift and get a longer trip up and more usable time at high altitude. Here's the WB9SBD method of achieving the desired amount of lift:

1: Construct a simple scale by suspending a strong rod from a rope tied around its middle.

2: Hang your payload, parachute, radar reflector, suspension cables and EVERYTHING else that will fly EXCEPT the balloon to one end of the rod.

3: Hang a one or two gallon plastic jug from the other end of the rod.

4: Fill the jug with water until the rod is balanced.

5: Add six ounces to one pound of extra weight to the payload end. (Hint: bread comes in one pound loaves - a WB9SBD discovery)

6: Add enough water to balance the rod again.

You now have a jug of water that weighs exactly as much as what your balloon will have to lift plus 6 to 16 ounces extra.

FILLING THE BALLOON

Fill the balloon indoors or in an area that's very well protected from the wind. You don't want to have to fight the wind because the balloon is very fragile and it will burst. Look for an old barn or airplane hanger. Be aware that the balloon will just barely clear a barn door when it's filled. A home garage door isn't high enough.

Spread a tarp on the ground to protect the balloon and spread the balloon out on the tarp. Handle the balloon with gloves.

Lay the gas tank next to the balloon. (It can't fall over if it's laying on the ground.) The regulator manufacturers recommend that you crack the valve slightly to blow out any dust before screwing on the regulator. Be aware that the threads on hydrogen tanks are "backwards" - you turn them counter clockwise to tighten them. (This gave me a bad moment on my first solo launch.) Run a hose from the regulator to your filling adaptor.

THE FILLING ADAPTOR: This is a piece of plastic tubing wide enough to be a snug fit into the open end of the balloon - 1.5 to 2 inches should do it. PVC pipe is fine. Somehow neck the other end of that tube down to the point where you can attach the hose from the gas tank to it. Also put a hook on the tube - perhaps by epoxying a piece of coat hanger wire to the side of the tube, near the end where the hose attaches. Now tie some twine from that hook to the jug.

Start the gas flowing and the balloon will start to inflate. Try not to get any air into the balloon, especially if you're using hydrogen! When the balloon lifts off the ground, the jug of water will keep it from going anywhere.

Continue to fill the balloon until the jug _just_ lifts off the floor. You now have enough gas in the balloon to lift your payload, parachute, radar reflector and connecting cords plus the extra six to sixteen ounces of water you put in the jug.

Sealing the balloon: using heavy twine, tie the balloon neck off tightly above the filling adaptor. Remove the adaptor. Tie the neck again, four to six inches below the first piece of twine. Tie your payload cord to the neck between these two pieces of twine. Now bend the neck over double and tie it again, twice. You will now have the neck of the balloon bent over double, with the payload suspension cord nestled in the bottom of the bend and the whole thing securely tied. You're ready to launch. (You can use tie-wraps instead of twine if you wish, but they're heavier.)

IS EVERYTHING TURNED ON?

Check now! Is your transmitter transmitting? Can you talk through the repeater? Is your GPS sending data? Is your audio beeper

beeping? Is your IDer IDing? It's best to have a checklist because you will feel _very_ foolish if you launch with something turned off! (Don't ask me how I know this.)

The Launch

Take the balloon outdoors with somebody else carrying the payload and parachute. Stretch the payload out downwind from the balloon, with somebody holding it. You can then just release the balloon or let it out hand over hand until you're holding the payload, then let go. It's best if people hold the payload, parachute and radar reflector to keep them from being dragged along the ground. Now call FSS and let them know you've launched.

The End

Oops, deadline's up and this has to go out. I remind you once again that this is version 1.0 of the BALLOON FAQ. I promise you that I've left things out and made mistakes. If you have additions, corrections or criticisms, please send them to:

djmullen@facstaff.wisc.edu e-mail
n9ltd@WD9ESU.EN53IE.WI packet
(608) 249-7130 Clear Skies BBS

177. AMSOFT-commercializing the net?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-29 07:26:27 UTC
From: bob@texas.net
Message-ID: <3gffv3$4o@empire.texas.net>
Source record: 25877

Hi;
I recieved this lovely little note from Pete deVolpi at amsoft. You read it and decide if this looks like a noncommercial entity publishing a noncommercial newsletter, or a business advertising on the 'net. Pete says it clearly--he thinks I'm attempting to restrain amsoft from doing trade!! Would he think or say something like that if he *WASN'T* doing trade???! You decide. I guess all further criticism of these guys best be done thru the offshore anon servers.... Imagine a thousand corporations just like this one, puking terabytes of commercial ads into the net. It'd be tough just to find the real traffic through the junk mail.

[recieved from amsoft@epix.net]

Date: Sat, 28 Jan 95 15:40:14 PST
From: Pete deVolpi <amsoft@epix.net>
Subject: RE: Complaint re: AMSOFT
To: Bob Scott <bob@texas.net>
Cc: postmaster@epix.net
X-UIDL: 791360215.000

>X-Sender: bob@texas.net
>X-Mailer: Windows Eudora Version 1.4.4
>Mime-Version: 1.0
>Content-Type: text/plain; charset="us-ascii"
>Date: Sat, 28 Jan 1995 13:50:18 -0600
>To: postmaster@epix.net
>From: bob@texas.net (Bob Scott)
>Subject: Complaint re: AMSOFT
>Cc: amsoft@epix.net
>X-UIDL: 791325571.001
>
>Hi;
> One of your users (AMSOFT) is posting offers for a "FREE HAM NEWSLETTER"
>on the rec.radio.amateur.* usenet groups that, in my opinion, constitute
>thinly veiled attempts to electronically market their CD-ROM product. I ask
>you to look into this and decide for yourselves if you wish to see several
>thousand businesses conducting themselves this way over the net in a year or
>two. I believe that if we [specifically you] allow this sort of
>comercialization of the internet, we will see many of the providers net-wide
>pull their resources away from the net community. Please put a stop to it.
>Thank you
>

The above paragraph borders on liabel based on your attempt to restrain AmSoft from doing trade. Unless you clearly know the LAW in this situation, I urge you contact you attorney. You should cease your conduct IMMEDIATLY!

(plus contents of a previous letter from bob@texas.net)

>I, for one, do not wish to see the internet become a medium which
>presents a non-hostile environment for those who wish to use it to
>spew forth electronic junk mail. Many other would-be advertisers
>have had their mailers crashed by angry replies to such electronic
>fecal matter. I wish the same on the hoseheads at AMSOFT.

BOB, your suggestion that persons should be asked to CRASH our MAILER
WITH ELECTRONIC FECAL MATTER will be met with a strong challenge here!

I would like to introduce you to my friend, K3RF. Robert Famiglio, Esq.
With the firm of Famiglio & Massinger, in Media, PA. Robert used to be
counsel to the ARRL and has 27 years of law practice. He has been our
company attorney for the last 3 years. And has represented AmSoft on both
copyright and cival litigation. I would hope that you have good sense and
can conduct yourself as a gentleman on the Internet. I hope this does not
require any further intervention.

I suggest you heed the warning I have given you and cease any further
harassment of employees of AmSoft and amsoft@epix.net.

Send E-mail to: amsoft@epix.net ,(Pete deVolpi, KC3TL)
Publisher of "The World of Ham Radio" Callsign CD-ROM
01/28/95 AD, 15:40:14 EST, Hams do it with frequency!

[end quote]

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

178. Re: Info wanted on off-the-shelf MIL-SPEC embedded controller boards

Newsgroup: rec.radio.amateur.space
Date: 1995-01-29 13:20:42 UTC
From: lacovara@ollie.jsc.nasa.gov
Message-ID: <lacovara.242.00586C65@ollie.jsc.nasa.gov>
Source record: 25923
Cross-posted to: comp.os.vxworks,comp.sys.m68k,alt.industrial.computing,sci.electronics,rec.radio.amateur.space

In article <3gap36$p9f@kocrsv08.delcoelect.com> aranders@kosepc01.delcoelect.com (Alan Anderson) writes:
>From: aranders@kosepc01.delcoelect.com (Alan Anderson)
>Subject: Re: Info wanted on off-the-shelf MIL-SPEC embedded controller boards
>Date: 27 Jan 1995 12:31:34 GMT

>Pardon the severely off-topic note, but I just had to respond.

>In <lacovara.227.0078D738@ollie.jsc.nasa.gov>,
>lacovara@ollie.jsc.nasa.gov (R. C. Lacovara) writes:
>>[note deleted, .sig retained]
>>Texas is the largest and grandest State of the United States. It retains the
> ^^^^^^^
>>right to fly its flag at the same height as that of the United States. Texas
>>must not be abbreviated, like NJ or RI: NJ fits between Houston and San
>>Antonio, with RI to spare. Al

>Watch out, Texas, or Alaska might split in two and make you the *third*
>largest state!

I believe that I have made this point in the past, but...

I'm not sure that actual Alaskans ever discuss dividing their state. But
Texans do not, even as a joke. Dem's fight'n words, pard'ner...

In any event, I also maintain that the apparent size of Alaska is due to a
consipriacy of map-makers and their projections.

Hop-along-Bob...

R. C. Lacovara, Ph. D.
GeoControl Systems voice: 713 333 2561
Houston, Texas 77058

Please be advised that there exists a probability P that
any opinions expressed above are not shared by GeoControl
or NASA, at least for 1-(1/Avogadro's number) < P < 1.

179. Re: WISP Problem?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-29 16:28:44 UTC
From: robinso1@iia.org
Message-ID: <3ggfns$7cm@ankh.iia.org>
Source record: 25878

Ronald G. Parsons (rparsons@bga.com) wrote:
: In article <3g9l13$2qb@ankh.iia.org>, robinso1@iia.org (Mark Robinson) wrote:

: > I am helping my father get on the packet satellites and we need some
: > help! We are running WISP with a Kantronics 9612. During a pass we can see
: > the raw data count increasing and view the raw data file, but nothing
: > displays on the screen as far as a directory of files or incoming data.
: > Thinking the TNC was at fault, we purchased an L.L. Grace DSP-12 and had
: > even less success. We get no raw data at all from the DSP-12. WISP has
: > been reloaded several times with no change. It acts like there is some
: > setting within WISP or the TNC's that prevents us from viewint the data on
: > the screen. Can anyone offer any suggestions?
: >
: > Thanks a million.
: >
: > Mark Robinson WB3JIS
: > robinso1@iia.org

: Just as a test, rather than running MSPE for the satellite, run a terminal
: emulator abd see if you see the packet data. What do you mean by "view the
: raw data file"?

: Ron W5RKN

180. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-01-29 19:45:58 UTC
From: miles@mail.utexas.edu
Message-ID: <miles-2901951345580001@slip-13-9.ots.utexas.edu>
Source record: 25879

Thanks to Dave for putting this information all together in one place!

> Balloons are sized by their weight in grams...The 800 gram size will lift
> 3-4 lbs to 100,000 feet. The 1200 gram size will take a full six
> pound payload to 100,000 feet.

Is this using hydrogen gas? How does helium compare in lift?

--

Miles Abernathy, N5KOB, University of Texas
P. O. Box 7580, Austin, Texas 78713 USA

181. Re: FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-01-29 19:59:00 UTC
From: emd@ham.island.net
Message-ID: <012995115923Rnf0.79b4@ham.island.net>
Source record: 25880
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.mi

bob@texas.net (Bob Scott) writes:

>In article <NEWTNews.18260.790755434.amsoft@amsoft.epix.net>, AMSOFT@EPIX.NET says:
>>
>>
>>The Jan 95 "[deleted]" CD-ROM newsletter is now
>>available. This CD-ROM offers more ham programs than any of the
>>others out there! blah blah blah bullcrap
>
>/\/\/\/\/\/\/\ Chainsaw inserted here /\/\/\/\/\/\/\/\/\/\
>
>I, for one, do not wish to see the internet become a medium which
>presents a non-hostile environment for those who wish to use it to
>spew forth electronic junk mail. Many other would-be advertisers
>have had their mailers crashed by angry replies to such electronic
>fecal matter. I wish the same on the hoseheads at AMSOFT.
>_
>___
>Bob Scott WY7O | Roses are red, Violets are blue
>bob@texas.net | I'm schizophrenic, And so am I

Bob, I agree absolutely on this issue. In addition to e-mailing the inappropriate advertiser, send e-mail to his postmaster. Sometimes it's merely a post by someone new to the net, and a polite message to his postmaster will reinforce the idea that this really is a no-no. Even if this isn't the case and the poster is an unrecalcitrant slime bag, it's only fair to warn the postmaster about what may be heading his systems way. Some postmasters really do welcome knowing what their users are up to.

--
emd@ham.island.net (Robert Smits VE7EMD Ladysmith BC)

182. Re: FREE HAM NEWSLETTER!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-29 20:13:03 UTC
From: alanb@sr.hp.com
Message-ID: <3ggssf$al8@canyon.sr.hp.com>
Source record: 25881
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

Dave Mullenix (djmullen@facstaff.wisc.edu) wrote:
: I recently posted a reply to the AMSOFT spam telling them that
: instead of asking for a copy of their thinly disguised advertisement
: for their CD-ROM, I was sending a copy of their message to their
: system administrator.
...
: To repeat (and clarify), the proper response to any kind of spamming
: and especially to a _commercial_ spam is to send a copy of the
: message to the miscreant's system administrator along with a note
: describing the problems they're causing.

So for us Usenet novices, how do you find out the address of their
system administrator?

AL N1AL

183. Re: WISP Problem?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-30 00:49:19 UTC
From: robinso1@iia.org
Message-ID: <3ghd2f$c83@ankh.iia.org>
Source record: 25882

Ronald G. Parsons (rparsons@bga.com) wrote:
: In article <3g9l13$2qb@ankh.iia.org>, robinso1@iia.org (Mark Robinson) wrote:

: > I am helping my father get on the packet satellites and we need some
: > help! We are running WISP with a Kantronics 9612. During a pass we can see
: > the raw data count increasing and view the raw data file, but nothing
: > displays on the screen as far as a directory of files or incoming data.
: > Thinking the TNC was at fault, we purchased an L.L. Grace DSP-12 and had
: > even less success. We get no raw data at all from the DSP-12. WISP has
: > been reloaded several times with no change. It acts like there is some
: > setting within WISP or the TNC's that prevents us from viewint the data on
: > the screen. Can anyone offer any suggestions?
: >
: > Thanks a million.
: >
: > Mark Robinson WB3JIS
: > robinso1@iia.org

: Just as a test, rather than running MSPE for the satellite, run a terminal
: emulator abd see if you see the packet data. What do you mean by "view the
: raw data file"?

: Ron W5RKN

184. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-01-30 16:23:53 UTC
From: zlau@arrl.org
Message-ID: <1995Jan30.162353.8133@arrl.org>
Source record: 25883

KE4ZV Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

: P3D will have a power budget about 10x that of AO-10 and AO-13,
: yet both of those satellites have been able to support FSK and
: SSTV operations, both high duty cycle modes. Limited FM operations
: should be possible on P3D without significantly impacting the
: power budget.

I believe such operations are only considered acceptable at low
ERP uplinks. On the other hand, getting a good downlink
on simple mobile whip requires a rather large amount of power
from the satellite. (3 dB polarization loss + 6 dB compared
to a simple CP yagi or helix).

People have complained a lot about how difficult it is to use
Oscar 13--signals aren't anywhere near as loud as they expect
them to be--they have to buy amplifiers and expensive antennas
to get OK but not great signals. I see the enhanced capabilities
as being enough to reward people for their investment--with the
new bird they ought to get pretty good results on SSB using exciter
power and small CP beam antennas.

True, if you wanted to use big antennas and/or amplifiers when the
satellite was lightly loaded FM would work (provided that you
reprogrammed the satellite so it wouldn't notch out the power
abusers). But, this isn't what most people are looking for
when they ask or think about "FM birds." The basic problem is
one of physics--when you are 100 times farther away you need
40 dB more gain/power. Light bulbs are much brighter when you
are within a foot as opposed to 100 ft away.

IF there is enough interest I could go into the actual numbers, but
this post is long enough...

--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

185. DOCTORED RS-15 KEPS

Newsgroup: rec.radio.amateur.space
Date: 1995-01-30 16:24:19 UTC
From: durham@lobby.ti.com
Message-ID: <3gj3rj$eak@superb.csc.ti.com>
Source record: 25884

Could someone post a set of RS-15 KEPS that have been doctored to make them accurate? I have seen some posted, but they wouldn't autoload into Instantrack (a group of information was missing.) Mine were working until I updated with the latest Amateur Keps from the net which had a 20 minute error for RS-15 (this overwrote the fudged Keps.)

Thanks, Ken K5MBV durham@lobby.ti.com

186. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-01-30 18:41:32 UTC
From: hanko@wv.mentorg.com
Message-ID: <3gjbss$3l9@hpbab.wv>
Source record: 25885
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

```
In article <3g71qe$hc5@crcnis3.unl.edu>, gbrown@unlinfo.unl.edu (gregory brown) writes:
|> I find your (AMSOFT) reply as innappropriate, perhaps more
|> innappropriate, than Bob's comments, and a substantial waste of
|> "bandwidth".
|>
|> Perhaps what Bob should have said is that it is contrary to Internet's
|> policy for Internet to be used as a vehicle for commercial
|> advertisement. That is a fact. While I can not say that the policy is
|> a legally binding one (that is for others to say), it certainly is
|> followed by the vast majority of commercial enterprises, and for good
|> reason. They realize that they run the risk of alienating potential
|> customers who may not appreciate such a blatant disregard for net
|> etiquette and policy. Like Bob. And like me. Mind you, it is no big
|> deal to me personally. But I don't like advertising here either, and
|> there are plenty of alternatives to AMSOFT.

I'm very curious where you discovered the information that indicates
it "... contrary to Internet's policy ...". As far as I know, there
IS no such entity as "Internet" to have a policy. Could you be a bit
more specific where you located this policy information? Any sort of
reference will do: ftp, email, http, whatever. I'd like to review
the policy you are talking about before making any further comments.

... Hank

--

Hank Oredson @ Mentor Graphics Library Operations
Internet : hank_oredson@mentorg.com "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM
```

187. Tracking Software

Newsgroup: rec.radio.amateur.space
Date: 1995-01-30 19:35:57 UTC
From: mark@PROBLEM_WITH_INEWS_DOMAIN_FILE
Message-ID: <1995Jan30.133557.39814@cc.usu.edu>
Source record: 25887

Howdy:

I am currently trying to put together an amateur station to
experiment in the S band. I looked at AMSAT's www for info
on tracking software. I would like a software package that
will control my antenna. It seems InstantTrack (PC) or
Microsat Groundstation (Linux) would be best.

Can anyone tell me how these packages interface to my
pedistal motors? Also, any opinions on these options
would really be appreciated.

73,
Mark

--

Markus Wilkinson "Stop Groveling"
Net: mark@gas.physics.usu.edu -Monty Python
Mail: P.O. Box 213, Hyde Park, UT 84318
Phone: 801/797-2629
Radio: KC7IHX

188. balloon listsever?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-30 19:38:47 UTC
From: biekert@phoenix.phoenix.net
Message-ID: <3gjf88$6j2@gryphon.phoenix.net>
Source record: 25886

I know there are some balloon launch listservers out there ... does anyone know the email address and how to subscribe?

Thanks, we are heading towards our 2nd balloon launch NOSTS-2 and would like to receive/share info with the others.

73 Bob

--
Robert E. Biekert KA5GLX Houston, Texas
Email: biekert@phoenix.phoenix.net
Clear Lake ARC http://www.phoenix.net/USERS/biekert/index.html

189. Re: FREE HAM NEWSLETTER!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-30 23:51:58 UTC
From: amsoft@epix.net
Message-ID: <3gju2u$eep@grape.epix.net>
Source record: 25888
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

>So for us Usenet novices, how do you find out the address of their
>system administrator?
>
The AmSoft system administrator of Ais postmaster@epix.net.

Epix is an open and uncensored system.

==========
A F R E E H A M N E W S L E T T E R A V A I L A B L E !!!
==========
A free newsletter from AmSoft, a leader in Amateur Radio CD-ROM's
is available by sending your E-Mail address to amsoft@epix.net.
The newsletter contains the entire listing of the January 95 CD-ROM
software library, and a one page description of the Amsoft CD-ROM.
==========

190. Re: FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 01:08:20 UTC
From: johnl@world.std.com
Message-ID: <D38wHw.AC7@world.std.com>
Source record: 25889
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3g9gr8$8hh@news.doit.wisc.edu>,
Dave Mullenix <djmullen@facstaff.wisc.edu> wrote:
>In article <NEWTNews.18260.790755434.amsoft@amsoft.epix.net>, AMSOFT@EPIX.NET says:
>>
>>If you would like to get a FREE newsletter about the JAN 1995 AmSoft
>>CD-ROM please send your Internet E-mail address to: amsoft@epix.net
>>
>I felt a letter to your system administrator was a better use of my
>time. I sent you a copy too. DON'T MAIL ME YOUR THINLY DISGUISED
>ADVERTISEMENT! Any chance you ever had of selling me anything vanished
>when you decided to spam the newsgroups with your commercial ads.
>
>Dave Mullenix, N9LTD

In my humble opinion, I think the AmSoft posting was appropriate.
It told me a new version of the product was available and where
to get more information. It was brief, didn't mention prices, and
was posted ONLY to appropriate (ham radio) groups. This is useful
information.

A few facts:

1. Years ago the Internet backbone was government funded and was only
supposed to be used for non-commercial purposes. That changed about
3 or 4 years ago. It is now commercial with no restrictions on
commercial use. I was the Internet contact for our site at the time
so I got all the official info and saw the significant jump in the
monthly bill.

2. Netiquite (sp?) is not law or a contract between network service
providers and users. It is only generally accepted guidelines
of the culture of the newsgroups. There are many newsgroups dedicated
to particular commercial products used for communication between
manufacturers and customers.

3. There are only a few big companies in the ham radio market. The
transceiver manufacturers, AEA, MFJ, and very few others are big
companies that can afford full page ads. Most of the others are
just one person at-home "basement" operations persued nights and
weekends in addition to regular full time jobs. Don't be fooled
by the fancy names like "XYZ Technologies" or "XYZ Research".
I know several people personally who fit into this category. Most
people feel more comfortable dealing with a big company instead
of a basement operation so it really is necessary to give the

the impression of being bigger.
We should thank and encourage these people for bringing us interesting products that larger companies wouldn't want to be bothered with due to tiny market and low margins.

If some one is truly abusive of the communication channel we should scold him and even ask the site administrator to revoke access. However this was not terrible abuse.

73,
John WB2OSZ

191. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 05:24:10 UTC
From: gbrown@unlinfo.unl.edu
Message-ID: <3gkhhq$2nc@crcnis3.unl.edu>
Source record: 25890
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

Hank Oredson (hanko@wv.mentorg.com) wrote:

: I'm very curious where you discovered the information that indicates
: it "... contrary to Internet's policy ...". As far as I know, there
: IS no such entity as "Internet" to have a policy. Could you be a bit
: more specific where you located this policy information? Any sort of
: reference will do: ftp, email, http, whatever. I'd like to review
: the policy you are talking about before making any further comments.

Any of a number of books at your local library or bookstore can fill you in on the history and evolution of what we now call the "Internet". It's original purpose was to connect Universities and other educational institutions for educational purposes. Major advances in this regard were made by the National Science Foundation. Commercial participation was once excluded or severely restricted. The intended purpose of the "creators" was educational advancement (much of it at taxpayers expense), not providing commercial enterprises with new ways to make money. Commercial connections are now common, the limitations on use much more flexible. There are no laws that I know of which prohibit advertising on the net, however the vast majority of commercial enterprises connected to the net honor the traditional "ban" on overt advertising and limit their use to their own research and development purposes and for business communications. They understand and respect the original purpose and intent of what has become the "Internet", and respect the wishes of the majority of users, as well as the wishes of those who have made "Internet" possible.

Virtually every major business from IBM to Intel to General Motors has Internet access. When was the last time you saw a commercial here from one of them?

Again, there are dozens of books that discuss Internet history and purpose. I've not done it, but I imagine you could also come up with lots of similar info if you do a Gopher search on some key relevant topics.

Feel free to let me know what you discover in your research.

Greg

192. Two-Line Orbital Element Sets (TLE541)

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 06:35:14 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.791534114@eel>
Source record: 25891

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #541 -
Alouette 1
1 00424U 62049A 95029.59102611 .00000044 00000-0 41396-4 0 751
2 00424 80.4634 61.6326 0021901 251.8718 108.0042 13.67831510613354
ATS 1
1 02608U 66110A 95008.75047509 -.00000171 00000-0 10000-3 0 9207
2 02608 14.6198 358.3316 0008624 51.7194 308.3730 1.00316591 19597
ATS 3
1 03029U 67111A 95027.26285243 -.00000122 00000-0 10000-3 0 3247
2 03029 14.7706 5.1697 0010832 271.1318 199.1240 1.00273012 99680
Cosmos 398
1 04966U 71016A 95030.25075030 .00137541 78888-5 20418-3 0 7248
2 04966 51.4285 120.3304 0790132 346.7651 11.3766 14.44704049804901
Starlette
1 07646U 75010A 95029.96001593 -.00000126 00000-0 13907-4 0 8605
2 07646 49.8315 338.4772 0206431 5.2453 355.0538 13.82188120 9220
LAGEOS
1 08820U 76039A 95029.53661981 .00000023 00000-0 10000-3 0 807
2 08820 109.8171 213.1113 0044061 236.4987 123.1457 6.38664267181600
ETS-2
1 09852U 77014A 95021.36158926 -.00000265 00000-0 10000-3 0 124
2 09852 12.5108 38.8934 0001207 45.3389 314.7309 1.00022966 12512
GOES 2
1 10061U 77048A 95019.29217156 .00000077 00000-0 10000-3 0 4826
2 10061 11.5664 43.1142 0004418 133.8748 270.7059 1.00275106 9280
IUE
1 10637U 78012A 95028.10281584 -.00000288 00000-0 00000+0 0 1055
2 10637 34.9483 91.2483 1316841 42.5136 341.0679 1.00267975 14868
GPS BI-01
1 10684U 78020A 95028.40979676 -.00000002 00000-0 10000-3 0 3359
2 10684 64.7679 38.8449 0061411 163.9679 196.2519 1.98069521109396
```

```
GPS BI-02
1 10893U 78047A 95027.92514288 .00000016 00000-0 10000-3 0 1453
2 10893 63.4106 277.2298 0219720 14.0331 346.6566 2.01627498122609
GOES 3
1 10953U 78062A 95028.37279764 .00000047 00000-0 10000-3 0 4473
2 10953 10.5440 45.7929 0003658 125.1611 274.7193 1.00265798 13981
SeaSat 1
1 10967U 78064A 95029.90255505 .00000012 00000-0 48401-4 0 3712
2 10967 108.0009 211.3587 0002071 240.5830 119.5105 14.38008915868959
GPS BI-03
1 11054U 78093A 95024.94608746 .00000009 00000-0 10000-3 0 2651
2 11054 63.0854 275.2072 0044355 177.0111 183.0975 1.93505252118806
Nimbus 7
1 11080U 78098A 95029.70708782 -.00000077 00000-0 -31057-4 0 4751
2 11080 99.0230 269.4886 0008219 245.2105 114.8193 13.83717060821405
GPS BI-04
1 11141U 78112A 95029.91025034 -.00000012 00000-0 00000+0 0 9584
2 11141 64.7689 40.4042 0048403 27.1848 333.1091 1.92895090 8150
GPS BI-05
1 11690U 80011A 95029.27959769 -.00000005 00000-0 10000-3 0 8805
2 11690 65.1054 40.4838 0145774 196.1130 163.4654 2.00561146124074
GPS BI-06
1 11783U 80032A 95024.17255950 .00000016 00000-0 10000-3 0 528
2 11783 62.5494 270.8092 0215544 29.3707 331.9017 2.03456595108450
GOES 5
1 12472U 81049A 95030.02012508 -.00000259 00000-0 10000-3 0 8342
2 12472 7.2654 55.6129 0005025 19.1792 340.9243 1.00322919 8045
Cosmos 1383
1 13301U 82066A 95029.82938024 .00000019 00000-0 47157-5 0 3769
2 13301 82.9322 143.5964 0027046 187.0826 172.9947 13.68062665628412
LandSat 4
1 13367U 82072A 95029.18732070 .00000028 00000-0 16112-4 0 6040
2 13367 98.1510 88.2701 0006544 278.0860 81.9596 14.57147478666972
IRAS
1 13777U 83004A 95029.52384775 .00000225 00000-0 18462-3 0 8550
2 13777 98.9669 220.7340 0013515 54.8944 305.3496 13.99218246282794
Cosmos 1447
1 13916U 83021A 95029.54421015 .00000015 00000-0 -71321-6 0 4757
2 13916 82.9442 204.2749 0038931 116.9108 243.6030 13.74319666594427
TDRS 1
1 13969U 83026B 95027.79052067 -.00000210 00000-0 10000-3 0 3921
2 13969 8.1212 48.7852 0004857 183.2315 264.5322 1.00270007 16306
GOES 6
1 14050U 83041A 95029.29615931 .00000054 00000-0 10000-3 0 3477
2 14050 6.0747 58.6703 0002669 347.4909 55.0008 1.00285412101131
OSCAR 10
1 14129U 83058B 95022.06637884 .00000188 00000-0 10000-3 0 3378
2 14129 26.6077 286.7997 6021742 245.9578 41.7464 2.05877067 59324
LandSat 5
1 14780U 84021A 95028.67439124 .00000020 00000-0 14407-4 0 1887
```

```
2 14780 98.1350 88.5704 0003765 289.9364 70.1429 14.57153784580317
UoSat 2
1 14781U 84021B 95029.53497394 .00000125 00000-0 28936-4 0 7713
2 14781 97.7802 38.5998 0010747 268.2209 91.7767 14.69298517583540
GPS BI-09
1 15039U 84059A 95025.15655316 -.00000000 00000-0 10000-3 0 2692
2 15039 64.4366 34.9405 0081937 16.8199 343.4916 1.92302494 77644
Cosmos 1574
1 15055U 84062A 95029.68244661 .00000007 00000-0 -83430-5 0 6761
2 15055 82.9570 258.0082 0027025 309.5611 50.3152 13.73616237531728
GPS BI-10
1 15271U 84097A 95021.50382063 .00000017 00000-0 00000+0 0 9096
2 15271 62.2407 271.1159 0153131 352.1505 7.6955 2.00592115 74985
Cosmos 1602
1 15331U 84105A 95029.99180776 .00000278 00000-0 29943-4 0 3647
2 15331 82.5330 225.3257 0020047 169.2476 190.9181 14.84546746558163
NOAA 9
1 15427U 84123A 95029.87375882 .00000035 00000-0 42750-4 0 1206
2 15427 99.0195 87.6473 0014528 303.1014 56.8758 14.13679843522285
GPS BI-11
1 16129U 85093A 94286.19804857 -.00000052 00000-0 10000-3 0 6297
2 16129 65.0476 40.6077 0151018 88.8628 272.8467 1.89472549 10319
Mir
1 16609U 86017A 95028.99805050 .00004342 00000-0 61833-4 0 9105
2 16609 51.6470 135.3231 0001326 185.7409 174.3567 15.58673967511198
SPOT 1
1 16613U 86019A 95028.74236385 .00000089 00000-0 62356-4 0 7758
2 16613 98.6663 103.1084 0001063 46.8297 313.2969 14.20053161148571
Cosmos 1766
1 16881U 86055A 95030.19439719 .00000224 00000-0 24286-4 0 2782
2 16881 82.5195 283.0496 0018168 193.9830 166.0884 14.83572318459110
EGP
1 16908U 86061A 95029.56253567 -.00000097 00000-0 00000+0 0 9726
2 16908 50.0085 108.4285 0011698 169.7714 190.3360 12.44411432 53570
NOAA 10
1 16969U 86073A 95029.96772439 .00000031 00000-0 31309-4 0 295
2 16969 98.5083 37.0404 0014181 29.7362 330.4620 14.24922710434795
MOS-1
1 17527U 87018A 95030.21955216 .00000132 00000-0 13014-3 0 1714
2 17527 99.0043 98.8405 0000950 53.9175 306.2071 13.94919152404592
GOES 7
1 17561U 87022A 95027.38040428 .00000083 00000-0 10000-3 0 2292
2 17561 2.0337 73.7218 0000342 310.5135 104.5686 1.00113720 12224
Kvant-1
1 17845U 87030A 95028.93392349 .00030362 00000-0 39205-3 0 1368
2 17845 51.6472 135.6467 0001546 178.0681 181.9752 15.58696706511295
DMSP B5D2-3
1 18123U 87053A 95029.93312519 -.00000011 00000-0 16660-4 0 8227
2 18123 98.7803 223.2207 0013298 254.6028 105.3678 14.15388452393163
RS-10/11
```

```
1 18129U 87054A 95029.81708464 .00000048 00000-0 36184-4 0 177
2 18129 82.9253 161.3378 0013081 111.5236 248.7310 13.72347864380992
Meteor 2-16
1 18312U 87068A 95029.50739775 .00000036 00000-0 19428-4 0 3702
2 18312 82.5513 32.3641 0011735 189.8551 170.2381 13.84048428376363
Meteor 2-17
1 18820U 88005A 95030.19893348 .00000042 00000-0 24004-4 0 5280
2 18820 82.5406 88.0272 0014992 263.5166 96.4281 13.84730971353775
DMSP B5D2-4
1 18822U 88006A 95029.52964128 -.00000017 00000-0 10672-4 0 8645
2 18822 98.4174 239.8420 0006830 41.5091 318.6603 14.23138996362791
Glonass 34
1 19163U 88043A 95028.19531007 -.00000013 00000-0 10000-3 0 9666
2 19163 65.0822 102.8805 0008014 146.0445 214.0577 2.13102390 51458
Glonass 36
1 19165U 88043C 95029.18982532 -.00000005 00000-0 10000-3 0 3622
2 19165 65.0600 102.8053 0002528 303.8023 56.2291 2.13102168 52091
METEOSAT 3
1 19215U 88051A 95023.35838204 -.00000255 00000-0 10000-3 0 776
2 19215 2.1962 70.8398 0001205 295.1780 171.3919 1.00265795 12127
AO-13
1 19216U 88051B 95029.26279784 .00000295 00000-0 10000-4 0 106
2 19216 57.6177 206.7230 7260071 0.7339 359.8140 2.09716671 19255
OKEAN 1
1 19274U 88056A 95023.07679334 .00000263 00000-0 29899-4 0 9776
2 19274 82.5125 29.9350 0020704 12.0518 348.1179 14.82280129353658
Meteor 3-2
1 19336U 88064A 95029.86339305 .00000051 00000-0 10000-3 0 3679
2 19336 82.5430 163.2916 0018231 59.1670 301.1248 13.16970989313095
Glonass 39
1 19503U 88085C 95027.34008723 -.00000065 00000-0 10000-3 0 2581
2 19503 65.7073 341.7914 0007932 173.9399 186.0713 2.13101897 49549
NOAA 11
1 19531U 88089A 95029.94471472 .00000022 00000-0 36968-4 0 9399
2 19531 99.1869 29.6119 0011062 214.8106 145.2343 14.13035913327164
TDRS 2
1 19548U 88091B 95027.59913230 .00000088 00000-0 00000+0 0 893
2 19548 1.4498 75.6466 0003092 225.4279 230.1113 1.00283627 10454
Glonass 40
1 19749U 89001A 95023.15555782 -.00000002 00000-0 10000-3 0 4683
2 19749 65.0352 102.6385 0006942 225.9094 134.0664 2.13101467 46964
Glonass 41
1 19750U 89001B 95023.21146582 -.00000003 00000-0 10000-3 0 3754
2 19750 65.0346 102.6649 0006608 232.1446 127.8333 2.13101905 46984
GPS BII-01
1 19802U 89013A 95024.59749225 -.00000004 00000-0 00000+0 0 180
2 19802 55.1609 130.9156 0030304 177.7823 182.2140 2.00568336 43499
Akebono
1 19822U 89016A 95030.17247939 .00005902 00000-0 34132-3 0 4262
2 19822 75.0772 53.9449 3789762 123.6541 278.4751 7.83009539126995
```

```
Meteor 2-18
1 19851U 89018A 95029.87808287 .00000036 00000-0 19112-4 0 3680
2 19851 82.5214 323.1794 0013938 318.2693 41.7402 13.84382280299055
MOP-1
1 19876U 89020B 95025.51037897 -.00000073 00000-0 10000-3 0 964
2 19876 0.9184 70.5847 0001627 190.9308 38.5604 1.00274831 1588
TDRS 3
1 19883U 89021B 95023.00077605 -.00000263 00000-0 00000+0 0 388
2 19883 0.0491 260.9861 0003085 48.7197 131.3664 1.00267285193995
GPS BII-02
1 20061U 89044A 95026.93147517 -.00000065 00000-0 10000-3 0 237
2 20061 54.5156 307.2856 0138452 212.5252 146.6555 2.00564335 41285
Nadezhda 1
1 20103U 89050A 95029.72684618 .00000038 00000-0 24391-4 0 2778
2 20103 82.9617 120.7129 0038505 20.4220 339.8464 13.73849291279411
GPS BII-03
1 20185U 89064A 95029.26332827 -.00000033 00000-0 10000-3 0 454
2 20185 54.9710 131.3106 0047101 315.5532 44.0670 2.00552795 39903
GMS 4
1 20217U 89070A 95029.47437762 -.00000298 00000-0 10000-3 0 1458
2 20217 0.7363 75.6834 0000333 144.9458 218.6201 1.00276184 20360
INTERCOSMOS 24
1 20261U 89080A 95029.61665236 .00000153 00000-0 37134-4 0 3834
2 20261 82.5911 232.9613 1243543 108.9046 265.0785 12.47215808243005
GPS BII-04
1 20302U 89085A 95025.80244173 .00000059 00000-0 00000+0 0 306
2 20302 53.4552 247.4396 0006324 178.2099 181.8282 2.00553827 38631
Meteor 3-3
1 20305U 89086A 95029.19721764 .00000044 00000-0 10000-3 0 2448
2 20305 82.5466 113.7373 0008987 99.3592 260.8521 13.04412579252365
COBE
1 20322U 89089A 95030.05753052 -.00000211 00000-0 -10701-3 0 929
2 20322 98.9627 48.1120 0009491 3.5807 356.5429 14.03440407266212
Kvant-2
1 20335U 89093A 95028.93392349 .00030362 00000-0 39205-3 0 1659
2 20335 51.6472 135.6467 0001546 178.0681 181.9752 15.58696706511215
GPS BII-05
1 20361U 89097A 95029.30879709 -.00000016 00000-0 00000+0 0 8900
2 20361 55.6742 73.2991 0077239 119.0247 241.8161 2.00560881 28188
SPOT 2
1 20436U 90005A 95029.21822125 .00000095 00000-0 65161-4 0 8892
2 20436 98.6949 105.0545 0001056 3.0477 357.0702 14.20045971260178
UO-14
1 20437U 90005B 95030.23016510 -.00000008 00000-0 13759-4 0 714
2 20437 98.5785 116.7862 0010090 245.9616 114.0500 14.29872767262031
UO-15
1 20438U 90005C 95030.20307594 -.00000013 00000-0 12071-4 0 8683
2 20438 98.5730 115.4564 0009312 249.0456 110.9733 14.29196567261937
PACSAT
1 20439U 90005D 95029.78733809 -.00000010 00000-0 13205-4 0 8695
```

```
2 20439 98.5882 117.8404 0010532 248.1918 111.8143 14.29926709261983
DO-17
1 20440U 90005E 95030.20926175 -.00000012 00000-0 12412-4 0 8697
2 20440 98.5894 118.6633 0010607 244.8407 115.1678 14.30067368262069
WO-18
1 20441U 90005F 95030.18880306 .00000007 00000-0 19801-4 0 8737
2 20441 98.5886 118.6256 0011118 245.7949 114.2070 14.30039762262064
LO-19
1 20442U 90005G 95030.22140151 .00000003 00000-0 18242-4 0 8699
2 20442 98.5870 118.9734 0011497 245.2987 114.7000 14.30139739262084
GPS BII-06
1 20452U 90008A 95029.70922703 .00000016 00000-0 00000+0 0 15
2 20452 54.0544 187.3150 0059246 80.3989 280.2304 2.00565140 36691
MOS-1B
1 20478U 90013A 95030.26531365 .00000091 00000-0 10000-3 0 7376
2 20478 99.0113 103.1163 0000870 76.8992 283.2266 13.94911048174301
DEBUT
1 20479U 90013B 95030.25717602 -.00000006 00000-0 57457-4 0 8686
2 20479 99.0687 144.6736 0542359 184.7982 174.7803 12.83328906233269
FO-20
1 20480U 90013C 95030.25279873 .00000019 00000-0 11434-3 0 7665
2 20480 99.0669 144.5321 0540208 185.3361 174.1822 12.83229967233250
MOS-1B R/B
1 20491U 90013D 95029.89281325 .00000731 00000-0 14382-2 0 983
2 20491 99.0204 194.9268 0470238 35.9345 327.2438 13.02995437236186
LACE
1 20496U 90015A 95029.84570644 .00001549 00000-0 54582-4 0 4991
2 20496 43.1018 199.0948 0010278 22.3014 337.8287 15.33999902276328
Nadezhda 2
1 20508U 90017A 95029.94594941 .00000028 00000-0 13790-4 0 2786
2 20508 82.9550 255.1374 0044978 331.1207 28.7461 13.73486709246673
OKEAN 2
1 20510U 90018A 95029.85328494 .00000233 00000-0 28771-4 0 3793
2 20510 82.5232 334.3286 0018747 162.0524 198.1337 14.78440334265157
INTELSAT-6
1 20523U 90021A 95020.79350694 -.00000236 00000-0 10000-3 0 4871
2 20523 0.0238 92.5455 0001130 249.5712 28.6825 1.00267189 10750
GPS BII-07
1 20533U 90025A 95029.11759979 -.00000064 00000-0 00000+0 0 72
2 20533 54.9021 307.7501 0046122 78.9687 281.5845 2.00557331 35455
PegSat
1 20546U 90028A 95029.52437217 .00004509 00000-0 98490-4 0 7497
2 20546 94.1169 65.8716 0070350 147.9676 212.5873 15.41660900267103
HST
1 20580U 90037B 95028.91473681 .00000414 00000-0 25934-4 0 5887
2 20580 28.4705 225.8470 0006437 292.5223 67.4726 14.90784685 63100
MACSAT 2
1 20608U 90043B 95029.87580535 .00000168 00000-0 26088-4 0 699
2 20608 89.9276 177.6513 0107921 20.0494 340.4912 14.64793080252462
Glonass 44
```

```
1 20619U 90045A 95026.80923982 -.00000062 00000-0 00000+0 0 1595
2 20619 65.3206 341.3029 0025107 211.1147 148.7219 2.13102531 36498
Glonass 45
1 20620U 90045B 95028.80508274 -.00000074 00000-0 00000+0 0 1708
2 20620 65.3103 341.2304 0007182 52.2692 307.7957 2.13102316 36579
Glonass 46
1 20621U 90045C 95029.80944626 -.00000076 00000-0 10000-3 0 7696
2 20621 65.3275 341.2509 0012241 195.6482 164.3106 2.13101592 36598
Kristall
1 20635U 90048A 95028.93392349 .00030362 00000-0 39205-3 0 9584
2 20635 51.6472 135.6467 0001546 178.0681 181.9752 15.58696706511184
ROSAT
1 20638U 90049A 95029.23350255 .00000251 00000-0 35507-4 0 3852
2 20638 52.9909 52.5310 0012643 43.5222 316.6783 15.07059580256169
Meteor 2-19
1 20670U 90057A 95029.91944520 .00000015 00000-0 18331-6 0 8699
2 20670 82.5417 28.3834 0014420 228.7992 131.1932 13.84169874231986
CRRES
1 20712U 90065A 95029.31150439 .00000042 00000-0 11219-3 0 380
2 20712 17.8963 94.6264 7193777 0.8566 0.0352 2.35353785 31213
GPS BII-08
1 20724U 90068A 95029.43769640 -.00000032 00000-0 10000-3 0 8788
2 20724 54.8532 128.9702 0116531 169.1568 191.1204 2.00560769 32880
Feng Yun1-2
1 20788U 90081A 95030.23786360 -.00000027 00000-0 10000-4 0 1925
2 20788 98.8217 47.9400 0014896 96.2603 264.0139 14.01338886225512
Meteor 2-20
1 20826U 90086A 95029.87671402 .00000087 00000-0 65506-4 0 8788
2 20826 82.5245 325.6075 0014024 125.2908 234.9558 13.83600487219101
GPS BII-09
1 20830U 90088A 95029.98730652 -.00000017 00000-0 00000+0 0 8866
2 20830 55.6164 71.2700 0065453 102.7071 258.0972 2.00567615 31975
GPS BIIA-10
1 20959U 90103A 95027.39625668 -.00000033 00000-0 00000+0 0 8070
2 20959 54.9973 130.9675 0092167 228.4219 130.7533 2.00557107 30516
DMSP B5D2-5
1 20978U 90105A 95029.89631146 .00000118 00000-0 58099-4 0 631
2 20978 98.6585 98.5006 0078312 216.8358 142.7430 14.32506714217511
Glonass 47
1 21006U 90110A 95020.92082789 .00000015 00000-0 00000+0 0 7332
2 21006 65.0073 102.0406 0059461 187.8561 172.1190 2.13102623 32079
Glonass 48
1 21007U 90110B 95028.61641127 -.00000009 00000-0 00000+0 0 8643
2 21007 65.0171 101.8577 0034921 181.3704 178.6672 2.13100901 32227
Glonass 49
1 21008U 90110C 95028.50575703 -.00000009 00000-0 00000+0 0 314
2 21008 65.0105 101.8042 0010037 275.3971 84.5430 2.13099146 32218
AO-21
1 21087U 91006A 95028.83525113 .00000094 00000-0 82657-4 0 5616
2 21087 82.9442 335.7102 0035119 172.5390 187.6295 13.74549949200584
```

```
RS-12/13
1 21089U 91007A 95029.48529122 .00000028 00000-0 13812-4 0 7723
2 21089 82.9198 203.6193 0028460 196.2512 163.7733 13.74053450199729
MOP-2
1 21140U 91015B 95028.65864066 -.00000030 00000-0 00000+0 0 8812
2 21140 0.0643 209.8131 0001314 96.4113 57.3307 1.00262084 16544
Nadezhda 3
1 21152U 91019A 95029.84582563 .00000052 00000-0 40381-4 0 748
2 21152 82.9265 159.3423 0041104 306.9418 52.7975 13.73513716194515
Glonass 50
1 21216U 91025A 95025.16216725 -.00000049 00000-0 00000+0 0 3784
2 21216 65.0671 341.0646 0011250 202.8883 157.0641 2.13103057 29673
Glonass 51
1 21217U 91025B 95029.92271014 -.00000076 00000-0 00000+0 0 7903
2 21217 65.0568 340.9025 0012672 240.9003 118.9654 2.13101327 29762
Glonass 52
1 21218U 91025C 95027.22000529 -.00000065 00000-0 10000-3 0 2689
2 21218 65.0431 340.9836 0007247 289.7998 70.1187 2.13102638 29719
GRO
1 21225U 91027B 95030.26455020 .00002418 00000-0 49033-4 0 1880
2 21225 28.4591 94.5619 0003234 262.4550 97.5676 15.42003599 92013
Meteor 3-4
1 21232U 91030A 95029.42533773 .00000050 00000-0 10000-3 0 7775
2 21232 82.5387 9.6433 0013715 347.4559 12.6222 13.16466230181124
NOAA 12
1 21263U 91032A 95029.97292805 .00000070 00000-0 50827-4 0 3588
2 21263 98.5954 57.5040 0012206 301.7389 58.2600 14.22488697192744
OKEAN 3
1 21397U 91039A 95030.01441418 .00000122 00000-0 14376-4 0 793
2 21397 82.5243 246.8162 0020946 239.5104 120.4041 14.76315367196979
GPS BIIA-11
1 21552U 91047A 95029.66572457 -.00000016 00000-0 10000-6 0 8201
2 21552 55.9127 68.9258 0063652 240.9054 118.5044 2.00573796 26156
ERS-1
1 21574U 91050A 95030.20599465 .00003312 00000-0 11556-2 0 766
2 21574 98.4997 106.4602 0002797 113.7192 246.4287 14.35957442185286
UO-22
1 21575U 91050B 95030.20801640 .00000030 00000-0 24489-4 0 5757
2 21575 98.4121 104.8473 0007802 340.1147 19.9729 14.36956477185688
ORBCOMM-X
1 21576U 91050C 95030.23866242 .00000036 00000-0 27067-4 0 6707
2 21576 98.4101 103.4597 0004304 354.3568 5.7566 14.36360020185604
TUBSAT-A
1 21577U 91050D 95030.17511388 .00000032 00000-0 25456-4 0 5692
2 21577 98.4107 103.8955 0007079 344.3615 15.7331 14.36470039185622
SARA
1 21578U 91050E 95030.22203974 .00000236 00000-0 90585-4 0 7691
2 21578 98.4264 108.5016 0005108 344.8003 15.3021 14.38933146185856
TDRS 4
1 21639U 91054B 95030.03314027 .00000067 00000-0 00000+0 0 8583
```

```
2 21639 0.0298 103.5119 0002796 234.1091 348.8597 1.00274451106843
Meteor 3-5
1 21655U 91056A 95029.85679346 .00000051 00000-0 10000-3 0 7755
2 21655 82.5509 316.6505 0013808 358.1164 1.9894 13.16836611166295
UARS
1 21701U 91063B 95029.91484496 -.00000016 00000-0 19741-4 0 6463
2 21701 56.9853 330.6112 0005654 98.4688 261.6987 14.96319276184873
DMSP B5D2-6
1 21798U 91082A 95029.97552098 .00000052 00000-0 51324-4 0 7126
2 21798 98.9618 41.3976 0011996 214.9659 145.0715 14.13862079163679
Glonass 53
1 21853U 92005A 95028.37055867 -.00000010 00000-0 10000-3 0 9761
2 21853 64.9588 101.4766 0007756 177.5046 182.5453 2.13102306 23349
Glonass 54
1 21854U 92005B 95029.13069492 -.00000005 00000-0 00000+0 0 823
2 21854 64.9636 101.4539 0015282 13.2295 346.8694 2.13103521 23349
Glonass 55
1 21855U 92005C 95028.25501066 -.00000011 00000-0 00000+0 0 809
2 21855 64.9616 101.4889 0008094 209.5427 150.4606 2.13102035 23314
JERS-1
1 21867U 92007A 95028.89763073 .00001432 00000-0 12421-3 0 4986
2 21867 97.7285 107.1013 0002835 100.7388 259.4152 14.98645961162181
GPS BIIA-12
1 21890U 92009A 95028.12903025 .00000057 00000-0 00000+0 0 6163
2 21890 54.0009 247.5074 0055822 174.7428 185.3715 2.00553193 21498
GPS BIIA-13
1 21930U 92019A 95028.33791763 -.00000068 00000-0 00000+0 0 5988
2 21930 55.6813 8.8403 0042944 177.1397 182.8957 2.00565816 20427
EUVE
1 21987U 92031A 95029.19590830 .00001113 00000-0 42221-4 0 3807
2 21987 28.4330 336.5688 0009930 284.1935 75.7552 15.19013125146797
SAMPEX
1 22012U 92038A 95029.83268601 .00001265 00000-0 10854-3 0 6024
2 22012 81.6742 291.7256 0119942 20.2152 340.3840 14.91243598140055
GPS BIIA-14
1 22014U 92039A 95028.37692209 .00000037 00000-0 00000+0 0 4965
2 22014 54.8556 188.7497 0092976 312.0984 47.0320 2.00550891 12265
Glonass 56
1 22056U 92047A 95029.56273257 -.00000076 00000-0 00000+0 0 9958
2 22056 64.9030 341.0573 0006565 281.3775 78.5427 2.13103021 19430
Glonass 57
1 22057U 92047B 95028.91903851 -.00000075 00000-0 00000+0 0 9956
2 22057 64.9132 341.1016 0009388 317.2450 42.6733 2.13102646 19391
Glonass 58
1 22058U 92047C 95029.79793326 -.00000077 00000-0 00000+0 0 9916
2 22058 64.9111 341.0790 0010507 270.1414 89.7290 2.13102894 19462
TOPEX
1 22076U 92052A 95029.45962287 -.00000038 00000-0 10000-3 0 8482
2 22076 66.0370 181.0144 0007289 269.2138 90.8039 12.80930383115471
KO-23
```

```
1 22077U 92052B 95029.80585512 -.00000037 00000-0 10000-3 0 4670
2 22077 66.0793 165.4976 0013094 234.8401 125.1387 12.86290266115936
S80/T
1 22078U 92052C 95029.84181432 -.00000037 00000-0 10000-3 0 4645
2 22078 66.0788 164.4673 0014687 224.1214 135.8633 12.86573182116010
GPS BIIA-15
1 22108U 92058A 95028.84003009 .00000051 00000-0 10000-3 0 5250
2 22108 54.2286 248.2116 0111975 144.8513 215.9291 2.00562949 17459
FREJA
1 22161U 92064A 95029.12435562 .00000051 00000-0 67422-4 0 4824
2 22161 62.9993 80.8946 0799002 334.8474 21.5567 13.21809276111667
LAGEOS II
1 22195U 92070B 95029.26511738 -.00000009 00000-0 10000-3 0 3757
2 22195 52.6751 310.8002 0137934 215.8678 143.2553 6.47293614 53581
GPS BIIA-16
1 22231U 92079A 95028.52502983 .00000036 00000-0 10000-3 0 5006
2 22231 54.7146 189.9614 0035969 288.7963 70.7743 2.00571225 16023
GPS BIIA-17
1 22275U 92089A 95026.67463921 .00000062 00000-0 00000+0 0 5281
2 22275 54.6455 187.5282 0050192 249.1560 110.3392 2.00554786 15390
TDRS 5
1 22314U 93003B 95025.48235895 -.00000283 00000-0 10000-3 0 4849
2 22314 1.5599 72.6063 0001382 182.1540 357.6716 1.00269238 7487
GPS BIIA-18
1 22446U 93007A 95029.73637229 -.00000064 00000-0 00000+0 0 5021
2 22446 54.5433 308.0312 0081706 350.1376 9.7275 2.00555218 14449
Glonass 59
1 22512U 93010A 95026.49480619 -.00000020 00000-0 00000+0 0 6784
2 22512 64.9770 101.3974 0010708 179.7636 180.2757 2.13101997 14870
Glonass 60
1 22513U 93010B 95028.78075426 -.00000007 00000-0 00000+0 0 7107
2 22513 64.9652 101.3356 0007683 201.3143 158.7064 2.13102240 15118
Glonass 61
1 22514U 93010C 95029.05515629 -.00000005 00000-0 00000+0 0 7033
2 22514 64.9762 101.3248 0021955 150.0705 210.1092 2.12589465 15125
ASTRO-D
1 22521U 93011A 95027.54507664 .00000548 00000-0 40553-4 0 3763
2 22521 31.1031 106.4702 0075323 125.9641 234.8000 14.93530417105663
UFO F1
1 22563U 93015A 95027.59277050 -.00000241 00000-0 10000-3 0 3866
2 22563 26.2482 296.4626 0007346 322.8282 240.8244 0.99254611 11065
GPS BIIA-19
1 22581U 93017A 95028.38345183 -.00000069 00000-0 00000+0 0 3985
2 22581 55.1792 8.4749 0053135 34.6370 325.6861 2.00556060 13471
ARSENE
1 22654U 93031B 95022.17402542 -.00000103 00000-0 00000+0 0 3042
2 22654 2.3034 89.6815 2905952 201.9970 142.2536 1.42203247 4316
GPS BIIA-20
1 22657U 93032A 95027.02629843 -.00000060 00000-0 00000+0 0 4335
2 22657 55.2118 8.3600 0066491 202.7231 156.9980 2.00572134 8770
```

```
RADCAL
1 22698U 93041A 95030.24234111 .00000038 00000-0 10739-4 0 3752
2 22698 89.5473 297.6954 0090378 166.4926 193.8722 14.21333507 82841
GPS BIIA-21
1 22700U 93042A 95029.48323252 .00000045 00000-0 00000+0 0 3805
2 22700 54.3915 248.9539 0034727 337.4994 22.4127 2.00561052 11621
NOAA-13
1 22739U 93050A 95029.86281168 .00000017 00000-0 34275-4 0 7222
2 22739 98.9748 338.6642 0009193 200.5131 159.5659 14.10921872 75935
GPS BIIA-22
1 22779U 93054A 95028.57166170 -.00000065 00000-0 10000-3 0 4299
2 22779 54.6788 308.0363 0021472 244.4655 115.3463 2.00558838 10368
Meteor 2-21
1 22782U 93055A 95029.45017087 .00000024 00000-0 88423-5 0 3765
2 22782 82.5468 27.1368 0021524 316.4986 43.4472 13.83024508 71369
UFO F2
1 22787U 93056A 95027.14379115 -.00000062 00000-0 00000+0 0 3827
2 22787 4.6391 324.4689 0003413 323.3005 321.1722 1.00271640 5334
SPOT 3
1 22823U 93061A 95029.96338684 -.00000039 00000-0 19080-5 0 3921
2 22823 98.6928 105.7602 0001785 126.6903 233.4438 14.20043671 69673
STELLA
1 22824U 93061B 95030.21326977 -.00000052 00000-0 -33009-5 0 3646
2 22824 98.6345 108.2569 0005501 270.1107 89.9444 14.27099616 70050
AO-27
1 22825U 93061C 95030.17348827 .00000024 00000-0 27744-4 0 3667
2 22825 98.6328 108.4519 0008013 269.7686 90.2573 14.27649986 70077
IO-26
1 22826U 93061D 95030.20784082 .00000016 00000-0 24096-4 0 3645
2 22826 98.6315 108.5577 0008524 271.4602 88.5587 14.27756492 70081
HEATHSAT
1 22827U 93061E 95030.24038779 -.00000005 00000-0 15682-4 0 4264
2 22827 98.6310 108.5414 0008536 256.3285 103.6942 14.27874680 70094
ITAMSAT
1 22828U 93061F 95030.23613549 .00000015 00000-0 23727-4 0 3435
2 22828 98.6291 108.6148 0009415 254.1138 105.9002 14.28084911 38185
PO-28
1 22829U 93061G 95030.24565307 .00000023 00000-0 26786-4 0 3588
2 22829 98.6303 108.6505 0009421 253.9759 106.0382 14.28061707 70109
KO-25
1 22830U 93061H 95029.74676726 -.00000088 00000-0 -18090-4 0 3730
2 22830 98.5332 102.9129 0010945 230.5450 129.4762 14.28079978 70035
GPS BIIA-23
1 22877U 93068A 95029.11814025 -.00000017 00000-0 00000+0 0 2394
2 22877 55.3525 69.3855 0034541 295.8539 63.8225 2.00558083 9261
METEOSAT 6
1 22912U 93073B 95029.04988461 -.00000098 00000-0 00000+0 0 2296
2 22912 0.3989 261.0513 0000941 135.3039 99.9408 1.00256078 2799
HST Array
1 22920U 90037C 95028.59433786 .00005735 00000-0 44541-3 0 2762
```

```
2 22920 28.4701 201.9893 0003219 119.8230 240.2656 14.99309780 63329
Meteor 3-6
1 22969U 94003A 95029.14423021 .00000051 00000-0 10000-3 0 1426
2 22969 82.5580 256.8269 0016889 61.0663 299.2150 13.16726701 48587
TUBSAT-B
1 22970U 94003B 95030.10414828 .00000051 00000-0 10000-3 0 1320
2 22970 82.5584 256.1046 0017990 57.4754 302.8100 13.16823789 48718
ODERACS E
1 22994U 94006F 95030.09587539 .00142429 19928-4 18921-3 0 2619
2 22994 56.9794 3.2641 0002656 100.3405 259.8063 16.06477085 56206
ODERACS F
1 22995U 94006G 95029.94267147 .00171716 24676-4 19363-3 0 3059
2 22995 56.9760 2.9964 0002709 35.4133 324.7121 16.08993773 56193
BREMSAT
1 22998U 94006H 95030.27383841 .00410912 10347-3 29590-3 0 3157
2 22998 56.9781 1.7709 0004442 74.2524 285.9108 16.15422148 40090
GPS BIIA-24
1 23027U 94016A 95029.69407231 -.00000077 00000-0 00000+0 0 1616
2 23027 55.0364 10.3167 0063398 198.0096 161.7656 2.00572925 6582
Glonass 62
1 23043U 94021A 95027.74452877 -.00000069 00000-0 00000+0 0 1576
2 23043 64.7874 341.5624 0005419 206.9794 152.9987 2.13102784 6219
Glonass 63
1 23044U 94021B 95028.56580152 -.00000073 00000-0 00000+0 0 1458
2 23044 64.7760 341.5315 0028596 207.6395 152.2009 2.13103096 6234
Glonass 64
1 23045U 94021C 95028.74167165 -.00000074 00000-0 00000+0 0 1545
2 23045 64.7713 341.5370 0010459 29.1250 330.9254 2.13102409 6234
GOES 8
1 23051U 94022A 95021.51045182 -.00000170 00000-0 00000+0 0 2598
2 23051 0.2970 263.7976 0005184 15.8949 293.4542 1.00256631 2482
MSTI 2
1 23101U 94028A 95028.51812163 .00004508 00000-0 85364-4 0 1439
2 23101 97.1040 223.8217 0013003 44.2923 315.9402 15.48787098 40898
STRV-1A
1 23125U 94034B 95027.87757013 .00003340 00000-0 76301-3 0 1086
2 23125 7.2950 88.5290 7274759 5.9421 359.5060 2.29564415 4428
STRV-1B
1 23126U 94034C 95029.57781526 .00003645 00000-0 70364-3 0 1094
2 23126 7.3093 87.7422 7279944 7.2924 359.3623 2.29209451 4519
Nadezhda 4
1 23179U 94041A 95029.63920570 .00000018 00000-0 20709-5 0 743
2 23179 82.9460 250.5355 0037759 91.4781 269.0686 13.75662588 27422
Glonass 65
1 23203U 94050A 95029.81798629 .00000071 00000-0 00000+0 0 1048
2 23203 64.8209 221.0722 0007901 133.0553 227.0377 2.13101857 3654
Glonass 66
1 23204U 94050B 95025.82891746 .00000115 00000-0 00000+0 0 1106
2 23204 64.8043 221.2460 0014936 353.9949 6.0225 2.13101627 3562
Glonass 67
```

```
1 23205U 94050C 95028.99655477 .00000084 00000-0 00000+0 0 1001
2 23205 64.8127 221.1164 0001681 6.9241 353.1120 2.13101958 3634
DMSP B5D2-7
1 23233U 94057A 95029.85093469 .00000019 00000-0 34423-4 0 2024
2 23233 98.8969 89.0787 0012572 165.7595 194.3938 14.12572888 21622
Soyuz TM-20
1 23288U 94063A 95028.93392349 .00030362 00000-0 39205-3 0 1089
2 23288 51.6472 135.6467 0001546 178.0681 181.9752 15.58696706511204
OKEAN 1-7
1 23317U 94066A 95029.84714238 .00000213 00000-0 29096-4 0 394
2 23317 82.5433 162.9363 0024607 281.9541 77.8906 14.73890446 16248
ELEKTRO
1 23327U 94069A 95021.88878223 -.00000100 00000-0 00000+0 0 451
2 23327 1.0848 265.4842 0002599 146.7352 105.0448 1.00272067 865
RESURS 1-3
1 23342U 94074A 95029.00408779 .00000045 00000-0 15648-4 0 514
2 23342 98.0356 91.0244 0001413 90.2920 269.8448 14.69692361 12593
Progress M-25
1 23348U 94075A 95028.93392349 .00030362 00000-0 39205-3 0 820
2 23348 51.6472 135.6467 0001546 178.0681 181.9752 15.58696706 12274
Glonass 68
1 23396U 94076A 95029.30935040 -.00000003 00000-0 00000+0 0 497
2 23396 64.8981 101.4060 0030643 191.2759 168.7103 2.13102302 1486
Glonass 69
1 23397U 94076B 95028.54619276 -.00000009 00000-0 00000+0 0 567
2 23397 64.8896 101.4483 0013237 318.9141 41.0404 2.13102290 1465
Glonass 70
1 23398U 94076C 95028.42942719 -.00000010 00000-0 00000+0 0 535
2 23398 64.8829 101.4363 0004125 277.2383 82.7686 2.13101986 1476
RS-15
1 23439U 94085A 95029.78512545 -.00000039 00000-0 10000-3 0 256
2 23439 64.8142 118.8199 0167992 285.7880 72.4579 11.27524749 3916
1994087D
1 23451U 94087D 95003.78734279 -.00000148 00000-0 00000+0 0 137
2 23451 1.4891 279.0776 0012780 4.3663 188.1127 1.00056574 60
NOAA 14
1 23455U 94089A 95029.87411480 .00000056 00000-0 55492-4 0 493
2 23455 98.8867 333.5839 0008576 224.7164 135.3317 14.11487477 4295
1994089B
1 23457U 94089B 95029.86993123 -.00000026 00000-0 10000-4 0 240
2 23457 98.8879 333.5908 0005692 317.5490 42.5256 14.11696830 4292
1994089C
1 23458U 94089C 95029.86489097 .00000075 00000-0 65163-4 0 200
2 23458 98.8846 333.5949 0005952 302.8431 57.2183 14.11930276 4290
1994087E
1 23459U 94087E 95029.72614347 .00001559 00000-0 78575-3 0 222
2 23459 47.2238 269.7565 7279473 8.2737 359.2435 2.26800005 797
1994087F
1 23460U 94087F 95029.78268268 .00000333 00000-0 42042-3 0 170
2 23460 47.2650 269.8837 7261493 8.1338 359.2421 2.26366475 725
```

```
1995001A
1 23461U 95001A 95016.52338854 .00000090 00000-0 00000+0 0 179
2 23461 0.0144 30.3098 0001893 178.1156 151.5512 1.00217956 113
1995001B
1 23462U 95001B 95026.18997967 .00016201 -54225-6 64488-3 0 157
2 23462 26.5357 21.8602 7558296 187.4766 145.2962 1.97630697 330
1995002A
1 23463U 95002A 95027.86861277 .00000011 00000-0 -38730-5 0 93
2 23463 82.9263 206.9713 0038163 281.1306 78.5559 13.71837814 507
1995002C
1 23464U 95002B 95029.91367776 .00000092 00000-0 86568-4 0 74
2 23464 82.9279 205.4668 0041159 276.3226 83.3244 13.71146613 778
1995002B
1 23465U 95002C 95026.84810738 -.00000262 00000-0 -30553-3 0 56
2 23465 82.9255 207.7285 0036104 282.9821 76.7302 13.71506210 348
1995002D
1 23466U 95002D 95028.52035804 .00009557 00000-0 10237-1 0 90
2 23466 82.9227 206.4856 0030674 276.4073 83.3594 13.73368653 594
1995003A
1 23467U 95003A 95030.28421282 -.00000447 00000-0 10000-3 0 53
2 23467 26.9552 322.1027 6708213 174.4083 227.8124 3.00354657 47
1995003B
1 23468U 95003B 95029.92198836 .00001706 00000-0 86884-3 0 50
2 23468 26.9391 321.3284 6702967 174.8936 199.2914 3.01388965 34
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

193. Alden WEFAX Move?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 07:11:47 UTC
From: rbates@nermal.santarosa.edu
Message-ID: <3gknrj$6vu@floyd.santarosa.edu>
Source record: 25892

This is similar to a post on another group. I understand that the WEFAX data that is on S3/17 is in the process of being moved to G4 Ku.

Does someone know what transponder (and subcarrier frequency) is used at the new location?

I also understand that there may be some encryption (boo). Anyone help out there too?

This has been used for personal use only by several of us. We will hate to lose that feed since it is convenient. Sounds like I will be getting an S band setup soon (1691 for GOES direct).

Thanks in advance.

Rick WA6NHC
rbates@nermal.santarosa.edu

194. Re: FREE HAM NEWSLETTER!

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 12:46:15 UTC
From: md@pstc3.pstc.brown.edu
Message-ID: <3glben$rg5@cat.cis.Brown.EDU>
Source record: 25893
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment

In article <3gju2u$eep@grape.epix.net>, Pete deVolpi <amsoft@epix.net> wrote:

>Epix is an open and uncensored system.

So, it would be okay for me to use epix.net to distribute
pornographic material. Or use it for net drug trade. Perhaps
post mass quantities of skin-head propaganda.

Nah, didn't think so. Epix.net is only uncensored to those views
you happen to agree with.

MD
--
-- Who needs looks when you have taste?
--
-- Your blood pressure just went up.

195. HRPT NOAA14 hot edges

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 14:13:36 UTC
From: roffer@rcf.rsmas.miami.edu
Message-ID: <3glgig$s3@umigw.miami.edu>
Source record: 25894

We are receiving NOAA 14 images and it seems that the edges
of the images are too warm. We had the same problem with
NOAA 11, but not with NOAA 9 imagery. Is anyone else having
these observations? More details: the last (or first) several
pixels appear warmer on the edge of the image. This makes
compositing images over a few day period not usable as the
warm edges contaminate the composite.

thanks

Mitch Roffer
roffer@rcf.rsmas.miami.edu

196. Re: HRPT NOAA14 hot edges

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 15:35:05 UTC
From: mark@PROBLEM_WITH_INEWS_DOMAIN_FILE
Message-ID: <1995Jan31.093506.39922@cc.usu.edu>
Source record: 25897

: We are receiving NOAA 14 images and it seems that the edges
: of the images are too warm. We had the same problem with
: NOAA 11, but not with NOAA 9 imagery. Is anyone else having
: these observations? More details: the last (or first) several
: pixels appear warmer on the edge of the image. This makes
: compositing images over a few day period not usable as the
: warm edges contaminate the composite.

: thanks

: Mitch Roffer
: roffer@rcf.rsmas.miami.edu

Are these HRPT pictures? I have a question about HRPT. My "Satellite
Experimenter's Handbook" notes HRPT frequencies at 1707.0 MHz (NOAA-11),
1698.0 MHz (NOAA-10), and 1707.0 MHz (NOAA-9), but it doesn't say
any thing else really. Is HRPT FM also? Is a 30-50 kHz IF strip
enough or do I need more bandwith?

Thanks in advance,
Mark

--

Markus Wilkinson "Stop Groveling"
Net: mark@gas.physics.usu.edu -Monty Python
Mail: P.O. Box 213, Hyde Park, UT 84318
Phone: 801/797-2629
Radio: KC7IHX

197. Re: Radio Astronomy info

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 17:22:26 UTC
From: bwiebe@julian.uwo.ca
Message-ID: <bwiebe.5.2F2E71D0@julian.uwo.ca>
Source record: 25895

The system that KE4ZV proposed looks very interesting and I know that I
for one would be interested in participating. My question is: Who would act
as the central gathering point for the data obtained? Keeping up with it
the volume of data produced would be no small job.
It's probably too early in the game to raise this point but I definitely
would like to see something like this get going.

Bret, VE4GLV

Bret Wiebe, VE4GLV
bwiebe@julian.uwo.ca
Graduate School of Library and Information Science
University of Western Ontario
- Very effective for gathering lengthy volumes

---

198. Re: balloon listsever?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 18:09:00 UTC
From: Iver@ksu.ksu.edu
Message-ID: <3glubs$338@abc.ksu.ksu.edu>
Source record: 25896

biekert@phoenix.phoenix.net (Robert Biekert) writes:

>I know there are some balloon launch listservers out there ... does
>anyone know the email address and how to subscribe?

>Thanks, we are heading towards our 2nd balloon launch NOSTS-2 and would
>like to receive/share info with the others.

>73 Bob

>--
> Robert E. Biekert KA5GLX Houston, Texas
> Email: biekert@phoenix.phoenix.net
> Clear Lake ARC http://www.phoenix.net/USERS/biekert/index.html

Yes, yes, yes.
Please post (or create) a ham balloon list serve

199. How much power do I need for AO13?

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 22:17:57 UTC
From: jthomas@hookup.net
Message-ID: <jthomas.16.0014EA1D@hookup.net>
Source record: 25959

How much power do I need to work AO13 mode B? AT present I have 25 watts and I can not hear myself.

Tnx de Jim VE3TEJ

jthomas@wat.hookup.net

200. Re: AMSOFT (&other) advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-01-31 23:06:48 UTC
From: dtburr@ix.netcom.com
Message-ID: <3gmfq8$k63@ixnews3.ix.netcom.com>
Source record: 25898
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In <3gjbss$3l9@hpbab.wv> hanko@wv.mentorg.com (Hank Oredson) writes:

>I'm very curious where you discovered the information that indicates
>it "... contrary to Internet's policy ...". As far as I know, there
>IS no such entity as "Internet" to have a policy. Could you be a bit
>more specific where you located this policy information? Any sort of
>reference will do: ftp, email, http, whatever. I'd like to review
>the policy you are talking about before making any further comments.
>
> ... Hank
>
I agree that people shouldn't throw the "policy" terminology around,
especially because the attarction of the NET is that there are really no
hard and fast rules....things happen or do not happen as a result of
"gentlemens' agreements"

Use of the NET for commercial purposes is tempting, but my opinion is
that the best thing to do is for "advertisers" to voluntarily restriuct
their postings to areas set up for it. Otherwise, can you imagine what
some "enterprising" commercial entities would do to these USENET groups?

I use the word "enterprising" in quotes...these people are the same ones
who believe that they are "clever" when they park in a handicapped
parking space and get away with it, and that the rest of us "saps" were
not thinking or not willing to take a risk. We could legislate against
boorish behavior on the NET, but lets hope it never goes that far.

And in case you are wondering, Hank, I'm not some fresh-faced college
kid cooped up in my dorm room pecking away at my computer
at 2:30am philosophizing about how the world SHOULD be (not that there
is anything wrong with that). I'm a professional marketer with a real
soft spot for advertisng and business.

DB

201. AO-27? Hello? (again)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 01:34:31 UTC
From: greg@core.rose.hp.com
Message-ID: <D3AsDK.Kt3@icon.rose.hp.com>
Source record: 25899

Sorry for the duplication, but my previous post on this expired locally before I could look for replies...

Has anyone heard AO-27 lately? My last contact with it was months ago. Assuming it's still alive, what, if any, is its operating schedule? Have the frequencies changed (145.850 up, 436.800 down)?

Thanks,

Greg KD6KGW

202. Re: FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 04:11:24 UTC
From: dmlee@cris.com
Message-ID: <3gn1lc$9j0@deathstar.cris.com>
Source record: 25900
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In <D38wHw.AC7@world.std.com>, johnl@world.std.com (John W Langner) writes:
>In article <3g9gr8$8hh@news.doit.wisc.edu>,
>Dave Mullenix <djmullen@facstaff.wisc.edu> wrote:
>In my humble opinion, I think the AmSoft posting was appropriate.
>It told me a new version of the product was available and where
>to get more information. It was brief, didn't mention prices, and
>was posted ONLY to appropriate (ham radio) groups. This is useful
>information.
>
>If some one is truly abusive of the communication channel we should
>scold him and even ask the site administrator to revoke access. However
>this was not terrible abuse.
>
>
>73,
>John WB2OSZ
****

Congratulations....This is the first LOGICAL and UNEMOTIONAL
response, I've seen to this issue. Actually, if more people
would have taken your attitude, and not started exploding
flame mail (do I get flamed for saying this?) it would have been
over quickly. As it is, AMSOFT has gotten TONS of free
advertising, and more word-of-mouth exposure than they ever
expected.

I kind of liked the touch on the part of one AMSOFT rep
who just recently put the WHOLE AD on each of his replies
as his signature file -- nice touch!

As a HAM who let his ticket expire 20 years ago (when I
got married and then joined the USMC), and is just this next
Tuesday re-taking the exam, I have just one question...

Do you guys behave this way on the air? My experience
has always been that of the courteous HAM. Helping the
Novice and "gently" correcting anothers mistake or
indescretion used to be the rule.

I, for one, would try expressing my opinion directly to
the miscreant, rather than e-mails to admins (which
obviously did nothing). I think the folks at AMSOFT might
have responded more favorably to a reasonably-voiced
complaint than to naked aggression. Also, be aware that

AMSOFT needs the HAMS to purchase their goods, so
I don't believe they'ed intentionally want to annoy us to
point of not buying their product(s).

-73-

****
// David M. Lee dmlee@cris.com
// or David_M._Lee@compuware.com
//
// Bill Gates for Ferringi Grand Nagus in 1996!!
// Rule of acquisition #874 -- "Make 'em pay for the software --
// AND the bug fix"

203. Re: FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 05:19:54 UTC
From: jeffrey@math.hawaii.edu
Message-ID: <D3B2t6.87z@news.hawaii.edu>
Source record: 25901
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.antenna

johnl@world.std.com (John W Langner) writes:
>
>

Why does world.std.com sound so familiar? Wasn't someone at that
site also posting ads on the rec.radio groups? This might explain
your `humble opinion':

>In my humble opinion, I think the AmSoft posting was appropriate.
>It told me a new version of the product was available and where
>to get more information. It was brief, didn't mention prices, and
>was posted ONLY to appropriate (ham radio) groups. This is useful
>information.

It was posted to *all* the radio groups many times. If only one post
to .swap had been made no one probably would have minded.

>A few facts:
>
>1. Years ago the Internet backbone was government funded and was only
> supposed to be used for non-commercial purposes. That changed about
> 3 or 4 years ago. It is now commercial with no restrictions on
> commercial use. I was the Internet contact for our site at the time
> so I got all the official info and saw the significant jump in the
> monthly bill.

A very large portion of is is still government funded: State taxpayers
foot the bill for the .edu sites (millions of dollars per year here
to run 5 unix mainframes for 45,000 students/faculty and to pay the
long DX telephone bills to all points in the Pacific). Keep in mind
that a good portion of the traffic that has originated at non-.edu
sites gets passed through those sites. If the state government-funded
.edu sites each pulled their plug Internet would probably cease to exist.
Thus, your `fact' isn't quite factual.

73 from warm and sunny Hawaii,
Jeff NH6IL

204. Need source for 39mhz crystals for FM narrowband receiver design

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 06:13:00 UTC
From: v064mb9k@ubvms.cc.buffalo.edu
Message-ID: <D3B561.527@acsu.buffalo.edu>
Source record: 25902

I am currently designing a narrowband receiver based on
a motorolla chip to tune in frequencies of 49.6 mHz. The recommended
circuit diagram calls for a 39mHz crystal, a component that I have not been
able to find after checking many electronic component distributors. Can anyone
direct me to a source. I would appreciate any help.

Neil Gandler

205. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 13:13:06 UTC
From: ddabay@ruacad.ac.runet.edu
Message-ID: <D3Bopu.Dvt@ruacad.ac.runet.edu>
Source record: 25916
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3gkhhq$2nc@crcnis3.unl.edu> gbrown@unlinfo.unl.edu (gregory brown) writes:
>Hank Oredson (hanko@wv.mentorg.com) wrote:
>
>: I'm very curious where you discovered the information that indicates
>: it "... contrary to Internet's policy ...". As far as I know, there
>: IS no such entity as "Internet" to have a policy. Could you be a bit
>: more specific where you located this policy information? Any sort of
>: reference will do: ftp, email, http, whatever. I'd like to review
>: the policy you are talking about before making any further comments.

This is the more current thinking, probably closest to fact.

>
>
>Any of a number of books at your local library or bookstore can fill
>you in on the history and evolution of what we now call the
>"Internet". It's original purpose was to connect Universities and
>other educational institutions for educational purposes.

I must disagree herre, don't always believe what you read!! Just because it
is in print does NOT mean that it is in the least bit accurate. In the early
70's the "Internet" as you call it was born out of DARPA, Usenet, and several
other "local" networks. It's original purpose, no matter what is claimed
after the fact, was NOT to connect Universities. It's main purpose was to
allow exchange of information between large gov't agencies and their sub-
contractors, typically universities and such. Don't confuse the facts.

>Major
>advances in this regard were made by the National Science Foundation.
>Commercial participation was once excluded or severely restricted.

I agree with the first inthat the NSF funded research and development along
with others. However commercial participation has always been an important
part of the net...just ask BBN, DEC, etc about this. Ithink the difference
here is that it was better self-controlled... (opinion mine)

>The intended purpose of the "creators" was educational advancement
>(much of it at taxpayers expense), not providing commercial
>enterprises with new ways to make money.

BZZZZTTT! Wrong again read above...it was a gov't funded program...

>Commercial connections are
>now common, the limitations on use much more flexible. There are no
>laws that I know of which prohibit advertising on the net, however the

>vast majority of commercial enterprises connected to the net honor the
>traditional "ban" on overt advertising and limit their use to their
>own research and development purposes and for business communications.

See the above on peer pressure, self control, etc..

>They understand and respect the original purpose and intent of what
>has become the "Internet", and respect the wishes of the majority of
>users, as well as the wishes of those who have made "Internet"
>possible.

Again youmiss the point, read some of teh comp.sys groups and see how well
the big vendors "respect the wishes of the majority". Those companies use
the net as their own....whether you agree or not, that is the fact...

Internet is/was made possible by large donations of money, time and hardware
from big business and the government. Not by some collective of users or
universities. If we waited for academia to decide how to do things we would
still be waiting for an 8bit computer... Keep this inmind as things move
on and we "bite the hand that feeds us" turning the net over to the MCI's,
sprint's etc of the world.

>
>Virtually every major business from IBM to Intel to General Motors has
>Internet access. When was the last time you saw a commercial here
>from one of them?

Read the correct groups and you will see in some way shape or form either
blatant or subtle adverts from them all. They are not going to miss out
on a chance to target their market. How better to beat demographics?? If it
isn't happening in "your" group, IT WILL!

>
>Again, there are dozens of books that discuss Internet history and
>purpose. I've not done it, but I imagine you could also come up with
>lots of similar info if you do a Gopher search on some key relevant
>topics.

Check out your sources!!

>
>Feel free to let me know what you discover in your research.

Me too!!

dave
--
Dave Dabay Telecommunications Engineer Supervisor KD3PC
Radford University Computer Services Internet: ddabay@esprit.runet.edu

206. Re: How much power do I need for AO13?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 13:36:19 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0102950736190001@ivy-b3.ip.realtime.net>
Source record: 25917

In article <jthomas.16.0014EA1D@hookup.net>, jthomas@hookup.net (James E. Thomas) wrote:

> How much power do I need to work AO13 mode B? AT present I have 25 watts and
> I can not hear myself.
>
> Tnx de Jim VE3TEJ

What antennas are you using? A preamp? Are you listening on SSB or CW?
Near appogee or perigee?

25 watts should be enough to at least hear you signal, perhaps weakly.

Ron W5RKN

207. Re: How much power do I need for AO13?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 14:46:16 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <D3Bt14.31D@murdoch.acc.Virginia.EDU>
Source record: 25903

The key is not "power" as in watts out of the transmitter, but "power" as in EIRP (effective isotropic radiated power) as in directed power out of the antenna. With a good uplink beam, like the 40 el KLM circularly polarized crossed Yagi setup (15+ dB gain), 25 watts will easily get you into the bird under good conditions (squint/off point angle <15 deg. or so). For less optimal conditions, you may want up to 100 watts, even with the 40 element beam. I suggest that you get the "Beginners Guide to Oscar-13" from AMSAT (850 Sligo Ave., Suite 600, Silver Spring, MD 20910). It will answer this question, and many others in far more detail.

-73's es CU on AO-13 de WB4QKT

208. Re: AMSOFT advertising on

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 16:05:07 UTC
From: clint.bradford@ectech.com
Message-ID: <950201120241614@ectech.com>
Source record: 25904

GREGORY>>...it is contrary to Internet's policy for Internet to be used as a vehicle for commercial advertisement...

True or not, commercialism abounds in the Internet. And it cannot be stopped.

I found AMSOFT's ad - or press release - enlightening and appropriate for this Conference.

I would be disgruntled and offended, however, if I were to be subjected to Press Releases touting X-Rated magazines, marital aids, or any other topic NOT related to the current Conference.

This country's business news is mostly Press Releases. We need this information. We can save or delete what we want - and we do not want to be censored in any manner, shape, or form (another Internet goal).

209. Elements via ftp?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 16:15:14 UTC
From: ppp@netcom.com
Message-ID: <pppD3Bx5E.D6u@netcom.com>
Source record: 25905

I have a userid (or did at one time) the Nasa BBS to get 2 line orbital elements. Does anyone know if this BBS is accessible via the internet? Anywhere else where one can get fairly recent elements via ftp?
Thanks.

--
ppp@netcom.com

210. STS-63 Element_Set (95033.300)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 19:30:45 UTC
From: elements-request@alsys.com
Message-ID: <STS-63.95033.300@alsys.com>
Source record: 25906
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-63
1 99963U 95033.30079147 .00130549 00000-0 12842-3 0 35
2 99963 51.6490 114.5633 0080613 5.0856 355.0928 16.04842332 25

Satellite: STS-63
Catalog number: 99963
Epoch time: 95033.30079147 = (02-Feb-95 07:13:08.38 UTC)
Element set: 003
Inclination: 51.6490 deg
RA of node: 114.5633 deg Space Shuttle Flight STS-63
Eccentricity: .0080613 Prelaunch element set JSC-003
Arg of perigee: 5.0856 deg Launch: 02-Feb-95 05:47:49 UTC
Mean anomaly: 355.0928 deg
Mean motion: 16.04842332 rev/day Gil Carman
Decay rate: 1.30549e-03 rev/day^2 NASA Johnson Space Center
Epoch rev: 2

This data is also available on the Shuttle Elements Mailing List. For
more information about the list, send a message to with only the command
"info elements" in the body of your message to "listserv@alsys.com".

--
--
Gary Morris Internet: garym@thomsoft.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

211. Re: FREE HAM NEWSLETTER!

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 20:04:16 UTC
From: gcouger@jsun.okstate.edu
Message-ID: <3gopg0$v73@bubba.ucc.okstate.edu>
Source record: 25907
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

```
>: I recently posted a reply to the AMSOFT spam telling them that
>: instead of asking for a copy of their thinly disguised advertisement
>: for their CD-ROM, I was sending a copy of their message to their
>: system administrator.
>
>So for us Usenet novices, how do you find out the address of their
>system administrator?

Send it to postmaster@the.same.address.as.the.sender.of.the.post.

Gordon AB5DG

Gordon Couger
Biosystems & Agricultural Engineering
Oklahoma State University
114 Ag Hall, Stillwater, OK 74074
gcouger@olesun.agen.okstate.edu 405-744-9763 day 624-2855 evenings
I do not speak for my employer
```

212. Shuttle-Mir flyby schedule

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 21:15:28 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3gotlg$6gc@news.doit.wisc.edu>
Source record: 25908

Here's a description of the Shuttle-Mir rendezvous and fly around. It's
from the STS-63 press kit, STS63KIT.ZIP. This is available from
NASA Spacelink. FTP or HTTP to: spacelink.msfc.nasa.gov

Note that all the fun takes place Sunday afternoon Eastern Time.
Should be some great live TV! I guess this means that Sunday
morning would be the best time to look for the two spacecraft flying
in formation.

Ti-Burn, Mir 3/10:55 11:55 AM, Feb. 5 EST
V-Bar Arrival, Mir 3/12:35 1:26 PM, Feb. 5 EST

SHUTTLE MIR RENDEZVOUS AND FLY AROUND

STS-63's primary objective is to rendezvous with the
Russian Space Station Mir in a dress rehearsal of
cooperative missions that will follow later in 1995. The
approach will serve to test the systems and techniques
currently planned for the first Shuttle docking mission,
STS-71, currently scheduled for June 1995.

The rendezvous sequence will begin about nine hours
into the mission when a reaction control system jet firing
adjusts the rate at which Discovery is closing on Mir. Over
the next few days, additional burns will gradually bring
Discovery to within eight nautical miles behind Mir. At
this point, the Ti burn is fired and the final phase of the
rendezvous begins. Discovery will close the final 8
nautical miles to Mir during the next one-and-a-half-hour
orbit. At this point, the Shuttle's rendezvous radar system
begins providing range and closing rate information to the
crew.

The manual phase of the operation begins just after
Discovery passes about a half-mile below Mir when Commander
Jim Wetherbee takes the controls at a distance of about
2,000 feet. Wetherbee will be flying the Shuttle from the
aft flight deck controls as Discovery circles up to
intersect the velocity vector of Mir. The velocity vector,
also known as the V-Bar, is an imaginary line drawn along
Mir's direction of travel.

Wetherbee will stop Discovery's approach when the
Shuttle reaches a point about 400 feet directly in front of
Mir.

After the Shuttle moves to within 1,000 feet of Mir, Discovery's steering jets will be fired in a mode called "Low Z". This approach uses braking jets that are slightly offset to the Mir rather than steering jets pointed directly at the Station, thus avoiding contaminating or damaging the Station. Also, as Discovery reaches close proximity to Mir, the Trajectory Control Sensor, a laser ranging device mounted in the payload bay, will supplement the navigation information by supplying data on the Shuttle's range and closing rate to Mir.

Discovery will maintain its position 400 feet in front of Mir until Flight Control teams in Russia give a "go" for the Shuttle's approach. Wetherbee will then slowly fly the Orbiter from 400 feet to a point about 30 feet from Mir, aligning with the Station's docking module in a rehearsal of a docking approach planned for Shuttle mission STS-71. To assist with the alignment, Wetherbee will watch the approach from a centerline television camera, mounted in the upper window of the Spacehab module, on a monitor in the aft flight deck. When within about 200 feet of Mir, Discovery will begin air-to-air communications with cosmonauts on Mir using a VHF radio system.

At 30 feet from the docking port, Wetherbee will again stationkeep, rehearsing a maneuver to orient Discovery properly to the docking port, before slowly backing the Orbiter away from Mir.

When Discovery is again about 400 feet from Mir, Wetherbee will begin a slow fly-around, maintaining a distance of about 450 feet from Mir. Discovery will completely circle Mir once over the next 45 minutes.

The two spacecraft will begin the separation sequence when Discovery reaches a point about 450 feet above Mir for the second time. The Orbiter will then fire its steering jets in a maneuver that will put it on a course to eventually take it ahead of Mir as Discovery opens the distance between the two spacecraft with each orbit. Throughout the operation, Discovery's crew will use video and still cameras to document the exterior of the Mir.

The rendezvous will validate a number of flight techniques that will be employed on subsequent docking missions. These techniques include the use of precision flying as the Shuttle closes in on Mir, validating the use of a centerline camera for targeting the docking mechanism on Mir, verifying the absence of plume effects, demonstrating VHF radio communications, inspecting the Mir complex through photographs and video, and demonstrating the joint operations between Mission Control Centers in Houston, and Kaliningrad, Russia.

While the fly-around will provide valuable information for flight designers planning the docking missions, the completion of these objectives is not mandatory in preparation for the STS-71 mission.

213. Re: Elements via ftp?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 21:22:09 UTC
From: spahr@csn.net
Message-ID: <3gou22$hc@news-2.csn.net>
Source record: 25909

Peter Pauly (ppp@netcom.com) wrote:
: I have a userid (or did at one time) the Nasa BBS to get 2 line orbital
: elements. Does anyone know if this BBS is accessible via the internet?
: Anywhere else where one can get fairly recent elements via ftp?
: Thanks.

: --
: ppp@netcom.com

try archive.afit.af.mil pub/space

73,Sherm
wb0pcm@amsat.org

214. Re: How much power do I need for AO13?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 21:24:17 UTC
From: little@iamu.chi.dec.com
Message-ID: <3gou61$36m@jac.zko.dec.com>
Source record: 25910

In article <jthomas.16.0014EA1D@hookup.net>, jthomas@hookup.net (James E. Thomas) writes:
|>How much power do I need to work AO13 mode B? AT present I have 25 watts and
|>I can not hear myself.

I think the recommended EIRP is 500 watts. So you need a power gain of 20
or roughly a 13 dBi antenna. Most of the circularly polarized (CP)
cross yagis on the market should give you that much gain on 70 cm. Make sure
your polarization is correct if you have CP antennas. Also, conditions
may not be very good at the moment or the off pointing (squint) angle
may have been high. Can you describe your station in a little more
detail and also provide an example of when you tried to use AO-13?

73,
Todd
N9MWB

215. Re: Elements via ftp?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 21:35:14 UTC
From: mrsmith@netcom.com
Message-ID: <mrsmithD3CByr.IwH@netcom.com>
Source record: 25911

Peter Pauly (ppp@netcom.com) wrote:
: I have a userid (or did at one time) the Nasa BBS to get 2 line orbital
: elements. Does anyone know if this BBS is accessible via the internet?
: Anywhere else where one can get fairly recent elements via ftp?
: Thanks.

: --
: ppp@netcom.com

Try archive.afit.af.mil in the directory pub/space. The latest set is
called tle.new, usually updated every couple of days. There are also
specific sets of tle's, such as amateur.tle and weather.tle.

--
Russell Smith
mrsmith@netcom.com

216. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 21:56:22 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <3gp026$lqe@kocrsv08.delcoelect.com>
Source record: 25912
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

gbrown@unlinfo.unl.edu (gregory brown) writes:
>Virtually every major business from IBM to Intel to General Motors has
>Internet access. When was the last time you saw a commercial here
>from one of them?

ddabay@ruacad.ac.runet.edu (Dave Dabay) writes:
>Read the correct groups and you will see in some way shape or form either
>blatant or subtle adverts from them all. They are not going to miss out
>on a chance to target their market. How better to beat demographics?? If it
>isn't happening in "your" group, IT WILL!

I think it won't.

Most "major businesses" like IBM and General Motors have a Public
Relations department for such "market targeting." There are usually
specific personnel policies to discourage individual employees from
engaging in "public advertisement" of the company. Ever see a .sig
with a disclaimer about not speaking for one's employer? :-)

"Corporate entities" are usually pretty paranoid about offending
people, and advertising in newsgroups tends to offend many people.

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson | Ignorance can be fixed,
(I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.

217. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-01 23:07:03 UTC
From: JRHODES@ins.infonet.net
Message-ID: <3gp46n$gvs@insosf1.infonet.net>
Source record: 25924
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3gjbss$3l9@hpbab.wv>, hanko@wv.mentorg.com says...
>
>In article <3g71qe$hc5@crcnis3.unl.edu>, gbrown@unlinfo.unl.edu (gregory
brown) writes:
>|> I find your (AMSOFT) reply as innappropriate, perhaps more
>|> innappropriate, than Bob's comments, and a substantial waste of
>|> "bandwidth".
>|>
>|> Perhaps what Bob should have said is that it is contrary to
Internet's
>|> policy for Internet to be used as a vehicle for commercial
>|> advertisement. That is a fact. While I can not say that the policy
is
>|> a legally binding one (that is for others to say), it certainly is
>|> followed by the vast majority of commercial enterprises, and for good
>|> reason. They realize that they run the risk of alienating potential
>|> customers who may not appreciate such a blatant disregard for net
>|> etiquette and policy. Like Bob. And like me. Mind you, it is no big
>|> deal to me personally. But I don't like advertising here either, and
>|> there are plenty of alternatives to AMSOFT.
>
>I'm very curious where you discovered the information that indicates
>it "... contrary to Internet's policy ...". As far as I know, there
>IS no such entity as "Internet" to have a policy. Could you be a bit
>more specific where you located this policy information? Any sort of
>reference will do: ftp, email, http, whatever. I'd like to review
>the policy you are talking about before making any further comments.
>
> ... Hank
>
>
It seems to me that where the trouble comes is when the ads are sent to
those
who access the net through educatoinal or other networks that are not
open to
commercial traffic.

kc0xu jrhodes@ins.infonet.net

218. Re: Radio Astronomy info

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 03:25:36 UTC
From: wiselace@cix.compulink.co.uk
Message-ID: <D3Cs6o.Bow@cix.compulink.co.uk>
Source record: 25925

Hello Gary
I'm glad some one is thinking about this it has bugged
me since 1971
after doing some VLBI Woomera -Tidbinbilla and
Goldstone - Tidbinbilla, I was convinced that it was feasible
but mobilising the army of hams, swls and amateur astronomers
defeated me. Professional Astronomers and Cosmologists
would need to be involved. The network of people to co-ordinate
and pass the data would be huge. Many talents would be
required to accomplish this task, great patience would be
required as individual observers would be unable to make much
out of their own data. True altruistic co-operation would be
required, lack of that is probably the down fall of this dream.
It is very true what you say about the HF Data being a new frontier.
There are probably different ways to achieve this project
a synchronous clock and a digital sampling Technique would figure
high on my priority list as data in this form would suffer no further
degradation, once digitised. A further advantage would be that it
would be transmittable unlike some analogue methods.
The processing and correlations functions would be easier as the
data would already be in a useable form. the rapid proliferation of
Digital computers,digital recording techniques make it a starter.
home computers where not a starter until the VDU was
implemented to replace the old type 33/33A TTY machines that
we where forced to use prior to that. The Cassette recorder was
widely distributed and pressed into service to get mass computing
of the drawing board, but it didn't last long once economic digital
methods came along with the Calcomp discs and the extensions
of that principle. Packet could carry some real but non commercial
traffic at last to transfer the observational data for processing.
A development group needs to be set up to spec a receiver and
antenna system that will do the job and is practical for amateur
use. Et. Etc. Wibble wibble. What do you think of that Maxwell guy
he started something when he played with Faraday's work, him an
encyclopedia salesman too.

73

Gary Peach G7SLL Jean Peach
Wisdom to perceive, Lace the Ultimate thread
Grace to acknowledge

219. Lafayette,LA HAMFEST '95

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 05:17:33 UTC
From: pws8157@ucs.usl.edu
Message-ID: <3gpptd$cte@rouge.usl.edu>
Source record: 25913
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.amateur.swap,rec.radio.shortwave,rec.radio.swap

35th Lafayette Hamfest
March 10-11-12, 1995
Holidome - Holiday Inn Central
Lafayette, Louisiana

The 35th Annual Acadiana Amateur Radio Association (AARA) Lafayette Hamfest
will be held at the Holidome just south of the intersection of I-10 & I-49.

There will be commercial dealers, a flea market, technical forums, tours for
those interested in the area's attractions, the famous AARA fox hunt, and
plenty of Cajun hospitality.

The Quarter Century Wireless Association (QCWA) Cajun Chapter #189 will host
a dutch treat breakfast buffet at 8:00 a.m. on Sunday, March 12th.

FOR MORE INFORMATION:

If you'd like to find out how you can reserve swap tables, or pre-register,
or attend the V.E. test session, or anything else..... Please contact:

LAFAYETTE HAMFEST '95
Acadiana Amateur Radio Association
P. O. Box 51174
Lafayette, LA 70505-1174

Hope to see ya'll der, cher!

73 de ka5nmn
pat

* *
* Patrick W. Soileau, KA5NMN * packet: ka5nmn@w5ddl.#lft.la.usa.noam *
* 101 Amethyst Lane * Internet: ka5nmn@usl.edu psoileau@usl.edu *
* Lafayette, LA 70506-3844 * pws@usl.edu pat@usl.edu *
* Home Phone: (318) 989-8940 * "These are my own views & comments, not USL's"*
* *

220. Shuttle - Mir rendezvous

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 06:14:02 UTC
From: giles.26@postbox.acs.ohio-state.edu
Message-ID: <giles.26.3.2F307829@postbox.acs.ohio-state.edu>
Source record: 25914

When within about 200 feet of Mir, Discovery
will begin air-to-air communications with cosmonauts on Mir
using a VHF radio system.

Will this be 145.550 Mhz simplex?

221. Re: Alden WEFAX Move?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 07:21:27 UTC
From: n7ryw@teleport.com
Message-ID: <3gq123$jem@desiree.teleport.com>
Source record: 25915

In article <3gknrj$6vu@floyd.santarosa.edu>, rbates@nermal.santarosa.edu said...
>
>
>This is similar to a post on another group. I understand that the WEFAX
>data that is on S3/17 is in the process of being moved to G4 Ku.

And the answers are the same, as well.

>I also understand that there may be some encryption (boo).

As you heard there, it is digitized and available only if you pay for the service. Hacking a descrambler would be quite illegal, of course.

>Sounds like I will be getting an S
>band setup soon (1691 for GOES direct).

How true! Such a system (properly designed) would be capable of receiving far more information than the Alden, which is a selective retransmission. It would also not be subject to scrambling. I beleive a feedhorn could be mounted to your C band dish next to your existing feed. Or is this a repeat as well?

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

222. Re: Elements via ftp?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 10:54:30 UTC
From: boyer@rd.bbc.co.uk
Message-ID: <D3DCyv.F7p@bbc.co.uk>
Source record: 25918

Peter Pauly (ppp@netcom.com) wrote:
: I have a userid (or did at one time) the Nasa BBS to get 2 line orbital
: elements. Does anyone know if this BBS is accessible via the internet?
: Anywhere else where one can get fairly recent elements via ftp?
: Thanks.

: --
: ppp@netcom.com

try archive.afit.af.mil in pub/space

John B
john.boyer@rd.eng.bbc.co.uk

223. Re: How much power do I need for AO13?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 14:16:31 UTC
From: stephens@gdim.geod.emr.ca
Message-ID: <D3DMBJ.Bw0@emr1.emr.ca>
Source record: 25919

James E. Thomas (jthomas@hookup.net) wrote:
: How much power do I need to work AO13 mode B? AT present I have 25 watts and
: I can not hear myself.

: Tnx de Jim VE3TEJ

: jthomas@wat.hookup.net

That depends. What antenna have you, what is the cable to it and how
much of a cable run, and what orientation and antenna mode is the
satellite in. A couple of years ago I was uplinking 10 watts on
C.W. and occasionaly SSB to an AOP-1, but the cable (RG-8) was
about 3 m long, and most contacts came when the satellite was close
to the Earth.

--
Dave Stephenson
Geological Survey of Canada *Who ever knew the heavens menace so?
Ottawa, Ontario, Canada *Those that have known the earth so
Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

224. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 14:35:35 UTC
From: neill.taylor@ukaea.ORG.UK
Message-ID: <9502021435.AA25240@fusrs3b.culham.aea.orgn.uk>
Source record: 25920

Mitch Roffer wrote:
>In my humble opinion, I think the AmSoft posting was appropriate.

I completely agree. In fact following the "thinly disguized advert" I ordered the CD which was extremely promptly delivered and I am very happy with it. Without the net posting I would have not known that the product existed. Are we going to ban all mention of anything that's not free? In which case stop all this talk about InstantTrack, for example, which many folk must have purchased after a recommendation on this list.

Neill G4HLX

Dr. Neill Taylor UKAEA Government Division
Fusion
Culham, Abingdon,
Oxfordshire OX14 3DB, UK. PLEASE NOTE MY NEW
Internet: neill.taylor@ukaea.org.uk <<<<<<<<<<<<<<< INTERNET ADDRESS
Tel: +44 1235 463348 FAX: +44 1235 463435
---

225. Looking for Bruce, AH2AK

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 15:47:25 UTC
From: Gary_Rogers@DGC.ceo.dg.COM
Message-ID: <9502021547.AB00040@rtp41.rtp.dg.com>
Source record: 25921

Message:
Bruce, I have the antenna info you wanted, but I'm getting bounced.
Please send me another message with your E-mail as part of the text.
I think I may be sending it to the wrong place.

Everybody else: Sorry to take up the bandwidth. I'm not sure which
posting generated the first exchange between Bruce and me.

73, Gary WA4YMZ FM05 Apex, NC 27502 WA4YMZ@AMSAT.ORG or
Gary Rogers@DGC.CEO.DG.COM

226. Re: How much power do I need for AO13?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 16:29:24 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb2.162924.25378@ke4zv.atl.ga.us>
Source record: 25922

In article <jthomas.16.0014EA1D@hookup.net> jthomas@hookup.net (James E. Thomas) writes:
>How much power do I need to work AO13 mode B? AT present I have 25 watts and
>I can not hear myself.

What's your ERP? I've never needed more than 40 watts to put a signal
on the bird equal in strength to the beacon (that's as loud as you should
ever be). Under most conditions, considerably less power does fine. Of
course the secret is in the antennas and feedlines. If you are using a
KLM-40CX antenna for uplink, and need more than 10 watts to the antenna
under any conditions to be heard, then you've got something seriously
wrong with your station. 5 watts will generally put a usable signal
on the bird. Of course to *hear* yourself, you need a decent 2 meter
receiving setup too. A KLM-22C with a good GASFET preamp mounted at
the antenna is required if you want to hear weaker signals.

A good test of your receiving setup is to see if you can hear the
spin modulation on the transponder noise floor. If you can hear that,
your receiving setup is good enough.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

227. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 21:30:48 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3griu8$ka3@news.doit.wisc.edu>
Source record: 25926

In article <miles-2901951345580001@slip-13-9.ots.utexas.edu>, miles@mail.utexas.edu (Miles Abernathy) says:
>
>> Balloons are sized by their weight in grams...The 800 gram size will lift
>> 3-4 lbs to 100,000 feet. The 1200 gram size will take a full six
>> pound payload to 100,000 feet.
>Is this using hydrogen gas? How does helium compare in lift?

Yes, it is. Helium will have less lift, so you'll either have to inflate the balloon to a larger size to get your payload off the ground, which means the balloon will expand to bursting size at a lower altitude, or you'll have to cut the payload weight so the same volume of gas will lift it off the ground and expansion to burst size will occur at the same altitude as with hydrogen.

Unfortunately, I don't have any numbers to plug in here. Anybody got the formulas for this sort of work?

Dave, N9LTD

228. FTP addresses for Orbital Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 21:38:40 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3grjd0$ka3@news.doit.wisc.edu>
Source record: 25927

Internet FTP sites for Orbital Elements

archive.afit.af.mil /pub/space

Home of the TLE.nnn files posted by T.S. Kelso, the father of amateur satellite tracking. Includes individual files sorted by type of satellite and a larger list made of all the little lists added together.

kestrel.umd.edu /pub/wxsat/elements

Also WxSat & Radar GIFs, software

kilroy.jpl.nasa.gov /pub/space/elements/molczan /pub/space/elements/satelem

This site has the Mother Of All Element Files in the /pub/space/elements/satelem directory. Prepared by Alan Thompson, it's 1/4 meg in the .Z compressed format and expands to about 1/2 meg when uncompressed. It holds elements for just under 4000 satellites! No sat names are given, just the NORAD numbers, so you'll need a cross reference.

Ted Molczan's Canadian Space Society's element files are in the /pub/space/elements/molczan directory. This is a more reasonable length file that includes elements for spy sats.

seds.lpl.arizona.edu /pub/sat/molczan C.S.S. tles w/spy sats /pub/sat/satelem T.S. Kelso elements

This site appears to be mirroring kilroy's element directories. If the .Z is left off the file names, seds will uncompress the file for you before sending it. This doubles transmission time, but if you can't decode .Z'd files, this will get the files for you anyway.

DOS users: ftp gzip.exe from /pub/space/elements at kilroy to uncompress these files at home. Mac users: if you have a program that handles .Z'd files, please let me know.

Everybody: if you have any other FTP addresses for elements, please let me know.

(Dave Mullenix, N9LTD, djmullen@facstaff.wisc.edu)

229. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 22:03:29 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3grkrh$ka3@news.doit.wisc.edu>
Source record: 25928
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <D3Bopu.Dvt@ruacad.ac.runet.edu>, ddabay@ruacad.ac.runet.edu (Dave Dabay) says:
>
>I must disagree herre, don't always believe what you read!! Just
>because it is in print does NOT mean that it is in the least bit
>accurate. In the early 70's the "Internet" as you call it was born
>out of DARPA, Usenet, and several other "local" networks. It's original
>purpose, no matter what is claimed after the fact, was NOT to connect
>Universities. It's main purpose was to allow exchange of information
>between large gov't agencies and their sub-contractors, typically
>universities and such. Don't confuse the facts.

One amplification of something alluded to above: these messages are
part of USENET, which is NOT the INTERNET. It's always been my
understanding that different policies apply to the small part of the
internet that is usenet. I have no problem with IBM or any other
commercial organization sending email or files via the internet or
setting up FTP sites or Webservers or engaging in any other kind of
commercial activity on the internet. Having my tax money pay for
those activities is like having trucks on the Interstate - I can live
with it as long as they stay out of my way.

I _DO_ object to commercial messages on USENET. I don't enjoy having
my tax money used to pay for somebody to send me advertisements that
are mixed in with the legitimate messages in such a way that it's
extremely difficult to avoid them. That puts me in the position of
paying to be annoyed. If it gets bad enough, I'll say to heck with
it and stop reading the messages. Needless to say, if my congressman
then announces that dropping government subsidies to the usenet would
help balance the budget, I won't object very strongly.

After all, why pay good money so somebody can annoy you for their profit?

Perhaps we need rec.radio.commercials?

230. Re: HP-48 Satellite Tracker on FTP

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 22:40:06 UTC
From: tedwards@Glue.umd.edu
Message-ID: <3grn06$hqb@thrash.src.umd.edu>
Source record: 25929

In article <3gblfc$1t0@hatch.sonalysts.com>,
Al Gerheim <gerheim@PROBLEM_WITH_INEWS_GATEWAY_FILE> wrote:
>An HP-48 "fisheye" view satellite tracker is now
>available via ftp.

How much memory do you need for this?

-Thomas

231. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 22:45:20 UTC
From: wb4fin@iglou.COM
Message-ID: <Pine.SOL.3.91.950202174449.28063A-100000@iglou>
Source record: 25930

```
subscribe

wb4fin@iglou.com
```

232. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 23:06:57 UTC
From: hanko@wv.mentorg.com
Message-ID: <3groih$lrq@hpbab.wv>
Source record: 25931
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3gkhhq$2nc@crcnis3.unl.edu>, gbrown@unlinfo.unl.edu (gregory brown) writes:
|> Hank Oredson (hanko@wv.mentorg.com) wrote:
|>
|> : I'm very curious where you discovered the information that indicates
|> : it "... contrary to Internet's policy ...". As far as I know, there
|> : IS no such entity as "Internet" to have a policy. Could you be a bit
|> : more specific where you located this policy information? Any sort of
|> : reference will do: ftp, email, http, whatever. I'd like to review
|> : the policy you are talking about before making any further comments.
|>
|>
|> Any of a number of books at your local library or bookstore can fill
|> you in on the history and evolution of what we now call the
|> "Internet". It's original purpose was to connect Universities and
|> other educational institutions for educational purposes. Major
|> advances in this regard were made by the National Science Foundation.
|> Commercial participation was once excluded or severely restricted.
|> The intended purpose of the "creators" was educational advancement
|> (much of it at taxpayers expense), not providing commercial
|> enterprises with new ways to make money. Commercial connections are
|> now common, the limitations on use much more flexible. There are no
|> laws that I know of which prohibit advertising on the net, however the
|> vast majority of commercial enterprises connected to the net honor the
|> traditional "ban" on overt advertising and limit their use to their
|> own research and development purposes and for business communications.
|> They understand and respect the original purpose and intent of what
|> has become the "Internet", and respect the wishes of the majority of
|> users, as well as the wishes of those who have made "Internet"
|> possible.
|>
|> Virtually every major business from IBM to Intel to General Motors has
|> Internet access. When was the last time you saw a commercial here
|> from one of them?
|>
|> Again, there are dozens of books that discuss Internet history and
|> purpose. I've not done it, but I imagine you could also come up with
|> lots of similar info if you do a Gopher search on some key relevant
|> topics.
|>
|> Feel free to let me know what you discover in your research.
|>
|> Greg

What I discovered is that there is no longer any restriction on
the use of the net for commercial purposes.

I've been "on the net" since well before ARPA funded the initial
connectivity between commercial (not educational) users. Some of
those users WORKED at universities, but the projects which used
the ARPA backbone and the various ad hoc interconnections that
existed prior to the backbone didn't do it just for fun.

Perhaps you need to look at those books (and papers and other documents)
before you make assertions about history.

... Hank

|>
|>
|>

--

Hank Oredson @ Mentor Graphics Library Operations
Internet : hank_oredson@mentorg.com "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

233. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-02 23:13:04 UTC
From: tedwards@Glue.umd.edu
Message-ID: <3grou0$i09@thrash.src.umd.edu>
Source record: 25932
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

```
In article <3gkhhq$2nc@crcnis3.unl.edu>,
gregory brown <gbrown@unlinfo.unl.edu> wrote:
>laws that I know of which prohibit advertising on the net, however the
>vast majority of commercial enterprises connected to the net honor the
>traditional "ban" on overt advertising and limit their use to their
>own research and development purposes and for business communications.

I desire overt advertising on Usenet, in the appropriate newsgroups.

-Thomas
```

234. Re: FTP addresses for Orbital Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 02:36:38 UTC
From: thomsona@netcom.com
Message-ID: <thomsonaD3EKL2.7oL@netcom.com>
Source record: 25933

In article <3grjd0$ka3@news.doit.wisc.edu> djmullen@facstaff.wisc.edu (Dave Mullenix) writes:
> Internet FTP sites for Orbital Elements

[snip]

>
>kilroy.jpl.nasa.gov /pub/space/elements/molczan
> /pub/space/elements/satelem
>
> This site has the Mother Of All Element Files in the
> /pub/space/elements/satelem directory. Prepared by Alan
^^^^
> Thompson, it's 1/4 meg in the .Z compressed format and
^^^^^^^^
> expands to about 1/2 meg when uncompressed. It holds
> elements for just under 4000 satellites! No sat names are
> given, just the NORAD numbers, so you'll need a cross
> reference.

[remainder snipped]

Proud, though humble, as I am to be cited as the Father of the Mother Of All Element Files, would it be too much to ask to SPELL AT LEAST ONE OF MY NAMES RIGHT ???!!!

Elementarily yours,
Allen Thomson
^^^^^ ^^^^^^^

:-) , if needed.

BTW, the 4k collection is generated by combining files of element sets which are available on the net or from a couple of BBSs. I'm sure that this process could be completely automated by someone slightly more talented in writing shell scripts than I. (hint)

235. Re: Alden WEFAX Move?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 03:37:57 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <p03YzAN.sak1@delphi.com>
Source record: 25934

Is the signal on the 1691 frequency a ATP signal compatible with the WEFAX format?


```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " sak1@delphi.com " \ / *
* \ __\/__ / OPEN YOUR MIND \/ *
**********************************************************************
```

236. Amiga Ham User Group

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 07:23:18 UTC
From: paul.whatton@posnet.co.uk
Message-ID: <950203113005256@posnet.co.uk>
Source record: 25935

```
* This message forwarded from area 'PACKET' (PACKET)
* Original message dated 03 Feb 95, from Paul Whatton

Some time ago I posted a message about the Amiga Amateur Radio User Group.

Unfortunately shortly afterwards and for reasons outside my control my
E-mail address got cut off! I know several Amiga using amateurs tried to
reply but got bounced E-Mail.

In brief the AARUG is UK based but welcomes members from anywhere in the
world. There are already several hundred members. The AARUG publishes an
occasional newsletter and maintains a radio PD library. Membership is free;
the group runs entirely on voluntary donations.

There's an introductory floppy disk available containing details of how to
join, member lists, old newsletters and the PD list. For more information I
can now be contacted at my Internet address: paul.whatton@posnet.co.uk or
via FidoNet at 2:254/214

73 de Paul G4DCV. Internet: paul.whatton@posnet.co.uk ...
AmigaBee BBS 2:254/214 Tel 081 695 5328 * Amiga Ham radio file area *
--- Spot 1.3a #997
* Origin: Paul's Point off AmigaBee (2:254/214.6)
```

237. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 08:58:33 UTC
From: kthompso@WichitaKS.NCR.COM
Message-ID: <kthompso.408.0008FA22@WichitaKS.NCR.COM>
Source record: 25943

In article <3griu8$ka3@news.doit.wisc.edu> djmullen@facstaff.wisc.edu (Dave Mullenix) writes:
>From: djmullen@facstaff.wisc.edu (Dave Mullenix)
>Subject: Re: Balloon FAQ 1.0
>Date: 2 Feb 1995 21:30:48 GMT

>In article <miles-2901951345580001@slip-13-9.ots.utexas.edu>,
>miles@mail.utexas.edu (Miles Abernathy) says:
>>
>>> Balloons are sized by their weight in grams...The 800 gram size will lift
>>> 3-4 lbs to 100,000 feet. The 1200 gram size will take a full six
>>> pound payload to 100,000 feet.
>>Is this using hydrogen gas? How does helium compare in lift?

>Unfortunately, I don't have any numbers to plug in here. Anybody got
>the formulas for this sort of work?

He has about 8% less lift than Hydrogen

238. STS-63 Orbital Vector Rev #1

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 09:32:17 UTC
From: astroman@ccnet.com
Message-ID: <3gst71$lbj@ccnet.ccnet.com>
Source record: 25936
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space,rec.radio.info

S H U T T L E V E C T O R D A T A

Below is the rev 1 Earth-Fixed Greenwich (EFG), State Vector for STS-63.
This vector comes from NASA Goddard Space Flight Center (GSFC) and is
provided courtesy of the DOD C-Band Radar Network.

The data between the dotted lines may be read directly by VEC2TLE or
V2KEP
to estimate the Keplerian Elements for STS-63 in NASA Two-Line (TLE)
format.
The VEC2TLE software is available from a variety of sources including
AMSAT-NA, the NASA Spacelink BBS (205) 895-0028 and at the following
Internet FTP address: oak.oakland.edu:/pub/msdos/hamradio/v2l9331.zip --
VEC2TLE may be registered free of charge for hobby use.

....
Vector format = 117
Satellite Name: STS-63
Catalog Number: 23469 95004A
Epoch Date/Time: 95034.25473876157
02/03/1995 06:06:49.429 UTC
EFG E: 5586932.38 ft
F: 20677201.25 ft
G: -4809518.36 ft
Edot: -15172.2019 ft/s
Fdot: -336.3420 ft/s
Gdot: -19099.6944 ft/s
ndot/2 (drag): 0.00008460017 rev/day^2
nddt/6: 3.01720E-10 rev/day^3
Bstar: 4.04607E-05 1/Earth Radii
Elset #: 1
Rev @ Epoch: 1.54497509987
....

The drag values are estimated by VEC2TLE using a 0.5 drag multiplier.

To create a file for use by VEC2TLE or V2KEP, simply write the data
between
the dotted lines to a new (text) file. I recommend that the file you save
have a .VIF extension (default for VEC2TLE and V2KEP vector input
files).

Questions or comments should be directed to Ken Ernandes at:

Compuserve: 70511,3107
Internet: n2wwd@amsat.org
Packet Radio: n2wwd @kc2fd.#nli.ny.usa.na

MSDOS/PC software is available for conversion of
OSV to 2 Line Keplerian Elements via ftp to:
oak.oakland.edu:/pub/msdos/hamradio/v2l9331.zip
and the SIMTEL archives.

State Vectors courtesy Ken Ernandes N2WWD

SM

239. Re: Are RS-15 Keps "On"?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 13:07:22 UTC
From: kebsch@pdb.sni.de
Message-ID: <3gt9qa$7f9@nanette.pdb.sni.de>
Source record: 25940

In <3g9gbj$8hh@news.doit.wisc.edu> djmullen@facstaff.wisc.edu (Dave Mullenix) writes:

>In article <3g4120$6p9@mesa5.mesa.colorado.edu>, jrybak@mesa5.Mesa.Colorado.EDU (James P. Rybak) says:
>>
>>My InstantTrack program gives me very accurate information for all
>>satellites except RS-15. That satellite comes over the horizon 15 minutes
>>earlier than the program predicts. Is anyone else having this problem?

>The booster that launched RS-15 blew up a few hours after releasing the
>satellite. The US Space Command hasn't been able to figure out which
>piece of the resulting cloud of debris is the actual satellite. Try
>these hand-tweaked keps from G3IOR:

>RS-15
>1 99915U 94360.16222500 .00000000 00000-0 13414-4 0 26
>2 99915 64.8310 174.9040 0173420 233.4418 0.0000 11.27498800 13

Hi,

I have used the *following* data during the last week and I had no problem
with the tracking:

SB KEPS @ AMSAT $ORBS-027.N
2Line Orbital Elements 027.AMSAT

HR AMSAT ORBITAL ELEMENTS FOR AMATEUR SATELLITES IN NASA FORMAT
>From WA5QGD FORT WORTH,TX January 27, 1995
BID: $ORBS-027.N

[.. deleted ..]

RS-15
1 23439U 94085A 95025.17305041 -.00000039 00000-0 10000-3 0 234
2 23439 64.8154 126.2803 0167711 286.6267 71.6313 11.27524471 3393

[.. rest deleted ..]

Today, or may be tomorrow, there are new data available; hopefully, hi.
But, I am sure, the difference may be only few seconds!

BTW: I have made the experience, that the RS-15 has a very weak signal.
The RS-10/11 makes a 2..4 S-stops stronger signal. What is your
impression?

Have fun ..

73 de DK3VN
Waldemar

--
Waldemar Kebsch, c/o Siemens Nixdorf Informationssysteme AG,
33106 Paderborn, Federal Republic of Germany, kebsch.pad@sni.de
---
DK3VN - DXCC: 15 cfmd (since September 1994 QRV on 40/20/15/10)

240. test-don't read

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 13:12:00 UTC
From: wirenet!n4nr@vulcan.com
Message-ID: <8A2D1B0.001900017E.uuout@vulcan.com>
Source record: 25937

end

241. Is SAREX onboard Discovery?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 14:03:12 UTC
From: arbee@teleport.com
Message-ID: <3gtd30$guq@linda.teleport.com>
Source record: 25938

Is the Space shuttle Discovery carrying amateur radio this mission? Can someone please post the discoveries KEP's?

73

John KB7VZL

--
arbee@teleport.COM

242. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 14:30:38 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb3.143038.29728@ke4zv.atl.ga.us>
Source record: 25939

In article <1995Jan30.162353.8133@arrl.org> zlau@arrl.org (Zack Lau (KH6CP)) writes:
>KE4ZV Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
>
>: P3D will have a power budget about 10x that of AO-10 and AO-13,
>: yet both of those satellites have been able to support FSK and
>: SSTV operations, both high duty cycle modes. Limited FM operations
>: should be possible on P3D without significantly impacting the
>: power budget.
>
>I believe such operations are only considered acceptable at low
>ERP uplinks. On the other hand, getting a good downlink
>on simple mobile whip requires a rather large amount of power
>from the satellite. (3 dB polarization loss + 6 dB compared
>to a simple CP yagi or helix).

No joke. If it's omni-whip mobile reception that's wanted, well
that's right out. No way P3D is going to be able to do that.
The situation I was considering is the fellow with no multimode
transceiver, but with a decent set of satellite antennas. He
should be able to use his ordinary FM equipment at low to moderate
power through P3D without causing any harm other than occupying
excess bandwidth. Since the transponders of the existing birds
are rarely wall to wall signals, one might think that such operation
wouldn't be damaging to the usefulness of P3D. With FM threshold
improvement, a CNR of 12 db (about typical for a SSB signal on
the birds) should give him a SNR approaching 20 db quieting.
That's pretty useable without hurting the transponder power
budget. SSB is typically 20% or so duty cycle, so the FM signal
would be about 5x as power consumptive, but P3D will have 10x
the power budget, so no harm no foul.

>People have complained a lot about how difficult it is to use
>Oscar 13--signals aren't anywhere near as loud as they expect
>them to be--they have to buy amplifiers and expensive antennas
>to get OK but not great signals. I see the enhanced capabilities
>as being enough to reward people for their investment--with the
>new bird they ought to get pretty good results on SSB using exciter
>power and small CP beam antennas.

That's certainly true. All I was suggesting was that with Oscar 10-13
class receiving antennas, FM operation on P3D should be feasible.

>True, if you wanted to use big antennas and/or amplifiers when the
>satellite was lightly loaded FM would work (provided that you
>reprogrammed the satellite so it wouldn't notch out the power

>abusers). But, this isn't what most people are looking for
>when they ask or think about "FM birds." The basic problem is
>one of physics--when you are 100 times farther away you need
>40 dB more gain/power. Light bulbs are much brighter when you
>are within a foot as opposed to 100 ft away.

Well, like I said, I think that the FM improvement ratio, provided
a sufficient modulation index is used, should allow reasonable
signals to be copied with Oscar 10-13 class antennas without
drawing the attention of the auto-notch on the bird. I'm not
recomending FM operations on P3D, just noting that they seem
feasible. You'd need a receiving setup that can hear the spin
modulation of the transponder noise floor, but that's not hard,
and is something all satellite operators should strive for anyway.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

243. Re: Radio Astronomy info

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 15:11:03 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb3.151103.29953@ke4zv.atl.ga.us>
Source record: 25941

In article <D3Cs6o.Bow@cix.compulink.co.uk> wiselace@cix.compulink.co.uk ("Gary and Jean Peach") writes:
>Hello Gary
>I'm glad some one is thinking about this it has bugged
>me since 1971
> after doing some VLBI Woomera -Tidbinbilla and
> Goldstone - Tidbinbilla, I was convinced that it was feasible
> but mobilising the army of hams, swls and amateur astronomers
> defeated me. Professional Astronomers and Cosmologists
> would need to be involved. The network of people to co-ordinate
> and pass the data would be huge. Many talents would be
> required to accomplish this task, great patience would be
> required as individual observers would be unable to make much
> out of their own data. True altruistic co-operation would be
> required, lack of that is probably the down fall of this dream.

So true. The current packet "network" typlifies how difficult it is to get long term cooperative efforts going and sustained. Hams just aren't cooperative by nature. The culture has been one of competition too long, Dxing, contests, etc. There's no place for competition in this effort, so it's unlikely to gather the support needed to make it a reality.

> It is very true what you say about the HF Data being a new frontier.

Yes, I think that would be really exciting. At UHF and above, VLBI with existing radio telescopes is feasible, but HF is an area where only the intensely decentralized amateur effort could possibly succeed. It's simply not feasible for the professionals to support the number of dispersed dipoles needed to synthesize a narrow beam.

> There are probably different ways to achieve this project
> a synchronous clock and a digital sampling Technique would figure
> high on my priority list as data in this form would suffer no further
> degradation, once digitised. A further advantage would be that it
> would be transmittable unlike some analogue methods.

Well, the key of course is to be able to preserve phase coherence from the antenna to the data. Flash A/D chips are getting cheap enough to do that at HF while still fitting into an amateur's budget. I now picture a TRF front end feeding a flash A/D which in turn feeds the data capture system. The A/D sample clock would be slaved to a high precision reference such as a signal from a TVRO setup, or perhaps WWVL. The data could be captured to very fast streaming tape.

The alternative of a block downconverter with a high precision LO reference feeding a modified VCR for analog data storage and later digitization is still a contender of course. I'm not sure which would be the better course. The direct capture to streaming tape method would be pushing the limits of data storage quite a bit, but the block converter to modified VCR to digitizer method would require 3 phase offset corrections. The timebase correction of the VCR would be the dominant one. That still takes some fairly expensive custom chips.

The direct converting receiver could probably be built for under $200, minus the precision reference. The other method likely would cost 5 times as much. I'm more comfortable with the technologies involved in the latter method, however, due to my broadcast background. And it does place less strain on the station's computing resources.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

244. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 16:11:30 UTC
From: ddabay@ruacad.ac.runet.edu
Message-ID: <D3FMB6.Cp2@ruacad.ac.runet.edu>
Source record: 25942
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3groih$lrq@hpbab.wv> Hank_Oredson@mentorg.com writes:
>In article <3gkhhq$2nc@crcnis3.unl.edu>, gbrown@unlinfo.unl.edu (gregory brown) writes:
>|> Hank Oredson (hanko@wv.mentorg.com) wrote:
>|>
>|> : I'm very curious where you discovered the information that indicates
>|> lots of similar info if you do a Gopher search on some key relevant

>Perhaps you need to look at those books (and papers and other documents)
>before you make assertions about history.
>
> ... Hank
>

YES!!! Someone else who had/has worked onthe "net" since before it
existed, "according to some sources" (dave says tongue in cheek)

Again, as they say in the newspapers (Martie Zad, Washington Post, circa
1978): Don't believe ...anything you hear,
half of what you read,
or some of what you see.
--
Dave Dabay Telecommunications Engineer Supervisor KD3PC
Radford University Computer Services Internet: ddabay@esprit.runet.edu

245. Re: AMSOFT (&other) advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 19:22:12 UTC
From: hanko@wv.mentorg.com
Message-ID: <3gtvp4$r2i@hpbab.wv>
Source record: 25944
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3gmfq8$k63@ixnews3.ix.netcom.com>, dtburr@ix.netcom.com (Dave Burr) writes:
|> In <3gjbss$3l9@hpbab.wv> hanko@wv.mentorg.com (Hank Oredson) writes:
|>

<deletia>

|> I use the word "enterprising" in quotes...these people are the same ones
|> who believe that they are "clever" when they park in a handicapped
|> parking space and get away with it, and that the rest of us "saps" were
|> not thinking or not willing to take a risk. We could legislate against
|> boorish behavior on the NET, but lets hope it never goes that far.

Do you have evidence to back up this assertion?

It is *illegal* to park in handicapped parking spaces, at least
in most jurisdictions. It is not *illegal* to post commercial
messages to usenet. You have here compared an *illegal* act to
an act *which you personally consider objectionable*.

If you wish a newsgroup without advertising, then you should take
those actions which will lead to such a newsgroup: a call for
moderation of the group, or a call for a new (moderated) group.
Within usenet, this is the only mechanism available to control
content - other than peer pressure ... and you will lose this one.

... Hank

--
<My opinion only>
Hank Oredson @ Mentor Graphics Library Operations
Internet : hank_oredson@mentorg.com "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

246. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 20:00:15 UTC
From: tedwards@Glue.umd.edu
Message-ID: <3gu20f$inm@thrash.src.umd.edu>
Source record: 25945
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3grkrh$ka3@news.doit.wisc.edu>,
Dave Mullenix <djmullen@facstaff.wisc.edu> wrote:

>I _DO_ object to commercial messages on USENET. I don't enjoy having
>my tax money used to pay for somebody to send me advertisements that
>are mixed in with the legitimate messages in such a way that it's
>extremely difficult to avoid them.

If you don't like your tax funded Usenet access to receive traffic
from privately funded Usenet sites, I suggest you contact your
newsadmin and complain. No one is forcing your site to
receive news from anyone else.

Clearly everyone, including advertisers, should abide by the individual
newsgroup charters, as most of you are FAILING to do in having this
conversation on so many newsgroups INAPPROPRIATE for this discussion.

Thus, followups to news.misc, please!

-Thomas
N3HAU

247. Re: AMSOFT advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 20:05:00 UTC
From: emd@ham.island.net
Message-ID: <020395120500Rnf0.79b6@ham.island.net>
Source record: 25946
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.mi

amsoft@epix.net (Pete deVolpi) writes:

>What we offer on the Internet is "A FREE HAM NEWSLETTER" and nothing
>more. The purpose of the newsletter is to inform the interested
>Amateur Radio public that our product will provide them with useful
>information about the hobby of Amateur Radio. The decision for
>another individual on the Internet to receive a NEWSLETTER is the
>readers decision, not yours. My post gives the reader the choice
>if they wish to continue by requesting our newsletter. In the case
>of yourself, you did not need to respond.

It certainly IS up to the individual whether or not to receive a newsletter, or, for that matter, advertisements. It was your decision to inflict your advertising on this newsgroup that caused the response in the first place.

I don't have any problem with using the Internet to send your newsletter to someone who requests it. Advertise it on your WWW page or in print, etc. That's fine. It's another matter altogether when you post advertising in newsgroups where that is NOT acceptable behaviour, and where readers are NOT expecting to read advertisements.

Posting advertisements in newsgroups where they are not acceptable is the e-mail equivalent of junk faxes. Where the recipient pays for the cost of receiving the ad, whether or not he wants to read it.

The purpose of newsgroup charters is to organize discussion/information by category for the reader. It allows the reader to make intelligent decisions about which groups to read, based at least in part on whether or not he expects ads in that group. Circumvention of newsgroup charters and tradition by those seeking to advertise their wares is not only rude and impolite, but a disservice to all readers.

There are biz newsgroups available, you can use a Web page to advertise your newsletter, you can start your own mailing list, and no one will find this offensive. Expecting us to pay for unsolicited and unwanted intrusions into our newsgroups is another thing altogether.

>The ease of posting Usenet News articles causes many inappropriate
>articles to be sent to the network.
>An article can be inappropriate if it:
>
>-- Is devoid of useful information or ideas.
>-- Is sent to inappropriate newsgroup(s).

It's a pity you don't seem able to understand the above line.

>Last but not least BOB, your suggestion that persons should be asked to
>CRASH MAILERS WITH ELECTRONIC FECAL MATTER will be met with a strong
>challenge here at EPIX.NET!
>Should such an occourence happen we will refer the matter directly to your
>commander, you are under the Uniform Code of Military Justice!
>Furthermore any damages caused by your suggestion will be dealt with in a
>court of Civil Law.
>

Threats to complain to someone's commanding officer because he objects to your violation of netiquette by posting offensive advertising in newsgroups are highly inappropriate. I hope that your threat gets the widest possible circulation, and induces others, as it has me, to boycott any product you or your company is associated with.

You, sir, are despicable.

emd@ham.island.net (Robert Smits VE7HS Ladysmith BC)

Democracy is the theory that the common people know what they want, and deserve to get it good and hard. - H.L. Mencken

248. Re: FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 20:27:00 UTC
From: emd@ham.island.net
Message-ID: <020395122748Rnf0.79b6@ham.island.net>
Source record: 25947
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.mi

johnl@world.std.com (John W Langner) writes:

>In my humble opinion, I think the AmSoft posting was appropriate.
>It told me a new version of the product was available and where
>to get more information. It was brief, didn't mention prices, and
>was posted ONLY to appropriate (ham radio) groups. This is useful
>information.

I disagree, John. Just because the product itself is amateur radio
related doesn't make advertising such a product itself in an amateur radio
newsgroup appropriate. It's the e-mail equivalent of junk mail with the
"bonus" that you pay to have it delivered to your system.

>
>A few facts:
>
>1. Years ago the Internet backbone was government funded and was only
> supposed to be used for non-commercial purposes. That changed about
> 3 or 4 years ago. It is now commercial with no restrictions on
> commercial use. I was the Internet contact for our site at the time
> so I got all the official info and saw the significant jump in the
> monthly bill.
>

The Internet <> Usenet, John. I don't disagree with commercial traffic
flowing over the Internet in the least. I do, however, object strenuously
to businesses which post advertisements in Usenet newsgroups which by charter
or tradition have not carried those kinds of posts. Posting ads in groups
which the reader has selected at least in part because of the absence of
the ads is wrong.

>2. Netiquite (sp?) is not law or a contract between network service
> providers and users. It is only generally accepted guidelines
> of the culture of the newsgroups. There are many newsgroups dedicated
> to particular commercial products used for communication between
> manufacturers and customers.

That's true, John, but these guys weren't advertising in rec.radio.amsoft,
where the newsgroup charter might include those kinds of posts. If they
want to start a new group with ads, let 'em fly at it. I won't read it, of
course, but that's MY decision to make, not THEIRS.

>3. There are only a few big companies in the ham radio market. The
> transceiver manufacturers, AEA, MFJ, and very few others are big
> companies that can afford full page ads. Most of the others are

> just one person at-home "basement" operations persued nights and
> weekends in addition to regular full time jobs. Don't be fooled
> by the fancy names like "XYZ Technologies" or "XYZ Research".
> I know several people personally who fit into this category. Most
> people feel more comfortable dealing with a big company instead
> of a basement operation so it really is necessary to give the
> the impression of being bigger.
> We should thank and encourage these people for bringing us interesting
> products that larger companies wouldn't want to be bothered with
> due to tiny market and low margins.
>

Of course we should. This doesn't mean that because they're small and/or struggling companies they should be encouraged to flout newsgroup conventions - which are conventions for good reason.

>If some one is truly abusive of the communication channel we should
>scold him and even ask the site administrator to revoke access. However
>this was not terrible abuse.
>

This example certainly wasn't as egregious as a lot I have seen. The problem is, John, that this is the thin edge of the wedge. I don't want to pay for receiving newsgroups where 50 % of the messages are from corporations trying to sell me something. Which is precisely the direction we're heading if we let them (the advertisers) in the door.

--
emd@ham.island.net (Robert Smits VE7EMD Ladysmith BC)

[Los Angeles] Nineteen suburbs in search of a metropolis.
- H.L. Mencken

249. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 21:46:57 UTC
From: wb4fin@iglou.COM
Message-ID: <Pine.SOL.3.91.950203164611.248A-100000@iglou>
Source record: 25948

sub ham-space George Troutman

wb4fin@iglou.com

250. 138 MHz beam antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-02-03 21:58:34 UTC
From: jpd@isoroku.mit.edu
Message-ID: <3gu8ua$ind@senator-bedfellow.MIT.EDU>
Source record: 25949
Cross-posted to: rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.antenna

Does anyone out there know of a good 138 MHz beam antenna? I need
circular polarization and 12-14 dB gain.

The objective is to find a way to build low cost receive-only ground
stations for the HETE (High Energy Transient Experiment) spacecraft,
which will be launched later this year. Selected data will be
sent down at at 137.96 MHz (the main downlink is S-band).

For those interested, HETE will transmit linear polarization, but
Faraday rotation will cause the plane to revolve rapidly. With a
circularly polarized receiving antenna (either left or right handed),
this rotation becomes a frequency shift, which is small compared
to the doppler shift and therefore not a problem. A linearly
polarized antenna, in contrast, will see severe fading, disrupting
the modulation.

It's probably best if you reply to me by e-mail, given that I'm
cross-posting this to four busy groups.

Thanks in advance.

John Doty
HETE Project Scientist

--
John Doty "You can't confuse me, that's my job."
jpd@space.mit.edu

251. Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 00:31:40 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.791857900@tiger>
Source record: 25950

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated several times weekly. Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated weekly) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

252. Two-Line Orbital Element Sets (TLE544)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 00:34:04 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.791858044@tiger>
Source record: 25951

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #544 -
Alouette 1
1 00424U 62049A 95029.59102611 .00000044 00000-0 41396-4 0 751
2 00424 80.4634 61.6326 0021901 251.8718 108.0042 13.67831510613354
ATS 1
1 02608U 66110A 95032.67412677 -.00000154 00000-0 10000-3 0 9219
2 02608 14.6236 358.0785 0008815 53.3164 306.8052 1.00314398 19834
ATS 3
1 03029U 67111A 95033.21768325 -.00000124 00000-0 10000-3 0 3271
2 03029 14.7745 5.1024 0010175 270.4382 189.4508 1.00271976 99743
Cosmos 398
1 04966U 71016A 95031.63412397 .00170478 79367-5 25637-3 0 7272
2 04966 51.4267 114.4110 0787260 351.2748 7.5172 14.45203036805108
Starlette
1 07646U 75010A 95029.96001593 -.00000126 00000-0 13907-4 0 8605
2 07646 49.8315 338.4772 0206431 5.2453 355.0538 13.82188120 9220
LAGEOS
1 08820U 76039A 95029.53661981 .00000023 00000-0 10000-3 0 807
2 08820 109.8171 213.1113 0044061 236.4987 123.1457 6.38664267181600
ETS-2
1 09852U 77014A 95033.35848742 -.00000347 00000-0 10000-3 0 130
2 09852 12.5309 38.7547 0001279 49.5625 310.5109 1.00019182 12633
GOES 2
1 10061U 77048A 95033.37730071 .00000091 00000-0 10000-3 0 4856
2 10061 11.5985 43.0636 0011891 94.5899 347.5298 1.00134659 9427
IUE
1 10637U 78012A 95028.10281584 -.00000288 00000-0 00000+0 0 1055
2 10637 34.9483 91.2483 1316841 42.5136 341.0679 1.00267975 14868
GPS BI-01
1 10684U 78020A 95028.40979676 -.00000002 00000-0 10000-3 0 3359
2 10684 64.7679 38.8449 0061411 163.9679 196.2519 1.98069521109396
```

```
GPS BI-02
1 10893U 78047A 95033.87671639 -.00000012 00000-0 10000-3 0 1477
2 10893 63.4059 277.0422 0219477 14.0573 346.6560 2.01627601122723
GOES 3
1 10953U 78062A 95034.23252253 .00000049 00000-0 10000-3 0 4493
2 10953 10.5538 45.7264 0002521 120.3014 234.7918 1.00267758 14039
SeaSat 1
1 10967U 78064A 95034.21553295 .00000013 00000-0 48987-4 0 3720
2 10967 108.0010 220.2844 0001992 236.7038 123.3912 14.38009908869575
GPS BI-03
1 11054U 78093A 95024.94608746 .00000009 00000-0 10000-3 0 2651
2 11054 63.0854 275.2072 0044355 177.0111 183.0975 1.93505252118806
Nimbus 7
1 11080U 78098A 95029.70708782 -.00000077 00000-0 -31057-4 0 4751
2 11080 99.0230 269.4886 0008219 245.2105 114.8193 13.83717060821405
GPS BI-04
1 11141U 78112A 95029.91025034 -.00000012 00000-0 00000+0 0 9584
2 11141 64.7689 40.4042 0048403 27.1848 333.1091 1.92895090 8150
GPS BI-05
1 11690U 80011A 95033.26839886 -.00000038 00000-0 10000-3 0 8813
2 11690 65.1037 40.3626 0146138 195.4467 164.1180 2.00561224124157
GPS BI-06
1 11783U 80032A 95031.54510751 .00000017 00000-0 10000-3 0 543
2 11783 62.5299 270.5590 0216156 29.4645 331.8020 2.03456486108604
GOES 5
1 12472U 81049A 95030.02012508 -.00000259 00000-0 10000-3 0 8342
2 12472 7.2654 55.6129 0005025 19.1792 340.9243 1.00322919 8045
Cosmos 1383
1 13301U 82066A 95029.82938024 .00000019 00000-0 47157-5 0 3769
2 13301 82.9322 143.5964 0027046 187.0826 172.9947 13.68062665628412
LandSat 4
1 13367U 82072A 95032.20870813 .00000032 00000-0 17161-4 0 6056
2 13367 98.1510 91.2264 0006242 267.1920 92.8564 14.57147981667416
IRAS
1 13777U 83004A 95033.52826641 .00000347 00000-0 26885-3 0 8595
2 13777 98.9669 224.6534 0013516 43.9843 316.2401 13.99222053283351
Cosmos 1447
1 13916U 83021A 95033.91247227 .00000055 00000-0 41534-4 0 4769
2 13916 82.9439 201.0433 0039168 105.0711 255.4788 13.74320254595023
TDRS 1
1 13969U 83026B 95032.75757328 -.00000210 00000-0 10000-3 0 3936
2 13969 8.1306 48.7376 0003508 197.7109 243.0504 1.00268743 16357
GOES 6
1 14050U 83041A 95030.23669872 .00000053 00000-0 10000-3 0 3486
2 14050 6.0766 58.6604 0003130 350.4711 31.5930 1.00285744101143
OSCAR 10
1 14129U 83058B 95022.06637884 .00000188 00000-0 10000-3 0 3378
2 14129 26.6077 286.7997 6021742 245.9578 41.7464 2.05877067 59324
LandSat 5
1 14780U 84021A 95031.69576754 -.00000006 00000-0 85947-5 0 1898
```

```
2 14780 98.1349 91.5209 0003741 280.0815 79.9961 14.57153822580755
UoSat 2
1 14781U 84021B 95033.55292422 .00000168 00000-0 36331-4 0 7721
2 14781 97.7802 42.4273 0010670 253.8614 106.1416 14.69300337584137
GPS BI-09
1 15039U 84059A 95025.15655316 -.00000000 00000-0 10000-3 0 2692
2 15039 64.4366 34.9405 0081937 16.8199 343.4916 1.92302494 77644
Cosmos 1574
1 15055U 84062A 95029.68244661 .00000007 00000-0 -83430-5 0 6761
2 15055 82.9570 258.0082 0027025 309.5611 50.3152 13.73616237531728
GPS BI-10
1 15271U 84097A 95030.47720656 .00000025 00000-0 00000+0 0 9118
2 15271 62.2356 270.8209 0153576 352.3190 7.5301 2.00592120 75166
Cosmos 1602
1 15331U 84105A 95034.03594934 .00000403 00000-0 44698-4 0 3658
2 15331 82.5326 221.5373 0020504 155.9489 204.2681 14.84550039558769
NOAA 9
1 15427U 84123A 95033.76646957 .00000096 00000-0 75008-4 0 1246
2 15427 99.0187 91.5705 0014313 291.4941 68.4702 14.13681189522833
GPS BI-11
1 16129U 85093A 95033.14990742 -.00000043 00000-0 10000-3 0 6337
2 16129 65.1155 37.6493 0153001 87.9262 273.8509 1.89367842 12432
Mir
1 16609U 86017A 95034.06297984 .00006148 00000-0 84639-4 0 9139
2 16609 51.6474 109.9045 0001144 214.6193 145.4706 15.58742067511981
SPOT 1
1 16613U 86019A 95032.19488829 .00000089 00000-0 62356-4 0 7765
2 16613 98.6672 106.4928 0001229 74.7857 285.3456 14.20053532149067
Cosmos 1766
1 16881U 86055A 95030.19439719 .00000224 00000-0 24286-4 0 2782
2 16881 82.5195 283.0496 0018168 193.9830 166.0884 14.83572318459110
EGP
1 16908U 86061A 95033.57821459 -.00000097 00000-0 00000+0 0 9734
2 16908 50.0086 96.0857 0011720 179.4274 180.6576 12.44411383 54075
NOAA 10
1 16969U 86073A 95033.68933713 .00000028 00000-0 30255-4 0 333
2 16969 98.5088 40.6484 0014041 19.9210 340.2518 14.24923278435321
MOS-1
1 17527U 87018A 95034.16459162 -.00000260 00000-0 -16126-3 0 1734
2 17527 99.0017 102.6915 0000684 55.8098 304.2993 13.94915179405140
GOES 7
1 17561U 87022A 95027.38040428 .00000083 00000-0 10000-3 0 2292
2 17561 2.0337 73.7218 0000342 310.5135 104.5686 1.00113720 12224
Kvant-1
1 17845U 87030A 95033.87062983 .00009875 00000-0 13200-3 0 1402
2 17845 51.6470 110.8728 0001075 216.6766 143.3161 15.58737068512067
DMSP B5D2-3
1 18123U 87053A 95033.75047063 -.00000019 00000-0 12886-4 0 8269
2 18123 98.7765 226.9798 0013361 239.9768 120.0073 14.15388733393708
RS-10/11
```

```
1 18129U 87054A 95033.82707083 .00000018 00000-0 28290-5 0 187
2 18129 82.9255 158.3747 0013190 101.1000 259.1636 13.72347657381544
Meteor 2-16
1 18312U 87068A 95033.91724629 .00000061 00000-0 41152-4 0 3712
2 18312 82.5511 28.8644 0011947 177.0955 183.0278 13.84048987376970
Meteor 2-17
1 18820U 88005A 95033.59500914 .00000051 00000-0 31915-4 0 5314
2 18820 82.5406 85.3255 0014995 253.8115 106.1395 13.84731245354248
DMSP B5D2-4
1 18822U 88006A 95033.53715308 .00000013 00000-0 24186-4 0 8667
2 18822 98.4175 243.6743 0006815 30.6445 329.5174 14.23139542363364
Glonass 34
1 19163U 88043A 95032.41866337 .00000006 00000-0 10000-3 0 9675
2 19163 65.0836 102.7381 0007866 145.7854 214.3319 2.13102396 51548
Glonass 36
1 19165U 88043C 95032.47466188 .00000005 00000-0 10000-3 0 3632
2 19165 65.0608 102.6946 0003185 307.5720 52.4631 2.13102156 52164
METEOSAT 3
1 19215U 88051A 95034.22778250 -.00000269 00000-0 10000-3 0 784
2 19215 2.2159 70.8059 0001142 299.6361 130.3669 1.00262475 12235
AO-13
1 19216U 88051B 95032.60051907 -.00000244 00000-0 10000-4 0 119
2 19216 57.6351 206.1374 7262194 0.9146 359.7475 2.09723401 19325
OKEAN 1
1 19274U 88056A 95030.43484447 .00000209 00000-0 23216-4 0 9792
2 19274 82.5119 23.0461 0020231 348.0744 11.9990 14.82282258354749
Meteor 3-2
1 19336U 88064A 95034.26975492 .00000051 00000-0 10000-3 0 3683
2 19336 82.5428 160.1738 0018194 47.4906 312.7746 13.16971357313675
Glonass 39
1 19503U 88085C 95027.34008723 -.00000065 00000-0 10000-3 0 2581
2 19503 65.7073 341.7914 0007932 173.9399 186.0713 2.13101897 49549
NOAA 11
1 19531U 88089A 95033.69757877 .00000009 00000-0 30068-4 0 9437
2 19531 99.1879 33.4629 0011144 203.5662 156.4997 14.13036178327698
TDRS 2
1 19548U 88091B 95031.24444462 .00000082 00000-0 00000+0 0 902
2 19548 1.4697 75.8006 0004625 75.3730 256.0377 1.00283668 10481
Glonass 40
1 19749U 89001A 95023.15555782 -.00000002 00000-0 10000-3 0 4683
2 19749 65.0352 102.6385 0006942 225.9094 134.0664 2.13101467 46964
Glonass 41
1 19750U 89001B 95032.12745558 .00000006 00000-0 10000-3 0 3776
2 19750 65.0376 102.3648 0006581 232.3703 127.6428 2.13101924 47177
GPS BII-01
1 19802U 89013A 95029.58317917 -.00000031 00000-0 00000+0 0 206
2 19802 55.1617 130.7186 0030179 177.8468 182.1527 2.00568048 43594
Akebono
1 19822U 89016A 95033.49393797 .00007951 00000-0 45983-3 0 4299
2 19822 75.0744 52.0514 3789469 121.1768 281.5548 7.83072284127251
```

```
Meteor 2-18
1 19851U 89018A 95029.87808287 .00000036 00000-0 19112-4 0 3680
2 19851 82.5214 323.1794 0013938 318.2693 41.7402 13.84382280299055
MOP-1
1 19876U 89020B 95025.51037897 -.00000073 00000-0 10000-3 0 964
2 19876 0.9184 70.5847 0001627 190.9308 38.5604 1.00274831 1588
TDRS 3
1 19883U 89021B 95032.17393689 -.00000283 00000-0 00000+0 0 404
2 19883 0.0565 261.3019 0002447 44.9590 206.2001 1.00269501194084
GPS BII-02
1 20061U 89044A 95031.91727057 -.00000064 00000-0 10000-3 0 255
2 20061 54.5108 307.0809 0138146 212.3173 146.8519 2.00563988 41384
Nadezhda 1
1 20103U 89050A 95033.73243736 .00000001 00000-0 -15000-4 0 2819
2 20103 82.9621 117.7607 0038318 9.5330 350.6544 13.73848927279960
GPS BII-03
1 20185U 89064A 95032.25496846 -.00000012 00000-0 10000-3 0 489
2 20185 54.9712 131.1906 0047634 314.8731 44.7361 2.00552653 39968
GMS 4
1 20217U 89070A 95033.47538241 -.00000296 00000-0 10000-3 0 1466
2 20217 0.7435 75.6905 0000399 117.0257 250.8817 1.00274516 20402
INTERCOSMOS 24
1 20261U 89080A 95034.02878598 .00000285 00000-0 78099-4 0 3844
2 20261 82.5872 230.1451 1243494 98.8968 275.4622 12.47218472243551
GPS BII-04
1 20302U 89085A 95030.78848079 .00000029 00000-0 00000+0 0 312
2 20302 53.4494 247.2330 0006187 178.0978 181.9630 2.00553761 38739
Meteor 3-3
1 20305U 89086A 95033.72271138 .00000044 00000-0 10000-3 0 2470
2 20305 82.5393 110.5964 0008389 83.4638 276.7413 13.04409599252955
COBE
1 20322U 89089A 95034.04991303 -.00000063 00000-0 -11984-4 0 936
2 20322 98.9633 52.0464 0009420 352.2682 7.8356 14.03441376266773
Kvant-2
1 20335U 89093A 95033.87062983 .00009875 00000-0 13200-3 0 1692
2 20335 51.6470 110.8728 0001075 216.6766 143.3161 15.58737068511985
GPS BII-05
1 20361U 89097A 95029.30879709 -.00000016 00000-0 00000+0 0 8900
2 20361 55.6742 73.2991 0077239 119.0247 241.8161 2.00560881 28188
SPOT 2
1 20436U 90005A 95033.72766784 .00000095 00000-0 65161-4 0 8914
2 20436 98.6914 109.4843 0001722 12.3027 347.8191 14.20045982260815
UO-14
1 20437U 90005B 95030.23016510 -.00000008 00000-0 13759-4 0 714
2 20437 98.5785 116.7862 0010090 245.9616 114.0500 14.29872767262031
UO-15
1 20438U 90005C 95030.20307594 -.00000013 00000-0 12071-4 0 8683
2 20438 98.5730 115.4564 0009312 249.0456 110.9733 14.29196567261937
PACSAT
1 20439U 90005D 95029.78733809 -.00000010 00000-0 13205-4 0 8695
```

```
2 20439 98.5882 117.8404 0010532 248.1918 111.8143 14.29926709261983
DO-17
1 20440U 90005E 95030.20926175 -.00000012 00000-0 12412-4 0 8697
2 20440 98.5894 118.6633 0010607 244.8407 115.1678 14.30067368262069
WO-18
1 20441U 90005F 95030.18880306 .00000007 00000-0 19801-4 0 8737
2 20441 98.5886 118.6256 0011118 245.7949 114.2070 14.30039762262064
LO-19
1 20442U 90005G 95030.22140151 .00000003 00000-0 18242-4 0 8699
2 20442 98.5870 118.9734 0011497 245.2987 114.7000 14.30139739262084
GPS BII-06
1 20452U 90008A 95029.70922703 .00000016 00000-0 00000+0 0 15
2 20452 54.0544 187.3150 0059246 80.3989 280.2304 2.00565140 36691
MOS-1B
1 20478U 90013A 95033.77999489 .00000091 00000-0 10000-3 0 7381
2 20478 99.0099 106.5483 0000859 75.3207 284.8049 13.94912646174790
DEBUT
1 20479U 90013B 95030.25717602 -.00000006 00000-0 57457-4 0 8686
2 20479 99.0687 144.6736 0542359 184.7982 174.7803 12.83328906233269
FO-20
1 20480U 90013C 95030.25279873 .00000019 00000-0 11434-3 0 7665
2 20480 99.0669 144.5321 0540208 185.3361 174.1822 12.83229967233250
MOS-1B R/B
1 20491U 90013D 95033.42476802 .00000491 00000-0 98800-3 0 995
2 20491 99.0218 197.8876 0469948 27.6808 334.8494 13.02997703236641
LACE
1 20496U 90015A 95033.75243885 .00001997 00000-0 67866-4 0 5009
2 20496 43.1028 176.8473 0009791 46.8737 313.2930 15.34018919276926
Nadezhda 2
1 20508U 90017A 95033.73404963 .00000074 00000-0 62787-4 0 2828
2 20508 82.9545 252.3424 0044108 320.6430 39.1518 13.73487418247193
OKEAN 2
1 20510U 90018A 95029.85328494 .00000233 00000-0 28771-4 0 3793
2 20510 82.5232 334.3286 0018747 162.0524 198.1337 14.78440334265157
INTELSAT-6
1 20523U 90021A 95020.79350694 -.00000236 00000-0 10000-3 0 4871
2 20523 0.0238 92.5455 0001130 249.5712 28.6825 1.00267189 10750
GPS BII-07
1 20533U 90025A 95033.10627768 -.00000068 00000-0 00000+0 0 92
2 20533 54.8839 307.5938 0046027 77.1945 283.3026 2.00557651 35530
PegSat
1 20546U 90028A 95032.51021219 .00007528 00000-0 16356-3 0 7518
2 20546 94.1142 67.5564 0070743 136.5621 224.1325 15.41705827267563
HST
1 20580U 90037B 95032.12825475 .00000388 00000-0 23344-4 0 5891
2 20580 28.4704 205.1988 0006772 326.0645 33.9514 14.90786448 63581
MACSAT 2
1 20608U 90043B 95029.87580535 .00000168 00000-0 26088-4 0 699
2 20608 89.9276 177.6513 0107921 20.0494 340.4912 14.64793080252462
Glonass 44
```

```
1 20619U 90045A 95031.97112273 -.00000074 00000-0 00000+0 0 1607
2 20619 65.3196 341.1263 0025173 210.9398 148.9122 2.13102541 36601
Glonass 45
1 20620U 90045B 95033.96696596 -.00000069 00000-0 00000+0 0 1722
2 20620 65.3096 341.0551 0007417 40.1590 319.8857 2.13102276 36686
Glonass 46
1 20621U 90045C 95029.80944626 -.00000076 00000-0 10000-3 0 7696
2 20621 65.3275 341.2509 0012241 195.6482 164.3106 2.13101592 36598
Kristall
1 20635U 90048A 95033.87062983 .00009875 00000-0 13200-3 0 9628
2 20635 51.6470 110.8728 0001075 216.6766 143.3161 15.58737068511955
ROSAT
1 20638U 90049A 95033.41150165 .00000024 00000-0 20575-4 0 3863
2 20638 52.9914 33.7260 0013133 55.6579 304.5650 15.07061375256797
Meteor 2-19
1 20670U 90057A 95034.03976126 .00000028 00000-0 11969-4 0 8709
2 20670 82.5429 25.1111 0014466 216.4838 143.5337 13.84170158232552
CRRES
1 20712U 90065A 95033.98483810 .00000146 00000-0 25503-3 0 409
2 20712 17.9093 92.7296 7192100 4.3732 359.6559 2.35357734 31327
GPS BII-08
1 20724U 90068A 95029.43769640 -.00000032 00000-0 10000-3 0 8788
2 20724 54.8532 128.9702 0116531 169.1568 191.1204 2.00560769 32880
Feng Yun1-2
1 20788U 90081A 95033.02239382 -.00000027 00000-0 10000-4 0 1977
2 20788 98.8205 50.6320 0015075 88.5360 271.7533 14.01369663225908
Meteor 2-20
1 20826U 90086A 95032.26314219 .00000048 00000-0 29525-4 0 8794
2 20826 82.5278 323.7116 0014179 119.4370 240.8227 13.83600260219435
GPS BII-09
1 20830U 90088A 95029.98730652 -.00000017 00000-0 00000+0 0 8866
2 20830 55.6164 71.2700 0065453 102.7071 258.0972 2.00567615 31975
GPS BIIA-10
1 20959U 90103A 95033.37945163 -.00000008 00000-0 00000+0 0 8083
2 20959 54.9989 130.7295 0092172 228.4895 130.7325 2.00557179 30636
DMSP B5D2-5
1 20978U 90105A 95033.59825932 .00000152 00000-0 70305-4 0 677
2 20978 98.6586 102.1979 0078422 205.8273 153.8990 14.32508336218044
Glonass 47
1 21006U 90110A 95031.24453147 .00000007 00000-0 00000+0 0 7352
2 21006 65.0112 101.6928 0059065 187.8751 172.0974 2.13102623 32291
Glonass 48
1 21007U 90110B 95028.61641127 -.00000009 00000-0 00000+0 0 8643
2 21007 65.0171 101.8577 0034921 181.3704 178.6672 2.13100901 32227
Glonass 49
1 21008U 90110C 95031.32137550 .00000007 00000-0 00000+0 0 320
2 21008 65.0134 101.7085 0010306 274.1478 85.8023 2.13099043 32278
AO-21
1 21087U 91006A 95032.18370123 .00000094 00000-0 82657-4 0 5629
2 21087 82.9466 333.2336 0034839 163.3811 196.8473 13.74550193201041
```

```
RS-12/13
1 21089U 91007A 95033.85440563 .00000040 00000-0 26552-4 0 7730
2 21089 82.9206 200.3793 0028612 183.8910 176.2031 13.74053748200321
MOP-2
1 21140U 91015B 95028.65864066 -.00000030 00000-0 00000+0 0 8812
2 21140 0.0643 209.8131 0001314 96.4113 57.3307 1.00262084 16544
Nadezhda 3
1 21152U 91019A 95033.77955235 .00000027 00000-0 13158-4 0 783
2 21152 82.9272 156.4301 0040924 295.6825 64.0104 13.73513593195054
Glonass 50
1 21216U 91025A 95031.26252534 -.00000076 00000-0 00000+0 0 3803
2 21216 65.0662 340.8547 0010969 205.7068 154.2357 2.13103076 29802
Glonass 51
1 21217U 91025B 95029.92271014 -.00000076 00000-0 00000+0 0 7903
2 21217 65.0568 340.9025 0012672 240.9003 118.9654 2.13101327 29762
Glonass 52
1 21218U 91025C 95027.22000529 -.00000065 00000-0 10000-3 0 2689
2 21218 65.0431 340.9836 0007247 289.7998 70.1187 2.13102638 29719
GRO
1 21225U 91027B 95032.46497268 .00003033 00000-0 62962-4 0 1895
2 21225 28.4601 79.2619 0003117 283.6673 76.3584 15.42017467 92355
Meteor 3-4
1 21232U 91030A 95033.45338734 .00000050 00000-0 10000-3 0 7784
2 21232 82.5417 6.7959 0013144 337.1246 22.9286 13.16466137181652
NOAA 12
1 21263U 91032A 95033.70090084 .00000088 00000-0 58601-4 0 3621
2 21263 98.5947 61.1403 0012064 290.5133 69.4745 14.22489850193279
OKEAN 3
1 21397U 91039A 95034.08108404 .00000202 00000-0 25763-4 0 802
2 21397 82.5208 243.0489 0021100 224.8968 135.0538 14.76317205197572
GPS BIIA-11
1 21552U 91047A 95034.15275484 -.00000043 00000-0 10000-6 0 8212
2 21552 55.9147 68.7476 0063582 240.9101 118.5113 2.00573650 26249
ERS-1
1 21574U 91050A 95033.82939985 .00000029 00000-0 25185-4 0 781
2 21574 98.4996 110.0300 0001313 65.1614 294.9708 14.35942988185806
UO-22
1 21575U 91050B 95030.20801640 .00000030 00000-0 24489-4 0 5757
2 21575 98.4121 104.8473 0007802 340.1147 19.9729 14.36956477185688
ORBCOMM-X
1 21576U 91050C 95030.23866242 .00000036 00000-0 27067-4 0 6707
2 21576 98.4101 103.4597 0004304 354.3568 5.7566 14.36360020185604
TUBSAT-A
1 21577U 91050D 95030.17511388 .00000032 00000-0 25456-4 0 5692
2 21577 98.4107 103.8955 0007079 344.3615 15.7331 14.36470039185622
SARA
1 21578U 91050E 95030.22203974 .00000236 00000-0 90585-4 0 7691
2 21578 98.4264 108.5016 0005108 344.8003 15.3021 14.38933146185856
TDRS 4
1 21639U 91054B 95031.59967021 .00000066 00000-0 00000+0 0 8605
```

```
2 21639 0.0275 101.2492 0002677 232.6001 198.1258 1.00273769106862
Meteor 3-5
1 21655U 91056A 95034.18762334 .00000051 00000-0 10000-3 0 7768
2 21655 82.5591 313.5983 0013418 346.8419 13.2356 13.16837272166862
UARS
1 21701U 91063B 95029.91484496 -.00000016 00000-0 19741-4 0 6463
2 21701 56.9853 330.6112 0005654 98.4688 261.6987 14.96319276184873
DMSP B5D2-6
1 21798U 91082A 95033.72620901 .00000029 00000-0 39158-4 0 7162
2 21798 98.9627 45.1579 0012060 203.6911 156.3707 14.13862382164202
Glonass 53
1 21853U 92005A 95033.53243419 -.00000001 00000-0 10000-3 0 9778
2 21853 64.9596 101.3024 0007751 177.6985 182.3672 2.13102308 23457
Glonass 54
1 21854U 92005B 95032.41551126 .00000005 00000-0 00000+0 0 838
2 21854 64.9651 101.3456 0015225 12.8349 347.2759 2.13103517 23415
Glonass 55
1 21855U 92005C 95032.00911396 .00000007 00000-0 00000+0 0 813
2 21855 64.9628 101.3628 0008081 209.9347 150.0826 2.13101944 23394
JERS-1
1 21867U 92007A 95034.23906490 .00001752 00000-0 15080-3 0 5006
2 21867 97.7285 112.3916 0002711 84.5668 275.5865 14.98666676162988
GPS BIIA-12
1 21890U 92009A 95031.61925979 .00000021 00000-0 00000+0 0 6186
2 21890 54.0006 247.3594 0055826 174.4506 185.6563 2.00553018 21566
GPS BIIA-13
1 21930U 92019A 95028.33791763 -.00000068 00000-0 00000+0 0 5988
2 21930 55.6813 8.8403 0042944 177.1397 182.8957 2.00565816 20427
EUVE
1 21987U 92031A 95029.19590830 .00001113 00000-0 42221-4 0 3807
2 21987 28.4330 336.5688 0009930 284.1935 75.7552 15.19013125146797
SAMPEX
1 22012U 92038A 95029.83268601 .00001265 00000-0 10854-3 0 6024
2 22012 81.6742 291.7256 0119942 20.2152 340.3840 14.91243598140055
GPS BIIA-14
1 22014U 92039A 95032.36589450 .00000013 00000-0 00000+0 0 4988
2 22014 54.8505 188.5811 0098634 313.7874 45.3731 2.00551740 12340
Glonass 56
1 22056U 92047A 95032.84755350 -.00000072 00000-0 00000+0 0 9969
2 22056 64.9006 340.9456 0006407 284.4974 75.4254 2.13103109 19500
Glonass 57
1 22057U 92047B 95033.61168235 -.00000071 00000-0 00000+0 0 9998
2 22057 64.9121 340.9371 0009221 319.8402 40.0954 2.13102125 19491
Glonass 58
1 22058U 92047C 95029.79793326 -.00000077 00000-0 00000+0 0 9916
2 22058 64.9111 341.0790 0010507 270.1414 89.7290 2.13102894 19462
TOPEX
1 22076U 92052A 95033.83187365 -.00000038 00000-0 10000-3 0 8496
2 22076 66.0407 171.9322 0007784 269.9453 90.0671 12.80930499116030
KO-23
```

```
1 22077U 92052B 95029.80585512 -.00000037 00000-0 10000-3 0 4670
2 22077 66.0793 165.4976 0013094 234.8401 125.1387 12.86290266115936
S80/T
1 22078U 92052C 95034.27263162 -.00000037 00000-0 10000-3 0 4650
2 22078 66.0790 155.1846 0014376 224.0651 135.9228 12.86573562116586
GPS BIIA-15
1 22108U 92058A 95033.82582806 .00000007 00000-0 10000-3 0 5263
2 22108 54.2448 247.9985 0112558 144.0567 216.7490 2.00563409 17551
FREJA
1 22161U 92064A 95033.20960342 .00000004 00000-0 47634-4 0 4839
2 22161 62.9979 70.5518 0799280 335.1975 21.2499 13.21810307112209
LAGEOS II
1 22195U 92070B 95033.43553467 -.00000009 00000-0 10000-3 0 3767
2 22195 52.6753 308.1672 0138054 217.6469 141.4353 6.47293452 53856
GPS BIIA-16
1 22231U 92079A 95033.51061493 .00000022 00000-0 10000-3 0 5013
2 22231 54.7165 189.7618 0035896 287.2511 72.3049 2.00570913 16129
GPS BIIA-17
1 22275U 92089A 95030.66332907 .00000010 00000-0 00000+0 0 5298
2 22275 54.6419 187.3651 0050496 247.8730 111.5211 2.00554469 15479
TDRS 5
1 22314U 93003B 95032.39127066 -.00000296 00000-0 10000-3 0 4852
2 22314 1.5687 72.3296 0001534 186.5322 327.4995 1.00266912 7553
GPS BIIA-18
1 22446U 93007A 95030.73359146 -.00000064 00000-0 00000+0 0 5033
2 22446 54.5428 307.9900 0082474 350.5734 9.2960 2.00555232 14463
Glonass 59
1 22512U 93010A 95030.24891615 .00000003 00000-0 00000+0 0 6795
2 22512 64.9759 101.2749 0009047 180.1563 179.9011 2.13101948 14958
Glonass 60
1 22513U 93010B 95031.12734954 .00000006 00000-0 00000+0 0 7116
2 22513 64.9677 101.2542 0007723 201.5701 158.6823 2.13102387 15167
Glonass 61
1 22514U 93010C 95032.34791706 .00000006 00000-0 00000+0 0 7042
2 22514 64.9812 101.2174 0022275 149.8144 210.3841 2.12589485 15190
ASTRO-D
1 22521U 93011A 95032.22333371 .00000645 00000-0 48936-4 0 3778
2 22521 31.1013 77.0612 0075479 171.5546 188.6381 14.93535530106366
UFO F1
1 22563U 93015A 95031.36391988 -.00000283 00000-0 10000-3 0 3870
2 22563 26.2436 296.4058 0007024 323.1712 148.0145 0.99253664 11109
GPS BIIA-19
1 22581U 93017A 95029.38067950 -.00000077 00000-0 00000+0 0 3999
2 22581 55.1798 8.4345 0053255 34.9871 325.3501 2.00555879 13498
ARSENE
1 22654U 93031B 95022.17402542 -.00000103 00000-0 00000+0 0 3042
2 22654 2.3034 89.6815 2905952 201.9970 142.2536 1.42203247 4316
GPS BIIA-20
1 22657U 93032A 95033.00897231 -.00000089 00000-0 00000+0 0 4362
2 22657 55.2015 8.1059 0068096 207.2302 152.3981 2.00571313 8896
```

```
RADCAL
1 22698U 93041A 95030.24234111 .00000038 00000-0 10739-4 0 3752
2 22698 89.5473 297.6954 0090378 166.4926 193.8722 14.21333507 82841
GPS BIIA-21
1 22700U 93042A 95033.47188508 .00000007 00000-0 00000+0 0 3811
2 22700 54.3455 248.7820 0033922 340.5615 19.3758 2.00561506 11700
NOAA-13
1 22739U 93050A 95033.19582102 -.00000058 00000-0 -73332-5 0 7253
2 22739 98.9754 341.9944 0009183 191.3172 168.7797 14.10921104 76401
GPS BIIA-22
1 22779U 93054A 95033.05900665 -.00000068 00000-0 10000-3 0 4308
2 22779 54.6765 307.8550 0020976 243.2348 116.6065 2.00559265 10459
Meteor 2-21
1 22782U 93055A 95033.57388547 .00000022 00000-0 64653-5 0 3773
2 22782 82.5466 23.8676 0021540 304.6985 55.2124 13.83024742 71936
UFO F2
1 22787U 93056A 95032.39988542 -.00000072 00000-0 00000+0 0 3843
2 22787 4.6330 324.2952 0002891 323.5680 58.4122 1.00271523 5398
SPOT 3
1 22823U 93061A 95034.26137526 -.00009397 00000-0 -43972-2 0 3967
2 22823 98.7472 109.9942 0001615 118.0836 242.0092 14.20083157 70287
STELLA
1 22824U 93061B 95030.21326977 -.00000052 00000-0 -33009-5 0 3646
2 22824 98.6345 108.2569 0005501 270.1107 89.9444 14.27099616 70050
AO-27
1 22825U 93061C 95030.17348827 .00000024 00000-0 27744-4 0 3667
2 22825 98.6328 108.4519 0008013 269.7686 90.2573 14.27649986 70077
IO-26
1 22826U 93061D 95030.20784082 .00000016 00000-0 24096-4 0 3645
2 22826 98.6315 108.5577 0008524 271.4602 88.5587 14.27756492 70081
HEATHSAT
1 22827U 93061E 95030.24038779 -.00000005 00000-0 15682-4 0 4264
2 22827 98.6310 108.5414 0008536 256.3285 103.6942 14.27874680 70094
ITAMSAT
1 22828U 93061F 95030.23613549 .00000015 00000-0 23727-4 0 3435
2 22828 98.6291 108.6148 0009415 254.1138 105.9002 14.28084911 38185
PO-28
1 22829U 93061G 95030.24565307 .00000023 00000-0 26786-4 0 3588
2 22829 98.6303 108.6505 0009421 253.9759 106.0382 14.28061707 70109
KO-25
1 22830U 93061H 95029.74676726 -.00000088 00000-0 -18090-4 0 3730
2 22830 98.5332 102.9129 0010945 230.5450 129.4762 14.28079978 70035
GPS BIIA-23
1 22877U 93068A 95033.10693537 -.00000036 00000-0 00000+0 0 2404
2 22877 55.3549 69.2260 0036580 296.9033 62.7559 2.00558081 9347
METEOSAT 6
1 22912U 93073B 95029.04988461 -.00000098 00000-0 00000+0 0 2296
2 22912 0.3989 261.0513 0000941 135.3039 99.9408 1.00256078 2799
HST Array
1 22920U 90037C 95033.52014478 .00007348 00000-0 57314-3 0 2791
```

```
2 22920 28.4659 169.8965 0003680 157.3809 202.7066 14.99380610 64065
Meteor 3-6
1 22969U 94003A 95033.55140676 .00000051 00000-0 10000-3 0 1439
2 22969 82.5589 253.7177 0016623 50.9948 309.2654 13.16727431 49166
TUBSAT-B
1 22970U 94003B 95030.10414828 .00000051 00000-0 10000-3 0 1320
2 22970 82.5584 256.1046 0017990 57.4754 302.8100 13.16823789 48718
ODERACS E
1 22994U 94006F 95034.01396633 .00197775 28970-4 23516-3 0 2648
2 22994 56.9824 344.7047 0002864 48.6560 311.4499 16.08130006 56838
ODERACS F
1 22995U 94006G 95033.97819070 .00260942 44351-4 25402-3 0 3126
2 22995 56.9797 343.8054 0002219 52.7032 307.2371 16.11135065 56847
BREMSAT
1 22998U 94006H 95033.85880665 .00526647 11026-4 28794-3 0 3233
2 22998 56.9804 344.5478 0003353 56.9045 303.2361 16.19111731 40678
GPS BIIA-24
1 23027U 94016A 95031.18972035 -.00000085 00000-0 00000+0 0 1622
2 23027 55.0411 10.2501 0063303 197.9639 161.8083 2.00573161 6615
Glonass 62
1 23043U 94021A 95031.02933209 -.00000077 00000-0 00000+0 0 1585
2 23043 64.7901 341.4399 0005240 207.6241 152.3404 2.13102627 6286
Glonass 63
1 23044U 94021B 95031.85061568 -.00000075 00000-0 00000+0 0 1462
2 23044 64.7773 341.4165 0028447 207.5258 152.3169 2.13103133 6300
Glonass 64
1 23045U 94021C 95031.08797678 -.00000077 00000-0 00000+0 0 1558
2 23045 64.7701 341.4554 0010628 28.6697 331.3813 2.13102381 6281
GOES 8
1 23051U 94022A 95033.47034533 -.00000192 00000-0 10000-3 0 2616
2 23051 0.0698 264.3843 0001975 44.6798 261.4111 1.00271247 2604
MSTI 2
1 23101U 94028A 95033.04068746 .00007097 00000-0 13318-3 0 1450
2 23101 97.1035 228.2751 0012394 29.5341 330.6768 15.48845681 41596
STRV-1A
1 23125U 94034B 95033.53939154 .00003851 00000-0 87421-3 0 1109
2 23125 7.3155 86.1005 7273457 10.6813 359.0701 2.29610239 4553
STRV-1B
1 23126U 94034C 95029.57781526 .00003645 00000-0 70364-3 0 1094
2 23126 7.3093 87.7422 7279944 7.2924 359.3623 2.29209451 4519
Nadezhda 4
1 23179U 94041A 95029.63920570 .00000018 00000-0 20709-5 0 743
2 23179 82.9460 250.5355 0037759 91.4781 269.0686 13.75662588 27422
Glonass 65
1 23203U 94050A 95033.10278800 .00000043 00000-0 00000+0 0 1059
2 23203 64.8205 220.9610 0007877 133.4203 226.6560 2.13101694 3728
Glonass 66
1 23204U 94050B 95031.46002649 .00000050 00000-0 00000+0 0 1129
2 23204 64.8002 221.0557 0015260 353.9337 6.0664 2.13101609 3684
Glonass 67
```

```
1 23205U 94050C 95032.28135258 .00000044 00000-0 00000+0 0 1015
2 23205 64.8124 221.0067 0001585 9.1802 350.8350 2.13101813 3700
DMSP B5D2-7
1 23233U 94057A 95034.17170060 -.00000026 00000-0 10000-4 0 2088
2 23233 98.8936 93.3689 0013054 153.6957 206.4771 14.12488257 22233
Soyuz TM-20
1 23288U 94063A 95033.87062983 .00009875 00000-0 13200-3 0 1123
2 23288 51.6470 110.8728 0001075 216.6766 143.3161 15.58737068511974
OKEAN 1-7
1 23317U 94066A 95029.84714238 .00000213 00000-0 29096-4 0 394
2 23317 82.5433 162.9363 0024607 281.9541 77.8906 14.73890446 16248
ELEKTRO
1 23327U 94069A 95032.80754065 -.00000121 00000-0 00000+0 0 466
2 23327 1.0615 265.1565 0002852 143.3659 90.2368 1.00271596 975
RESURS 1-3
1 23342U 94074A 95032.27203873 .00000089 00000-0 23131-4 0 520
2 23342 98.0354 94.2409 0001460 85.7736 274.3637 14.69693792 13079
Progress M-25
1 23348U 94075A 95033.87062983 .00009875 00000-0 13200-3 0 863
2 23348 51.6470 110.8728 0001075 216.6766 143.3161 15.58737068 13046
Glonass 68
1 23396U 94076A 95033.06345197 .00000002 00000-0 00000+0 0 503
2 23396 64.9020 101.2784 0030424 192.3194 167.6757 2.13102177 1566
Glonass 69
1 23397U 94076B 95032.30028635 .00000006 00000-0 00000+0 0 576
2 23397 64.8902 101.3202 0013317 318.8068 41.1603 2.13102274 1540
Glonass 70
1 23398U 94076C 95032.18353175 .00000006 00000-0 00000+0 0 540
2 23398 64.8840 101.3087 0004020 277.8487 82.1733 2.13101922 1552
RS-15
1 23439U 94085A 95033.86503702 -.00000039 00000-0 10000-3 0 266
2 23439 64.8147 112.2253 0167936 285.1325 73.1079 11.27525264 4373
NOAA 14
1 23455U 94089A 95033.77288476 .00000007 00000-0 28374-4 0 545
2 23455 98.8881 337.4460 0008619 213.2052 146.8573 14.11487501 4841
Intelsat 704
1 23461U 95001A 95016.52338854 .00000090 00000-0 00000+0 0 179
2 23461 0.0144 30.3098 0001893 178.1156 151.5512 1.00217956 113
1995001B
1 23462U 95001B 95032.74385795 .00084639 -65676-5 38641-9 0 177
2 23462 26.5585 19.7579 7609117 191.5253 130.1947 1.98222093 466
Tsikada
1 23463U 95002A 95030.71311087 -.00000006 00000-0 -22829-4 0 108
2 23463 82.9260 204.8709 0038146 273.2268 86.4522 13.71837637 899
ASTRID
1 23464U 95002B 95029.91367776 .00000092 00000-0 86568-4 0 74
2 23464 82.9279 205.4668 0041159 276.3226 83.3244 13.71146613 778
FAISAT
1 23465U 95002C 95031.73648148 .00000036 00000-0 23955-4 0 83
2 23465 82.9254 204.1200 0036450 270.5954 91.5358 13.71506909 1015
```

```
1995002D
1 23466U 95002D 95033.18298777 .00000189 00000-0 18687-3 0 145
2 23466 82.9201 203.0330 0030963 259.0619 100.5161 13.73376116 1237
1995003A
1 23467U 95003A 95033.88203926 -.00000151 00000-0 00000+0 0 119
2 23467 6.0690 322.2967 1569217 174.1043 51.6679 1.24030491 27
1995003B
1 23468U 95003B 95029.92198836 .00001706 00000-0 86884-3 0 50
2 23468 26.9391 321.3284 6702967 174.8936 199.2914 3.01388965 34
STS 63
1 23469U 95004A 95034.28348921 .00000387 00000-0 53246-5 0 17
2 23469 51.6614 109.1408 0026128 202.9294 156.9459 15.82619484 06
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

253. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 00:36:05 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.791858165@tiger>
Source record: 25952

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 63
1 23469U 95004A 95034.28348921 .00000387 00000-0 53246-5 0 17
2 23469 51.6614 109.1408 0026128 202.9294 156.9459 15.82619484 06
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

254. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 00:36:20 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.791858180@tiger>
Source record: 25953
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.info

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 63
1 23469U 95004A 95034.28348921 .00000387 00000-0 53246-5 0 17
2 23469 51.6614 109.1408 0026128 202.9294 156.9459 15.82619484 06
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

255. Re: Is SAREX onboard Discovery?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 00:54:57 UTC
From: tomsunman@aol.com
Message-ID: <3guj91$oeq@newsbf02.news.aol.com>
Source record: 25954

<Is the Space shuttle Discovery carrying amateur radio this mission? Can
<someone please post the discoveries KEP's?

John,
Yes discovery is carring Sarex, config. M - Voice only.
keps are in this newsgroup or sci.space.shuttle.

Tom Randall
KB2SMS

256. Yet Another Satellite Tracker (for WinNT)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 02:02:22 UTC
From: sia@bga.com
Message-ID: <3gun7e$qgs@lia.bga.com>
Source record: 25955

Binaries and sources for a native multi-threaded Windows-NT 3.5 based satellite tracking program (called VersaTrack) are available (for as long as they'd let me use the space), from ftp.realtime.com.

IT WON'T RUN UNDER WINDOWS 3.x (sorry!).

The orbit calculations are adapted directly from Manfred Bester's fine Unix sattrack program (versions 1 and 2 but not 3).

The package is fully functional, unrestricted, distributable, FREE and AS IS (without support, warranty, and with all standard disclaimers) for educational, hobby & non-profit/non-commercial use. However, it is a derived work and has multiple copyrights.

Some features:

- Real-time (or near-real-time) graphical (and numerical) display of positions for multiple satellites from multiple sites. Number of sat/site pairs restricted only by available memory and CPU juice.

- Notification of AOS via audiable alarms (chirps), and/or visual clues (poping icons).

- Tabular report and graphical display of ground tracks.

- displayed or reported times can be independently chosen for each satellite-site pair to be given in UTC, "local time", or "site local time".

- "Next" rise/set times display for any chosen satellite/site pair.

- Two user selectable maps (US and world). Current supported display resolutions are 640x480 (not recommended), and 800x600.

- All data files are regular ASCII text files.

- Integrated (and documented) support for utilization of external modules (i.e., other executables) for remote control of devices such as rotators and radios.

FPU/FPP or i486 or pentium (w/good FPU) and lots of memory are very strongly suggested!

ftp to ftp.realtime.com, login as anonymous. Then cd to pub/misc. The files are VERSATRK.ZIP (executales and related files), VSTSRC.ZIP (sources), RADSERV.ZIP (sample code), and readme.first. Verify the files against the following:

```
FILE SIZE (BYTES) cksum(1) CRC32 BSD sum(1) sum(1)
========== ============ ============ ========== =======
VERSATRK.ZIP 259,988 2631905928 38657 59477
VSTSRC.ZIP 312,987 4255250203 18386 49228
RADSERV.ZIP 31,647 3252269177 56219 11122
```

Enjoy!

siamack
73 DE WJ1Q

====
sia@realtime.com -or- sia@bga.com

"-What's your goal in life?
-I endeavor to be absent when my time comes." -- Mark Twain

257. Re: AMSOFT (&other) advertising on 'net

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 03:47:46 UTC
From: bob@texas.net
Message-ID: <3gutd2$4li@empire.texas.net>
Source record: 25956
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <3gtvp4$r2i@hpbab.wv>, hanko@wv.mentorg.com (Hank Oredson) says:

>If you wish a newsgroup without advertising, then you should take
>those actions which will lead to such a newsgroup: a call for
>moderation of the group, or a call for a new (moderated) group.
>Within usenet, this is the only mechanism available to control
>content - other than peer pressure ... and you will lose this one.

No, there's also Cancelmoose[tm] and the advent of other cancelbot style-solutions to the spammers on the net. I agree that peer pressure is not likely to work--as long as a company has the potential to make so much as one sale, he's going to post ads to the net if he has no respect for the desires of the group's readers. I saw a post that suggested creating a group like rec.radio.amateur.ads to have a place where those who desire to read ads can go. But the advertisers wish to invite themselves into our living rooms and shacks, rather than place their ads on our doorstep.

Again, I refer those who feel imposed upon by spam ads to check out alt.current-events.net-abuse for some very enlightening reading, starting with the FAQs there.

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

258. STS-63 Orbital State Vector Rev #10

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 03:50:40 UTC
From: astroman@ccnet.com
Message-ID: <3gutig$520@ccnet3.ccnet.com>
Source record: 25957
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space,rec.radio.info

```
Vector format = 7
Satellite Name: STS-63
Catalog Number: 23469 95004A
Epoch Date/Time: 95034.83492929398
02/03/1995 20:02:17.891 UTC
ECI X: 4343.918521 km
Y: -453.173892 km
Z: -5104.421999 km
Xdot: -0.970675939 km/s
Ydot: 7.496008301 km/s
Zdot: -1.482296000 km/s
ndot/2 (drag): 0.00005922639 rev/day^2
nddt/6: 1.48474E-10 rev/day^3
Bstar: 3.82036E-05 1/Earth Radii
Elset #: 5
Rev @ Epoch: 10.71067494564

MSDOS/PC software is available for conversion of
OSV to 2 Line Keplerian Elements via ftp to:
oak.oakland.edu:/pub/msdos/hamradio/v2l9331.zip
and the SIMTEL archives.

State Vectors courtesy Ken Ernandes N2WWD

SM
```

259. How much power do I need for AO13?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 04:43:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A2D517.14E6000088.uuout@freddy.supernet.ab.ca>
Source record: 25958

Hi James,
In regards to your question...
-> How much power do I need to work AO13 mode B? AT present I have 25
-> watts and I can not hear myself.

With 25 watts you should be able to hear your downlink fairly well when the bird is in close range. Using this power level I would guest-a-mate that you can hear and work to approx. 25000 km without too much difficulty. The big trick is to get you 25 watts to the uplink antenna without too much loss.

My system: coax = 60 ft belden 9913 with N connectors to a MBM-48 (about 14 dbd gain less line loss approx. 2 db on 435 mhz)
= 60 ft belden 9913 with N connectors to 2 X 20 element cross yagis (about 15 dbd gain less 2 db line loss on 145 mhz)

I hope you can see that line loss is very important and your signals might be lost in your coax on both the up and down links. Also your antennas should have enough gain to make it happen.

Please have a good look at your system. Measure your power output at the antenna end of your coax. You may be surprised at what you find.

Hope this helps a little. Please let me know how you make out.

73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

260. STS-63 Element_Set (95035.043)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 08:15:31 UTC
From: elements-request@alsys.com
Message-ID: <STS-63.95035.043@alsys.com>
Source record: 25960
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-63
1 23469U 95004A 95035.04359398 .00130549 00000-0 12842-3 0 55
2 23469 51.6479 105.2241 0016699 292.1140 67.8056 15.75165780 145

Satellite: STS-63
Catalog number: 23469
Epoch time: 95035.04359398 = (04-Feb-95 01:02:46.51 UTC)
Element set: 005
Inclination: 51.6479 deg
RA of node: 105.2241 deg Space Shuttle Flight STS-63
Eccentricity: .0016699 Keplerian element set JSC-005
Arg of perigee: 292.1140 deg from NASA flight Day 1 vector
Mean anomaly: 67.8056 deg
Mean motion: 15.75165780 rev/day Gil Carman
Decay rate: 1.30549e-03 rev/day^2 NASA Johnson Space Center
Epoch rev: 14

This data is also available on the Shuttle Elements Mailing List. For
more information about the list, send a message to with only the command
"info elements" in the body of your message to "listserv@alsys.com".

--
--
Gary Morris Internet: garym@thomsoft.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

261. shortwave to hear shuttle ?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 08:22:53 UTC
From: Sono1@ix.netcom.com
Message-ID: <3gvdgt$pdv@ixnews3.ix.netcom.com>
Source record: 25611

Just wondering if a regular shortwave radio can pick up shuttle
transmisson. If so what frequencies.

262. Re: Radio Astronomy info

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 12:38:37 UTC
From: k23690@proffa.cc.tut.fi
Message-ID: <3gvsgd$u30@proffa.cc.tut.fi>
Source record: 25612

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

> In article <D3Cs6o.Bow@cix.compulink.co.uk> wiselace@cix.compulink.co.uk
> ("Gary and Jean Peach") writes:

> > It is very true what you say about the HF Data being a new frontier.

Isn't the synchrotron radiation (which dominates below 100 MHz) polarized ?

The Faraday rotation in the ionosphere would cause "interesting" effects
when received on a linear polarized dipole.

[deleted]

> Well, the key of course is to be able to preserve phase coherence
> from the antenna to the data. Flash A/D chips are getting cheap
> enough to do that at HF while still fitting into an amateur's budget.
> I now picture a TRF front end feeding a flash A/D which in turn feeds
> the data capture system. The A/D sample clock would be slaved to
> a high precision reference such as a signal from a TVRO setup, or
> perhaps WWVL. The data could be captured to very fast streaming tape.

Aren't the flash A/D chips capable of operating in the upper HF range
only 6 or 8 bit ? Is this enough dynamic range, particulary if a wide
bandwidth is used.

> The alternative of a block downconverter with a high precision LO
> reference feeding a modified VCR for analog data storage and later
> digitization is still a contender of course. I'm not sure which
> would be the better course. The direct capture to streaming tape

How about a receiver consisting of two mixers with quadrature
LO feeds from a locked source. The I and Q output channels from the
mixers are directly connected to the L and R input of a DAT,
storing the amplitude and phase of a 20 kHz wide band.

The 20 kHz bandwidth should be enough as it should be much easier
to find a 20 kHz band free of man-made noise than a band several
megahertz wide. Also, the amount of computations at the correlation
stage would be greatly reduced.

An alternative to the DAT would be the old digital audio adapters
that once were used to store digital audio on VCRs. I do not know if
these adapters work with European VCRs in LP mode, but it sure would
be nice to record 10 hours of data on a 5 hour cassette.

Paul OH3LWR

--
Phone : +358-31-213 3657 Mail: Hameenpuisto 42 A 26
Internet: Paul.Keinanen@cc.tut.fi FIN-33200 TAMPERE
Telex : 58-100 1825 (ATTN: Keinanen Paul) FINLAND
X.400 : G=Paul S=Keinanen O=Kotiposti A=ELISA C=FI

263. ARLK005 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 17:15:49 UTC
From: w1aw@arrl.org
Message-ID: <$arlk005.1995@ampr.org>
Source record: 25613
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK005
ARLK005 Keplerian data

ZCZC SK30
QST de W1AW
Keplerian Bulletin 5 ARLK005
From ARRL Headquarters
Newington, CT February 4, 1995
To all radio amateurs

SB KEP ARL ARLK005
ARLK005 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-63
1 99963U 95999A 95033.30079147 .00130549 00000-0 12842-3 0 36
2 99963 51.6490 114.5633 0080613 5.0856 355.0928 16.04842332 25
AO-10
1 14129U 83058B 95022.06637884 .00000188 00000-0 10000-3 0 3378
2 14129 26.6077 286.7997 6021742 245.9578 41.7464 2.05877067 59324
RS-10/11
1 18129U 87054A 95029.81708464 .00000048 00000-0 36184-4 0 177
2 18129 82.9253 161.3378 0013081 111.5236 248.7310 13.72347864380992
UO-11
1 14781U 84021B 95029.53497394 .00000125 00000-0 28936-4 0 7713
2 14781 97.7802 38.5998 0010747 268.2209 91.7767 14.69298517583540
RS-12/13
1 21089U 91007A 95029.48529122 .00000028 00000-0 13812-4 0 7723
2 21089 82.9198 203.6193 0028460 196.2512 163.7733 13.74053450199729
AO-13
1 19216U 88051B 95029.26279784 .00000295 00000-0 10000-4 0 106
2 19216 57.6177 206.7230 7260071 0.7339 359.8140 2.09716671 19255
UO-14
1 20437U 90005B 95030.23016510 -.00000008 00000-0 13759-4 0 714
2 20437 98.5785 116.7862 0010090 245.9616 114.0500 14.29872767262031
RS-15
1 23439U 94085A 95029.78512545 -.00000039 00000-0 10000-3 0 256
2 23439 64.8142 118.8199 0167992 285.7880 72.4579 11.27524749 3916
```

```
AO-16
1 20439U 90005D 95029.78733809 -.00000010 00000-0 13205-4 0 8695
2 20439 98.5882 117.8404 0010532 248.1918 111.8143 14.29926709261983
DO-17
1 20440U 90005E 95030.20926175 -.00000012 00000-0 12412-4 0 8697
2 20440 98.5894 118.6633 0010607 244.8407 115.1678 14.30067368262069
WO-18
1 20441U 90005F 95030.18880306 .00000007 00000-0 19801-4 0 8737
2 20441 98.5886 118.6256 0011118 245.7949 114.2070 14.30039762262064
LO-19
1 20442U 90005G 95030.22140151 .00000003 00000-0 18242-4 0 8699
2 20442 98.5870 118.9734 0011497 245.2987 114.7000 14.30139739262084
FO-20
1 20480U 90013C 95030.25279873 .00000019 00000-0 11434-3 0 7665
2 20480 99.0669 144.5321 0540208 185.3361 174.1822 12.83229967233250
AO-21
1 21087U 91006A 95028.83525113 .00000094 00000-0 82657-4 0 5616
2 21087 82.9442 335.7102 0035119 172.5390 187.6295 13.74549949200584
UO-22
1 21575U 91050B 95030.20801640 .00000030 00000-0 24489-4 0 5757
2 21575 98.4121 104.8473 0007802 340.1147 19.9729 14.36956477185688
KO-23
1 22077U 92052B 95029.80585512 -.00000037 00000-0 10000-3 0 4670
2 22077 66.0793 165.4976 0013094 234.8401 125.1387 12.86290266115936
KO-25
1 22828U 93061F 95030.23613549 .00000015 00000-0 23727-4 0 3435
2 22828 98.6291 108.6148 0009415 254.1138 105.9002 14.28084911 38185
IO-26
1 22826U 93061D 95030.20784082 .00000016 00000-0 24096-4 0 3645
2 22826 98.6315 108.5577 0008524 271.4602 88.5587 14.27756492 70081
AO-27
1 22825U 93061C 95030.17348827 .00000024 00000-0 27744-4 0 3667
2 22825 98.6328 108.4519 0008013 269.7686 90.2573 14.27649986 70077
PO-28
1 22829U 93061G 95030.24565307 .00000023 00000-0 26786-4 0 3588
2 22829 98.6303 108.6505 0009421 253.9759 106.0382 14.28061707 70109
Mir
1 16609U 86017A 95031.24203482 .00005418 00000-0 75479-4 0 9115
2 16609 51.6474 124.0586 0001404 196.3197 163.7753 15.58700662511540

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
February 7, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

264. STS/MIR

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 18:09:00 UTC
From: pet.bentley@woodybbs.com
Message-ID: <93.2831.7587.0NFB91B4@woodybbs.com>
Source record: 25614

CAN YOU GIVE ME THE FREQS BEING UDES USED BETWEEN STS63 AND MIR AND GROUND?
TKS

--- Maximus/2 2.02
* Origin: Packet BBS +44 81 547 1479 (2:254/173)

265. MONDAY: MIR AND SHUTTLE VIEWING WILL BE PERFECT IN SF!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 18:43:48 UTC
From: manfred@sunspot.ssl.berkeley.edu
Message-ID: <3h0ht4$lle@agate.berkeley.edu>
Source record: 25615
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space,rec.radio.amateur.misc

As you know, Discovery is on its way for the rendezvous with Mir. If the sky in the San Francisco Bay Area is clear on early Monday morning, we'll have the perfect viewing opportunity to watch Mir and Discovery fly in formation.

IT CANNOT POSSIBLY GET ANY BETTER THAT THIS!

One can expect to see both spacecraft as bright as Jupiter, if not Venus. The Sun will be right at the nautical twilight limit and will illuminate both spacecraft on the side that we'll be looking at. Mir and Discovery will appear in the north-west (309 degrees) and will be passing exactly overhead. Mir will be leading, and Discovery will follow shortly behind. Below are the circumstances for this pass. Let's hope there is no fog or clouds on Monday morning at 6:35 PST!

Enjoy,
Manfred

DL5KR SatTrack V3.1 Orbit Prediction

Satellite #16609 : Mir
Data File : tlex.dat
Element Set Number: 913 (Orbit 51198)
Element Set Epoch : 03Feb95 01:30:41.458 UTC (1.7 days ago)
Orbit Geometry : 391.03 km x 392.58 km at 51.647 deg
Propagation Model : SGP4
Ground Station : Berkeley (SSL), CA, USA --- CM87VV
Time Zone : PST (-8.00 h)

Mon 06Feb95 --- Orbit 51254

PST	Azimuth [deg]	Elev [deg]	Range [km]	Height [km]	Sun Ang [deg]	Sun Ele [deg]	V
06:36:00	309.3	0.3	2269.7	374.4	25.9	-7.0	N
06:36:15	309.4	1.2	2165.6	374.6	25.6	-7.0	N
06:36:30	309.4	2.2	2061.5	374.7	25.4	-6.9	N
06:36:45	309.5	3.2	1957.4	374.9	25.2	-6.9	N
06:37:00	309.5	4.3	1853.5	375.1	25.0	-6.8	N
06:37:15	309.6	5.5	1749.7	375.3	24.9	-6.8	N
06:37:30	309.6	6.8	1646.1	375.5	24.9	-6.7	V
06:37:45	309.7	8.2	1542.8	375.7	24.9	-6.7	V
06:38:00	309.7	9.8	1439.9	375.9	25.0	-6.6	V
06:38:15	309.8	11.5	1337.5	376.1	25.2	-6.6	V
06:38:30	309.8	13.4	1235.8	376.4	25.6	-6.5	V
06:38:45	309.9	15.6	1134.9	376.6	26.2	-6.5	V *
06:39:00	310.0	18.1	1035.2	376.8	27.1	-6.4	V *

```
06:39:15 310.0 21.1 937.0 377.1 28.4 -6.4 V *
06:39:30 310.1 24.6 841.0 377.3 30.3 -6.3 V *
06:39:45 310.1 28.9 748.0 377.6 32.8 -6.3 V *
06:40:00 310.2 34.3 659.2 377.8 36.5 -6.2 V *
06:40:15 310.3 41.2 576.7 378.1 41.6 -6.2 V *
06:40:30 310.4 50.0 503.7 378.3 48.8 -6.1 V *
06:40:45 310.6 61.4 444.8 378.6 58.5 -6.1 V *
06:41:00 311.2 75.4 406.2 378.9 70.9 -6.0 V *
06:41:15 117.1 88.8 394.0 379.2 85.2 -6.0 D
06:41:30 129.3 73.2 410.5 379.4 99.4 -5.9 D
06:41:45 129.8 59.6 452.6 379.7 111.7 -5.9 D
06:42:00 130.0 48.6 514.0 380.0 121.4 -5.8 D
06:42:15 130.1 40.1 588.7 380.3 128.7 -5.8 D
06:42:30 130.2 33.5 672.4 380.6 134.2 -5.8 D
06:42:45 130.3 28.3 761.9 380.9 138.4 -5.7 D
06:43:00 130.3 24.1 855.5 381.2 141.6 -5.7 D
06:43:15 130.4 20.7 951.9 381.4 144.1 -5.6 D
06:43:30 130.4 17.8 1050.4 381.7 146.1 -5.6 D
06:43:45 130.5 15.3 1150.4 382.0 147.7 -5.5 D
06:44:00 130.5 13.2 1251.4 382.3 149.0 -5.5 D
06:44:15 130.6 11.3 1353.4 382.6 150.1 -5.4 D
06:44:30 130.6 9.6 1455.9 382.9 151.0 -5.4 D
06:44:45 130.7 8.1 1558.9 383.2 151.7 -5.3 D
06:45:00 130.7 6.7 1662.4 383.5 152.4 -5.3 D
06:45:15 130.7 5.4 1766.1 383.8 152.9 -5.2 D
06:45:30 130.8 4.2 1870.0 384.1 153.4 -5.2 D
06:45:45 130.8 3.1 1974.0 384.4 153.8 -5.1 D
06:46:00 130.9 2.1 2078.2 384.6 154.1 -5.1 D
06:46:15 130.9 1.1 2182.4 384.9 154.3 -5.0 D

-----
```

266. RS-15 EUROPEAN SCHEDS.

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 22:17:26 UTC
From: kamer@ibm.net
Message-ID: <3h0udm$1ojq@news-s01.ny.us.ibm.net>
Source record: 25616

Hello, I am WB9ZAI, Harry Kamer, in EN-51 state of Illinois. I have recently started operating RS-15 satellite and still have yet to make any overseas contacts. I would like to set up a schedule with any interested amateur radio operators in England, Spain, France, etc. to make contact either CW or SSB.

Please leave a message and I will respond. Thanks and 73, WB9ZAI.

267. RS-12 Schedule contacts for WAS

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 22:19:45 UTC
From: kamer@ibm.net
Message-ID: <3h0ui1$1ojq@news-s01.ny.us.ibm.net>
Source record: 25617

Hello, I am WB9ZAI, Harry Kamer, in EN-51 (Illinois). I am trying to complete
WAS on RS-12 and still need Delaware, Hawaii, Alaska and Arkansas (!!).
If anyone is interested in scheds. or knows of any hams that are active from
these states on either RS-12 or RS-10, I would greatly appreciate a message.

Thanks for reading this message; 73 de WB9ZAI.

268. STS-63 Orbital State Vector Rev #26

Newsgroup: rec.radio.amateur.space
Date: 1995-02-04 23:43:22 UTC
From: astroman@ccnet.com
Message-ID: <3h13eq$aoc@ccnet3.ccnet.com>
Source record: 25622
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space,rec.radio.info

```
Vector format = 117
Satellite Name: STS-63
Catalog Number: 23469 95004A
Epoch Date/Time: 95035.83507653935
02/04/1995 20:02:30.613 UTC
EFG E: -20681542.29 ft
F: -7083150.25 ft
G: 3413261.20 ft
Edot: 1786.7231 ft/s
Fdot: -14432.6425 ft/s
Gdot: -19397.1839 ft/s
ndot/2 (drag): 0.00000997250 rev/day^2
nddt/6: 0.00000E+00 rev/day^3
Bstar: 7.30731E-06 1/Earth Radii
Elset #: 8
Rev @ Epoch: 26.46902575043

MSDOS/PC software is available for conversion of
OSV to 2 Line Keplerian Elements via ftp to:
oak.oakland.edu:/pub/msdos/hamradio/v2l9331.zip
and the SIMTEL archives.

State Vectors courtesy Ken Ernandes N2WWD

SM
```

269. Re: FTP addresses for Orbital Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 00:06:04 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3h14pc$95s@news.doit.wisc.edu>
Source record: 25618

In article <thomsonaD3EKL2.7oL@netcom.com>, thomsona@netcom.com (Allen Thomson) says:
{
{{In article <3grjd0$ka3@news.doit.wisc.edu> djmullen@facstaff.wisc.edu (Dave Mullenix)
writes:
Internet FTP sites for Orbital Elements

[snip]

kilroy.jpl.nasa.gov /pub/space/elements/molczan
/pub/space/elements/satelem

This site has the Mother Of All Element Files in the
/pub/space/elements/satelem directory. Prepared by Alan
^^^^
Thompson, it's 1/4 meg in the .Z compressed format and
^^^^^^^^
[remainder snipped]
}}

Proud, though humble, as I am to be cited as the Father of the Mother Of
All Element Files, would it be too much to ask to SPELL AT LEAST ONE OF
MY NAMES RIGHT ???!!!

Elementarily yours,
Allen Thomson
^^^^^ ^^^^^^^
}
Oops! Well, putting the best face on it, at least I got your initials
right. Corrections to that file have been made and any future posts
will have your name spelled right - or at least I'll be closer. Some-
times it takes a few iterations.

You know, if you'd change the spelling to Thompson, you could be
Governor of Wisconsin and a possible contender for the Republican
Vice Presidential nomination. On second thought...

Dave Mullenix, N9LTD

270. STS-63 2 Meter Uplink and Downlink Freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 02:50:01 UTC
From: fehner@cts.com
Message-ID: <fehner.3.2F343CD9@cts.com>
Source record: 25619

What are the 2 Meter uplink and downlink frequencies for
the shuttle?

Barbara Fehner KK6IB
E-Mail: fehner@cts.com

271. MIR/SHUTTLE VHF communications

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 03:18:00 UTC
From: wirenet!n4nr@vulcan.com
Message-ID: <8A2E4FE.00190001A8.uuout@vulcan.com>
Source record: 25620

Anybody know what frequency the shuttle and MIR will use (VHF) to
communicate between the two, as advertised?

Dennis - N4NR
wirenet!n4nr@vulcan.com
KO-25, KO-23, UO-22

272. Shuttle - Mir rendezvous

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 05:06:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A2E52E.14E6000095.uuout@freddy.supernet.ab.ca>
Source record: 25621

Sorry, got bad news about the shuttle.

It sounds like the shuttle will not be docking or even getting to close
to mir due to a two fuel leaks from the shuttle's thrusters.
Apparently the fuel leaking out would cause big problems for mir's solar
panels, so its best they don't get too close.

This news can from CNN this evening.

73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

273. Space Shuttle Frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 12:18:37 UTC
From: bc06@cityscape.co.uk
Message-ID: <3h2fmt$4l1@ns.cityscape.co.uk>
Source record: 25623

Does anyone have any HF frequencies for Shuttle comms in the UK ?
Have been trying WA3NAN on 14.295 without any joy

274. Frequencies METEOSAT satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 20:40:34 UTC
From: harry_ph@euronet.nl
Message-ID: <harry_ph.2.0014ADBF@euronet.nl>
Source record: 25629

Who nows wherr to obtain information about the METEOSAT sattelites.

Information such as frequencies, type of transmission and other stuff.

275. HOAX against AmSoft

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 21:49:11 UTC
From: amsoft@epix.net
Message-ID: <3h3h4n$sev@grape.epix.net>
Source record: 25624
Cross-posted to: rec.radio.amateur.policy,rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.misc,rec.radio.amateur.space

I question if the person called bob@texas.net really exists or if it was just a HOAX and a campaign by a spineless internet hacker to damage the AmSoft reputation.

I submit the following information and request that you as an individual test the information for yourself.

On 2/5/95 I did a FINGER on bob@texas.net and received the following information:

>--- Host: texas.net User: bob@texas.net ---
>Login name: bob
>In real life: Robert J. Scott
>Directory: /home/b/bob
>Shell: /bin/menu
>Last login Fri Jan 20 20:39 on ttyrc from sa-pm1.texas.net
>No unread mail
>No Plan.

Take a look at the LAST LOGIN DATE!
(Last login Fri Jan 20 20:39 on ttyrc from sa-pm1.texas.net)
So how is it that bob@texas.net has managed to post so many messages in the rec.radio.amateur.* usenets as bob@texas.net since Jan 20 and texas.net's finger has no record of it?

Take a look how he connected thru TEXAS.NET ON JAN. 20, 95
(on ttyrc from sa-pm1.texas.net)
Is sa-pm1 a code for SPAM?

It looks like the wool has been pulled over our eyes on this story.
Even the FCC records for WY7O don't correspond to the Texas area.
Whoever you are pretending to be WY70 we are onto your HOAX.

FYI, AmSoft has not posted any reference to it's products since January 27th and will not post reference to AmSoft products in the future except for the rec.radio.swap usenet, and in the amsoft signature when responding to usenet messages.

To all readers of the rec.radio.amateur.* usenets AmSoft posts this public apology to anyone that became annoyed by any aspect of the continuing posts by or about AmSoft and its product.

I request that nobody post a response to this article unless they intend for their message to appear in all 7 rec.radio.amateur.* usenets (read header of this message first)

Sincerely,
Pete, KC3TL

276. Re: HOAX against AmSoft

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 23:18:29 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3h3q8s$esm@newshost.lanl.gov>
Source record: 25625
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Mike,
As I posted to Bob Scott can we please let this go. The bandwidth
wasted on this debate could have posted the entire catalogs from
HRO or AES. Pete said he was just going to post in forsale from
now that should be good enough. 73 de Jerry

277. Re: HOAX against AmSoft

Newsgroup: rec.radio.amateur.space
Date: 1995-02-05 23:31:44 UTC
From: md@pstc3.pstc.brown.edu
Message-ID: <3h3n50$53c@cat.cis.Brown.EDU>
Source record: 25626
Cross-posted to: rec.radio.amateur.policy,rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.misc,rec.radio.amateur.space

In article <3h3h4n$sev@grape.epix.net>, Pete deVolpi <amsoft@epix.net> wrote:

>Take a look at the LAST LOGIN DATE!
>(Last login Fri Jan 20 20:39 on ttyrc from sa-pm1.texas.net)
>So how is it that bob@texas.net has managed to post so many messages in
>the rec.radio.amateur.* usenets as bob@texas.net since Jan 20 and
>texas.net's finger has no record of it?

Boy Pete, you really are a newbie without a clue as to how the net
works or how networks in general function, aren't you? Your whole
posting had me laughing. I hope your programming skills are better than
your understanding of networks, for your company's sake.

MD

--
-- Who needs looks when you have taste?
--
-- Your blood pressure just went up.

278. Re: Alden WEFAX Move?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 01:24:33 UTC
From: rbates@nermal.santarosa.edu
Message-ID: <3h3toh$j4k@floyd.santarosa.edu>
Source record: 25627

Steve Kittelsen (sak1@delphi.com) wrote:
: Is the signal on the 1691 frequency a ATP signal compatible with the WEFAX
: format?

Yes, it is APT typically at 240 LPM.

Now I am wondering if a 5 foot dish will be enough gain to be useful. I'll have to start poking through the old mags to get current sources of gear.

BTW, Alden sez that the imagery is supposed to stop on Friday night, 3 Feb 95. But it is Sunday now and it (a) still here and (b) looks better than last week, but still not what it was a few weeks ago (not enought contrast).

Alden further sez that they are going to 'give' their customers a 28k modem with software (the customer must provide a dedicated phone line and computer) and that they will call and download whatever imagery the customer wants (up to 48 per day). All this for only $250/month. Hello S band?

While it may not have fancy color, I can get what I want for the simple investment of a dish, S Band LNB and a 137 MHz. receiver. I figure <$1k.

Rick

279. Re: Alden WEFAX Move?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 01:37:31 UTC
From: rbates@nermal.santarosa.edu
Message-ID: <3h3ugr$j4k@floyd.santarosa.edu>
Source record: 25628

William Roth (n7ryw@teleport.com) wrote:

: As you heard there, it is digitized and available only if you pay for the
: service. Hacking a descrambler would be quite illegal, of course.

A friend of mine called Alden the other day. He was told that they are going to stop sending the signal on 3 Feb 95 (Friday) night. On Sunday it is still here (and the signal has improved, but still not what it was). So it may quit RSN [uh, Real Soon Now].

They are going to a phone based system (they give you a modem and call you to deliver the images) for $250/month.

S Band is sounding better and better.

What sized dishes are people using and what equipment should I stay away from for successful image taking [GOES West]? I am hoping that I can get by with a 5 foot dish, S band LNB and a 137 MHz. receiver. Comments? Beams work ok too (limited lot size and already have a 10 foot dish)?

I know I can put a third feed on the TVRO dish, but the cost of a used dish isn't much (~5 footer at least) and it will make the family happier if I can go another route (ties up the dish when I get images).

On the other hand, I saw on CIS today that the Weather Channel is starting a new forum. So I joined and asked them if they would like to put the GOES East and West feeds in sub-carriers on their transponder. I figured that the worst they could do is say no. One thing I didn't know was if the sub-carrier would automatically be passed on through a cable system or not (I can get it from the dish). I will report progress (or contact name) here when I get a response. That would at least maintain the status quo if they will be willing. Heck, they can sell the scan cards and sub-carrier receivers to make back what they spend. I did suggest that a sub-carrier above 5 MHz. would be cheaper to the user (the sat. receiver can already get that). As long as it doesn't mess up their contract with wherever they get their image feeds I don't see a problem (NOAA shouldn't care, but Alden would not like it ;-D) We'll see.

Rick

280. APT-Satellites: Report FEB 05, 1995

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 08:41:35 UTC
From: peter.henne@gmd.de
Message-ID: <peter.henne-060295094130@oskar.gmd.de>
Source record: 25630

```
Observed 50.61 deg NLat, 7.55 deg ELon; FEB 05, 1995

Following the satellite-name you read the approx.
hour (local=sun-time) and motion-direction of the
pass (N=northbound, S=southbound).
This time +/-1.5h is valid for the next 10+ days
to expect the satellite to be visible in range of
northern-hemisphere-stations, add 11h and switch
S<->N for another pass to observe.

NOAA-9 11:S APT 137.62 MHz On
NOAA-10 18:N APT 137.50 MHz On
NOAA-12 09:S APT 137.50 MHz On
NOAA-14 14:N APT 137.62 MHz On
Meteor 3-5 12:S APT 137.85 MHz On

Satellites with APT inactive:
NOAA-11 (AVHRR dead) 137.62 MHz
Meteor 2-21 137.85 MHz
Okean 1-7 137.40 MHz

APT of NOAA-10 was active although the satellite is in
standby mode. Quite good images from Meteor 3-5.
NOAA-14 transmits Ch. 2 and 4 during S/C-day, image-quality
is excellent, low noise-level and very good contrast.

+----------------------------------------+
|Peter Henne (peter.henne@gmd.de) |
| (henne@gmd.de) |
|German Nat.Research Center.f.Comp.Science |
|D-53754 St.AUGUSTIN, Germany |
+----------------------------------------+
```

281. Re: ARLK004 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 12:28:21 UTC
From: kebsch@pdb.sni.de
Message-ID: <3h54l5$7ee@nanette.pdb.sni.de>
Source record: 25631

In <$arlk004.1995@ampr.org> w1aw@arrl.org writes:

>SB KEP @ ARL $ARLK004
>ARLK004 Keplerian data
>
>ZCZC SK29
>QST de W1AW
>Keplerian Bulletin 4 ARLK004
>From ARRL Headquarters
>Newington, CT January 28, 1995
>To all radio amateurs
>
Hi,

if you can't wait: http://lorien.qualcomm.com:80/amsat/keps/menu.html
or: ftp.amsat.org

Have fun ..

73 de DK3VN
Waldemar
--
Waldemar Kebsch, c/o Siemens Nixdorf Informationssysteme AG,
33106 Paderborn, Federal Republic of Germany, kebsch.pad@sni.de
----
DK3VN - DXCC: 15 cfmd (since September 1994 QRV on 40/20/15/10)

282. Re: STS-63 2 Meter Uplink and Downlink Freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 14:16:33 UTC
From: cnc23a@b4pph13e.bnr.ca
Message-ID: <3h5b01$9hk@crchh327.bnr.ca>
Source record: 25632

In article <fehner.3.2F343CD9@cts.com>, fehner@cts.com (Barbara Fehner) writes:
|> What are the 2 Meter uplink and downlink frequencies for
|> the shuttle?
|>
|> Barbara Fehner KK6IB
|> E-Mail: fehner@cts.com
|>

The 2-meter FM voice and packet downlinks for the SAREX
station are on 145.55 MHz.

Uplinks are: Voice Packet

Europe 144.80 144.49
144.75
144.70

Rest of World 144.99 144.49
144.97
144.95
144.93
144.91

Shuttle audio is re-tranmitted by the following Amature Radio stations.

Station Centre VHF 10m 15m 20m 40m 80m

WA3NAN GSFC 147.450 28.650 21.395 14.295 7.185 3.860
W6VIO JPL 224.040 21.280 14.282 7.165
K6MF ARC 145.585 7.165 3.840
W5RRR JSC 146.640 28.495 21.350 14.280 7.227 3.850
AK8Y LERC 145.670 or 147.195 (alternate)
W1AW ARRL 147.555 28.0675 21.0675 18.0975 14.0475 7.0475 3.5815 1.818
KA9SZX 146.880 (Video at 426.250)
K4GCC 146.940
WA4VME 145.170

You might also try 20192 LSB which is NASA.

--
==========

Ken M. Edwards, PE Bell Northern Research, Research Triangle Park, NC
(919) 991-4769 email: cnc23a@bnr.ca Ham: N4ZBB Packet: n4zbb@n1gmv.nc
DX PacketCluster (tm) Node : W4DW

All opinions are my own and do not necessarily reflect the views of
my employer or co-workers, family, friends, congress, or president.

283. Trakbox to IC-970 interface

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 14:32:49 UTC
From: art_jeyes@jhuapl.edu
Message-ID: <art_jeyes.1142468809A@128.220.101.100>
Source record: 25633

I have connected my Trakbox with version 3.30i ROM to my IC-970 CAT port for automated tuning. However, I have a problem that I need some help with. It appears that the IC-970 only correctly receives a small percentage of the tuning commands and mode change commands that are sent to it. I can see commands going out on the serialline on the O-scope... but the IC-970 doesnt respond. Has anyone got this setup working...? Another ham, KC4KMY, with the same setup is seeing the same problem....

Another trakbox-ism--- if you tell it to correct the uplink frequency for doppler... and the command is correctly received by the IC-970...the trakbox calculates the proper correction, but applies it with the wrong sign... is there a fix for this problem?

Thanks for any and all comments on IC-970/Trakbox...

Art Jeyes
AA3GU
Art.Jeyes@jhuapl.edu

284. Trakbox to IC-970 interface

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 15:49:20 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1142473400B@128.220.101.100>
Source record: 25634

I have connected my Trakbox with version 3.30i ROM to my IC-970 CAT port for automated tuning. However, I have a problem that I need some help with. It appears that the IC-970 only correctly receives a small percentage of the tuning commands and mode change commands that are sent to it. I can see commands going out on the serialline on the O-scope... but the IC-970 doesnt respond. Has anyone got this setup working...? Another ham, KC4KMY, with the same setup is seeing the same problem....

Another trakbox-ism--- if you tell it to correct the uplink frequency for doppler... and the command is correctly received by the IC-970...the trakbox calculates the proper correction, but applies it with the wrong sign... is there a fix for this problem?

Thanks for any and all comments on IC-970/Trakbox...

Art Jeyes
AA3GU
Art.Jeyes@jhuapl.edu

285. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 15:51:46 UTC
From: mark@PROBLEM_WITH_INEWS_DOMAIN_FILE
Message-ID: <1995Feb6.095148.40728@cc.usu.edu>
Source record: 25635

Dave Mullenix (djmullen@facstaff.wisc.edu) wrote:
: In article <miles-2901951345580001@slip-13-9.ots.utexas.edu>, miles@mail.utexas.edu
(Miles Abernathy) says:
: >
: >> Balloons are sized by their weight in grams...The 800 gram size will lift
: >> 3-4 lbs to 100,000 feet. The 1200 gram size will take a full six
: >> pound payload to 100,000 feet.
: >Is this using hydrogen gas? How does helium compare in lift?

: Yes, it is. Helium will have less lift, so you'll either have to inflate
: the balloon to a larger size to get your payload off the ground, which

: Unfortunately, I don't have any numbers to plug in here. Anybody got
: the formulas for this sort of work?

: Dave, N9LTD

I would like to suggest that because hydrogen is a smaller atom, it
will leak out of the balloon faster (I can't remember my chemistry;
what is the term for dissipating through a membrane? Ossify?).

I think helium will not have as much lift, but more longevity.

Mark

Markus Wilkinson "Stop Groveling"
Net: mark@gas.physics.usu.edu -Monty Python
Mail: P.O. Box 213, Hyde Park, UT 84318
Phone: 801/797-2629
Radio: KC7IHX

286. .cfg files for wisp-tlm

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 15:57:13 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1142473873C@128.220.101.100>
Source record: 25636

Can anyone tell me where to find the .cfg files needed by wisp-tlm.

Thanks
Art Jeyes
AA3GU
Art.Jeyes@jhuapl.edu
****
*
* Art Jeyes Internet: art.jeyes@jhuapl.edu
* Packet: AA3GU@W3ZH.MD.USA.NOAM
*
* Indecision is the key to flexability.
* Bart Zaino, circa 1978
*
****

287. STS-63 Element_Set (95037.653)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-06 17:31:52 UTC
From: elements-request@alsys.com
Message-ID: <STS-63.95037.653@alsys.com>
Source record: 25637
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-63
1 23469U 95004A 95037.65332256 .00024724 00000-0 25635-3 0 82
2 23469 51.6483 91.8979 0014253 38.4169 321.7805 15.62271346 555

Satellite: STS-63
Catalog number: 23469
Epoch time: 95037.65332256 = (06-Feb-95 15:40:47.06 UTC)
Element set: 008
Inclination: 51.6483 deg
RA of node: 91.8979 deg Space Shuttle Flight STS-63
Eccentricity: .0014253 Keplerian element set JSC-008
Arg of perigee: 38.4169 deg from NASA flight Day 4 vector
Mean anomaly: 321.7805 deg
Mean motion: 15.62271346 rev/day Gil Carman
Decay rate: 2.4724e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 55

This data is also available on the Shuttle Elements Mailing List. For
more information about the list, send a message to with only the command
"info elements" in the body of your message to "listserv@alsys.com".

--
--
Gary Morris Internet: garym@thomsoft.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

288. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 00:07:24 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.792115644@eel>
Source record: 25638

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
MIR
1 16609U 86017A 95036.24276677 .00005128 00000-0 71618-4 0 9159
2 16609 51.6471 98.9656 0001058 225.4835 134.6064 15.58762091512303
STS 63
1 23469U 95004A 95037.25000000 .00024724 00000-0 25600-3 0 157
2 23469 51.6472 93.9303 0009516 22.0133 225.7655 15.64506676 479
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

289. RS-15 Info Wanted--

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 02:09:38 UTC
From: leigh@rain.org
Message-ID: <3h6kp2$54i@news.rain.org>
Source record: 25639

I've worked RS-10 and RS-12 in the past, but know almost nothing about RS-15. What is the uplink frequency for RS-15, and what sort of gear is typically used to work it?

My QTH is in Southern California; what is the extreme range of contacts I can expect from it?

I understand its signal is somewhat weaker than RS-10: can it still be recieved well enough to work with a dipole, or should I have a tracking beam and/or pre-amp?

Thanks. --Leigh/KM6JE in Santa Barbara.

290. Good Keps for RS-15?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 02:24:30 UTC
From: kamer@ibm.net
Message-ID: <3h6lku$d7h@news-s01.ny.us.ibm.net>
Source record: 25640

Would appreciate a good set of RS-15 KEPS and would like to know your source. Those that I have dwnloaded from ARRL and various packet clusters still seem to be off from my experimental versions by 20 min.

Thank you for reading this message. Harry Kamer, WB9ZAI

291. FAA Balloon Regs - far_101.doc [1/1]

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 02:48:14 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3h6n1e$76n@news.doit.wisc.edu>
Source record: 25641

Dave Odekirk left a _real nice_ present on the Clear Skies BBS yesterday:

FAA Regulations, Part 101, which covers moored balloons, kites, unmanned rockets and ... unmanned free balloons! I was about one page into typing this puppy and was starting to despair of ever getting it finished.
Many thanks, Dave!

BEGIN --- CUT HERE --- Cut Here --- cut here ---

PART 101--MOORED BALLOONS, KITES, UNMANNED ROCKETS AND UNMANNED FREE BALLOONS

Subpart A--General

Sec.
101.1 Applicability.
101.3 Waivers.
101.5 Operations in prohibited or restricted areas.
101.7 Hazardous operations.

Subpart B--Moored Balloons and Kites

101.11 Applicability.
101.13 Operating limitations.
101.15 Notice requirements.
101.17 Lighting and marking requirements.
101.19 Rapid deflation device.

Subpart C--Unmanned Rockets

101.21 Applicability.
101.22 Special provisions for large model rockets.
101.23 Operating limitations.
101.25 Notice requirements.

Subpart D--Unmanned Free Balloons

101.31 Applicability.
101.33 Operating limitations.
101.35 Equipment and marking requirements.
101.37 Notice requirements.
101.39 Balloon position reports.

Authority: 49 U.S.C. app. 1348, 1354, 1372, 1421, 1442, 1443, 1472, 1510, and 1522.

Subpart A--General

Sec. 101.1 Applicability.

(a) This part prescribes rules governing the operation in the United States, of the following:
(1) Except as provided for in Sec. 101.7, any balloon that is moored to the surface of the earth or an object thereon and that has a diameter of more than 6 feet or a gas capacity of more than 115 cubic feet.
(2) Except as provided for in Sec. 101.7, any kite that weighs more than 5 pounds and is intended to be flown at the end of a rope or cable.
(3) Any unmanned rocket except:
(i) Aerial firework displays; and,
(ii) Model rockets:
(a) Using not more than four ounces of propellant;
(b) Using a slow-burning propellant;
(c) Made of paper, wood, or breakable plastic, containing no substantial metal parts and weighing not more than 16 ounces, including the propellant; and
(d) Operated in a manner that does not create a hazard to persons, property, or other aircraft.
(4) Except as provided for in Sec. 101.7, any unmanned free balloon that--
(i) Carries a payload package that weighs more than four pounds and has a weight/size ratio of more than three ounces per square inch on any surface of the package, determined by dividing the total weight in ounces of the payload package by the area in square inches of its smallest surface;
(ii) Carries a payload package that weighs more than six pounds;
(iii) Carries a payload, of two or more packages, that weighs more than 12 pounds; or
(iv) Uses a rope or other device for suspension of the payload that requires an impact force of more than 50 pounds to separate the suspended payload from the balloon.
(b) For the purposes of this part, a "gyroglider" attached to a vehicle on the surface of the earth is considered to be a kite.

[Doc. No. 1580, 28 FR 6721, June 29, 1963, as amended by Amdt. 101-1, 29 FR 46, Jan. 3, 1964; Amdt. 101-3, 35 FR 8213, May 26, 1970]

Sec. 101.3 Waivers.

No person may conduct operations that require a deviation from this part except under a certificate of waiver issued by the Administrator.

[Doc. No. 1580, 28 FR 6721, June 29, 1963]

Sec. 101.5 Operations in prohibited or restricted areas.

No person may operate a moored balloon, kite, unmanned rocket, or unmanned free balloon in a prohibited or restricted area unless he has permission from the using or controlling agency, as appropriate.

[Amdt. 101-1, 29 FR 46, Jan. 3, 1964]

Sec. 101.7 Hazardous operations.

(a) No person may operate any moored balloon, kite, unmanned rocket, or unmanned free balloon in a manner that creates a hazard to other persons, or their property.

(b) No person operating any moored balloon, kite, unmanned rocket, or unmanned free balloon may allow an object to be dropped therefrom, if such action creates a hazard to other persons or their property.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 12800, Amdt. 101-4, 39 FR 22252, June 21, 1974]

Subpart B--Moored Balloons and Kites

Source: Docket No. 1580, 28 FR 6722 June 29, 1963, unless otherwise noted.

Sec. 101.11 Applicability.

This subpart applies to the operation of moored balloons and kites. However, a person operating a moored balloon or kite within a restricted area must comply only with Sec. 101.19 and with additional limitations imposed by the using or controlling agency, as appropriate.

Sec. 101.13 Operating limitations.

(a) Except as provided in paragraph (b) of this section, no person may operate a moored balloon or kite--
(1) Less than 500 feet from the base of any cloud;
(2) More than 500 feet above the surface of the earth;
(3) From an area where the ground visibility is less than three miles; or
(4) Within five miles of the boundary of any airport.
(b) Paragraph (a) of this section does not apply to the operation of a balloon or kite below the top of any structure and within 250 feet of it, if that shielded operation does not obscure any lighting on the structure.

Sec. 101.15 Notice requirements.

No person may operate an unshielded moored balloon or kite more than 150 feet above the surface of the earth unless, at least 24 hours before beginning the operation, he gives the following information to the FAA ATC facility that is nearest to the place of intended operation:
(a) The names and addresses of the owners and operators.
(b) The size of the balloon or the size and weight of the kite.
(c) The location of the operation.
(d) The height above the surface of the earth at which the balloon or kite is to be operated.
(e) The date, time, and duration of the operation.

Sec. 101.17 Lighting and marking requirements.

(a) No person may operate a moored balloon or kite, between sunset and sunrise unless the balloon or kite, and its mooring lines, are lighted so as to give a visual warning equal to that required for obstructions to air navigation in the FAA publication "Obstruction Marking and Lighting".
(b) No person may operate a moored balloon or kite between sunrise and sunset unless its mooring lines have colored pennants or streamers attached at not more than 50 foot intervals beginning at 150 feet above the surface of the earth and visible for at least one mile.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101-4, 39 FR 22252, June 21, 1974]

Sec. 101.19 Rapid deflation device.

No person may operate a moored balloon unless it has a device that will automatically and rapidly deflate the balloon if it escapes from its moorings. If the device does not function properly, the operator shall immediately notify the nearest ATC facility of the location and time of the escape and the estimated flight path of the balloon.

Subpart C--Unmanned Rockets

Source: Docket No. 1580, 28 FR 6722, June 29, 1963, unless otherwise noted.

Sec. 101.21 Applicability.

This subpart applies to the operation of unmanned rockets. However, a person operating an unmanned rocket within a restricted area must comply only with Sec. 101.23(g) and with additional limitations imposed by the using or controlling agency, as appropriate.

Sec. 101.22 Special provisions for large model rockets.

Persons operating model rockets that use not more than 125 grams of propellant; that are made of paper, wood, or breakable plastic; that contain no substantial metal parts, and that weigh not more than 1,500 grams, including the propellant, need not comply with Sec. 101.23 (b), (c), (g), and (h), provided:
(a) That person complies with all provisions of Sec. 101.25; and
(b) The operation is not conducted within 5 miles of an airport runway or other landing area unless the information required in Sec. 101.25 is also provided to the manager of that airport.

[Amdt. 101-6, 59 FR 50393, Oct. 3, 1994]

****

59 FR 50390, No. 190, Oct. 3, 1994

SUMMARY: This action amends the operational guidelines of the Federal Aviation Regulations (FAR) Part 101 for model rockets that: use not more than 125 grams (4.4 ounces) of propellant; are made of paper, wood, or breakable plastic; contain no substantial metal parts; and weigh not more than 1,500 grams (53 ounces). This amendment is necessary to provide for the operation of the technologically advanced, larger category, model rockets and to ensure that their operation is in concert with the maximum level of safety protection for aircraft, flight crews, and the flying public. The FAA believes that this amendment will foster important aeronautical education and research activities, while retaining appropriate operational safety precautions.

EFFECTIVE DATE: November 2, 1994.

****

Sec. 101.23 Operating limitations.

No person may operate an unmanned rocket--
(a) In a manner that creates a collision hazard with other aircraft;
(b) In controlled airspace;
(c) Within five miles of the boundary of any airport;
(d) At any altitude where clouds or obscuring phenomena of more than five-tenths coverage prevails;
(e) At any altitude where the horizontal visibility is less than five miles;
(f) Into any cloud;
(g) Within 1,500 feet of any person or property that is not associated with the operations; or
(h) Between sunset and sunrise.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101-4, 39 FR 22252, June 21, 1974]

Sec. 101.25 Notice requirements.

No person may operate an unmanned rocket unless that person gives the following information to the FAA ATC facility nearest to the place of intended operation no less than 24 hours prior to and no more than 48 hours prior to beginning the operation:
(a) The names and addresses of the operators; except when there are multiple participants at a single event, the name and address of the person so designated as the event launch coordinator, whose duties include coordination of the required launch data estimates and coordinating the launch event;
(b) The estimated number of rockets to be operated;
(c) The estimated size and the estimated weight of each rocket; and
(d) The estimated highest altitude or flight level to which each rocket will be operated.
(e) The location of the operation.
(f) The date, time, and duration of the operation.
(g) Any other pertinent information requested by the ATC facility.

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101-6, 59 FR 50393, Oct. 3, 1994]

****

59 FR 50390, No. 190, Oct. 3, 1994

SUMMARY: This action amends the operational guidelines of the Federal Aviation Regulations (FAR) Part 101 for model rockets that: use not more than 125 grams (4.4 ounces) of propellant; are made of paper, wood, or breakable plastic; contain no substantial metal parts; and weigh not more than 1,500 grams (53 ounces). This amendment is necessary to provide for the operation of the technologically advanced, larger category, model rockets and to ensure

that their operation is in concert with the maximum level of safety protection for aircraft, flight crews, and the flying public. The FAA believes that this amendment will foster important aeronautical education and research activities, while retaining appropriate operational safety precautions.

EFFECTIVE DATE: November 2, 1994.

****

Subpart D--Unmanned Free Balloons

Source: Docket No. 1457, Amdt. 101-1, 29 FR 47, Jan. 3, 1964, unless otherwise noted.

Sec. 101.31 Applicability.

This subpart applies to the operation of unmanned free balloons. However, a person operating an unmanned free balloon within a restricted area must comply only with Sec. 101.33 (d) and (e) and with any additional limitations that are imposed by the using or controlling agency, as appropriate.

Sec. 101.33 Operating limitations.

No person may operate an unmanned free balloon--
(a) Unless otherwise authorized by ATC, below 2,000 feet above the surface within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport;
(b) At any altitude where there are clouds or obscuring phenomena of more than five-tenths coverage;
(c) At any altitude below 60,000 feet standard pressure altitude where the horizontal visibility is less than five miles;
(d) During the first 1,000 feet of ascent, over a congested area of a city, town, or settlement or an open-air assembly of persons not associated with the operation; or
(e) In such a manner that impact of the balloon, or part thereof including its payload, with the surface creates a hazard to persons or property not associated with the operation.

[Dkt. 1457, Amdt. 101-1, 29 FR 47, Jan. 3, 1964, as amended by Amdt. 101-5, 56 FR 65662, Dec. 17, 1991]

EFFECTIVE DATE NOTE: Amdt. 101-5, 56 FR 65662, Dec. 17, 1991, revised paragraph (a) of Sec. 101.33 effective September 16, 1993. For the convenience of the user, the superseded text in effect until Sept. 16, 1993, is set forth as follows:

Sec. 101.33 Operating limitations.

* * * * *

(a) Unless otherwise authorized by ATC, in a control zone below 2,000 feet above the surface, or in an airport traffic area;

****

56 FR 65638, No. 242, Dec. 17, 1991

SUMMARY: This final rule amends the Federal Aviation Regulations (FAR) to adopt certain recommendations of the National Airspace Review (NAR) concerning changes to regulations and procedures in regard to airspace classifications. These changes are intended to: (1) Simplify airspace designations; (2) achieve international commonality of airspace designations; (3) increase standardization of equipment requirements for operations in various classifications of airspace; (4) describe appropriate pilot certificate requirements, visual flight rules (VFR) visibility and distance from cloud rules, and air traffic services offered in each class of airspace; and (5) satisfy the responsibilities of the United States as a member of the International Civil Aviation Organization (ICAO). The final rule also amends the requirement for minimum distance from clouds in certain airspace areas and the requirements for communications with air traffic control (ATC) in certain airspace areas; eliminates airport radar service areas (ARSAs), control zones, and terminal control areas (TCAs) as airspace classifications; and eliminates the term "airport traffic area." The FAA believes simplified airspace classifications will reduce existing airspace complexity and thereby enhance safety.

EFFECTIVE DATE: These regulations become effective September 16, 1993, except that Secs. 11.61(c), 91.215(d), 71.601, 71.603, 71.605, 71.607, and 71.609 and Part 75 become effective December 12, 1991, and except that amendatory instruction number 20, Sec. 71.1, is effective as of December 17, 1991 through September 15, 1993, and that Secs. 71.11 and 71.19 become effective October 15, 1992. The incorporation by reference of FAA Order 7400.7 in Sec. 71.1 (amendatory instruction number 20) is approved by the Director of the Federal Register as of December 17, 1991, through September 15, 1993. The incorporation by reference of FAA Order 7400.9 in Sec. 71.1 (amendatory instruction number 24) is approved by the Director of the Federal Register as of September 16, 1993 through September 15, 1994.

****

Sec. 101.35 Equipment and marking requirements.

(a) No person may operate an unmanned free balloon unless--
(1) It is equipped with at least two payload cut-down systems or devices that operate independently of each other;
(2) At least two methods, systems, devices, or combinations thereof, that function independently of each other, are employed for terminating the flight of the balloon envelope; and
(3) The balloon envelope is equipped with a radar reflective device(s) or material that will present an echo to surface radar operating in the 200 MHz to 2700 MHz frequency range.

The operator shall activate the appropriate devices required by paragraphs (a) (1) and (2) of this section when weather conditions are less than those prescribed for operation under this subpart, or if a malfunction or any other reason makes the further operation hazardous to other air traffic or to persons and property on the surface.
(b) No person may operate an unmanned free balloon below 60,000 feet

standard pressure altitude between sunset and sunrise (as corrected to the altitude of operation) unless the balloon and its attachments and payload, whether or not they become separated during the operation, are equipped with lights that are visible for at least 5 miles and have a flash frequency of at least 40, and not more than 100, cycles per minute.
(c) No person may operate an unmanned free balloon that is equipped with a trailing antenna that requires an impact force of more than 50 pounds to break it at any point, unless the antenna has colored pennants or streamers that are attached at not more than 50 foot intervals and that are visible for at least one mile.
(d) No person may operate between sunrise and sunset an unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously colored open parachute) more than 50 feet along, unless the suspension device is colored in alternate bands of high conspicuity colors or has colored pennants or streamers attached which are visible for at least one mile.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1457, Amdt. 101-1, 29 FR 47, Jan. 3, 1964, as amended by Amdt. 101-2, 32 FR 5254, Mar. 29, 1967; Amdt. 101-4, 39 FR 22252, June 21, 1974]

Sec. 101.37 Notice requirements.

(a) Prelaunch notice: Except as provided in paragraph (b) of this section, no person may operate an unmanned free balloon unless, within 6 to 24 hours before beginning the operation, he gives the following information to the FAA ATC facility that is nearest to the place of intended operation:
(1) The balloon identification.
(2) The estimated date and time of launching, amended as necessary to remain within plus or minus 30 minutes.
(3) The location of the launching site.
(4) The cruising altitude.
(5) The forecast trajectory and estimated time to cruising altitude or 60,000 feet standard pressure altitude, whichever is lower.
(6) The length and diameter of the balloon, length of the suspension device, weight of the payload, and length of the trailing antenna.
(7) The duration of flight.
(8) The forecast time and location of impact with the surface of the earth.
(b) For solar or cosmic disturbance investigations involving a critical time element, the information in paragraph (a) of this section shall be given within 30 minutes to 24 hours before beginning the operation.
(c) Cancellation notice: If the operation is canceled, the person who intended to conduct the operation shall immediately notify the nearest FAA ATC facility.
(d) Launch notice: Each person operating an unmanned free balloon shall notify the nearest FAA or military ATC facility of the launch time immediately after the balloon is launched.

Sec. 101.39 Balloon position reports.

(a) Each person operating an unmanned free balloon shall:
(1) Unless ATC requires otherwise, monitor the course of the balloon and record its position at least every two hours; and
(2) Forward any balloon position reports requested by ATC.
(b) One hour before beginning descent, each person operating an unmanned free balloon shall forward to the nearest FAA ATC facility the following information regarding the balloon:
(1) The current geographical position.
(2) The altitude.
(3) The forecast time of penetration of 60,000 feet standard pressure altitude (if applicable).
(4) The forecast trajectory for the balance of the flight.
(5) The forecast time and location of impact with the surface of the earth.
(c) If a balloon position report is not recorded for any two-hour period of flight, the person operating an unmanned free balloon shall immediately notify the nearest FAA ATC facility. The notice shall include the last recorded position and any revision of the forecast trajectory. The nearest FAA ATC facility shall be notified immediately when tracking of the balloon is re-established.
(d) Each person operating an unmanned free balloon shall notify the nearest FAA ATC facility when the operation is ended.

Report is Completed

Please turn off your printer or software capture command

Press <Enter> to continue.....

----------[You Cited: 14 CFR Part 101 as of Dec. 6, 1994]----------

PART 101--MOORED BALLOONS, KITES, UNMANNED ROCKETS AND UNMANNED FREE BALLOONS

Subpart A--General

Sec.
101.1 Applicability.
101.3 Waivers.
101.5 Operations in prohibited or restricted areas.
101.7 Hazardous operations.

Subpart B--Moored Balloons and Kites

101.11 Applicability.
101.13 Operating limitations.
101.15 Notice requirements.
101.17 Lighting and marking requirements.
101.19 Rapid deflation device.

Subpart C--Unmanned Rockets

101.21 Applicability.
101.22 Special provisions for large model rockets.
101.23 Operating limitations.

101.25 Notice requirements.

Subpart D--Unmanned Free Balloons

101.31 Applicability.
101.33 Operating limitations.
101.35 Equipment and marking requirements.
101.37 Notice requirements.
101.39 Balloon position reports.

Authority: 49 U.S.C. app. 1348, 1354, 1372, 1421, 1442, 1443, 1472, 1510, and 1522.

Subpart A--General

Sec. 101.1 Applicability.

(a) This part prescribes rules governing the operation in the United States, of the following:
(1) Except as provided for in Sec. 101.7, any balloon that is moored to the surface of the earth or an object thereon and that has a diameter of more than 6 feet or a gas capacity of more than 115 cubic feet.
(2) Except as provided for in Sec. 101.7, any kite that weighs more than 5 pounds and is intended to be flown at the end of a rope or cable.
(3) Any unmanned rocket except:
(i) Aerial firework displays; and,
(ii) Model rockets:
(a) Using not more than four ounces of propellant;
(b) Using a slow-burning propellant;
(c) Made of paper, wood, or breakable plastic, containing no substantial metal parts and weighing not more than 16 ounces, including the propellant; and
(d) Operated in a manner that does not create a hazard to persons, property, or other aircraft.
(4) Except as provided for in Sec. 101.7, any unmanned free balloon that--
(i) Carries a payload package that weighs more than four pounds and has a weight/size ratio of more than three ounces per square inch on any surface of the package, determined by dividing the total weight in ounces of the payload package by the area in square inches of its smallest surface;
(ii) Carries a payload package that weighs more than six pounds;
(iii) Carries a payload, of two or more packages, that weighs more than 12 pounds; or
(iv) Uses a rope or other device for suspension of the payload that requires an impact force of more than 50 pounds to separate the suspended payload from the balloon.
(b) For the purposes of this part, a "gyroglider" attached to a vehicle on the surface of the earth is considered to be a kite.

[Doc. No. 1580, 28 FR 6721, June 29, 1963, as amended by Amdt. 101-1, 29 FR 46, Jan. 3, 1964; Amdt. 101-3, 35 FR 8213, May 26, 1970]

Sec. 101.3 Waivers.

No person may conduct operations that require a deviation from this part except under a certificate of waiver issued by the Administrator.

[Doc. No. 1580, 28 FR 6721, June 29, 1963]

Sec. 101.5 Operations in prohibited or restricted areas.

No person may operate a moored balloon, kite, unmanned rocket, or unmanned free balloon in a prohibited or restricted area unless he has permission from the using or controlling agency, as appropriate.

[Amdt. 101-1, 29 FR 46, Jan. 3, 1964]

Sec. 101.7 Hazardous operations.

(a) No person may operate any moored balloon, kite, unmanned rocket, or unmanned free balloon in a manner that creates a hazard to other persons, or their property.
(b) No person operating any moored balloon, kite, unmanned rocket, or unmanned free balloon may allow an object to be dropped therefrom, if such action creates a hazard to other persons or their property.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 12800, Amdt. 101-4, 39 FR 22252, June 21, 1974]

Subpart B--Moored Balloons and Kites

Source: Docket No. 1580, 28 FR 6722 June 29, 1963, unless otherwise noted.

Sec. 101.11 Applicability.

This subpart applies to the operation of moored balloons and kites. However, a person operating a moored balloon or kite within a restricted area must comply only with Sec. 101.19 and with additional limitations imposed by the using or controlling agency, as appropriate.

Sec. 101.13 Operating limitations.

(a) Except as provided in paragraph (b) of this section, no person may operate a moored balloon or kite--
(1) Less than 500 feet from the base of any cloud;
(2) More than 500 feet above the surface of the earth;
(3) From an area where the ground visibility is less than three miles; or
(4) Within five miles of the boundary of any airport.
(b) Paragraph (a) of this section does not apply to the operation of a balloon or kite below the top of any structure and within 250 feet of it, if that shielded operation does not obscure any lighting on the structure.

Sec. 101.15 Notice requirements.

No person may operate an unshielded moored balloon or kite more than 150 feet above the surface of the earth unless, at least 24 hours before beginning the operation, he gives the following information to the FAA ATC facility that is nearest to the place of intended operation:
(a) The names and addresses of the owners and operators.

(b) The size of the balloon or the size and weight of the kite.
(c) The location of the operation.
(d) The height above the surface of the earth at which the balloon or kite is to be operated.
(e) The date, time, and duration of the operation.

Sec. 101.17 Lighting and marking requirements.

(a) No person may operate a moored balloon or kite, between sunset and sunrise unless the balloon or kite, and its mooring lines, are lighted so as to give a visual warning equal to that required for obstructions to air navigation in the FAA publication "Obstruction Marking and Lighting".
(b) No person may operate a moored balloon or kite between sunrise and sunset unless its mooring lines have colored pennants or streamers attached at not more than 50 foot intervals beginning at 150 feet above the surface of the earth and visible for at least one mile.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101-4, 39 FR 22252, June 21, 1974]

Sec. 101.19 Rapid deflation device.

No person may operate a moored balloon unless it has a device that will automatically and rapidly deflate the balloon if it escapes from its moorings. If the device does not function properly, the operator shall immediately notify the nearest ATC facility of the location and time of the escape and the estimated flight path of the balloon.

Subpart C--Unmanned Rockets

Source: Docket No. 1580, 28 FR 6722, June 29, 1963, unless otherwise noted.

Sec. 101.21 Applicability.

This subpart applies to the operation of unmanned rockets. However, a person operating an unmanned rocket within a restricted area must comply only with Sec. 101.23(g) and with additional limitations imposed by the using or controlling agency, as appropriate.

Sec. 101.22 Special provisions for large model rockets.

Persons operating model rockets that use not more than 125 grams of propellant; that are made of paper, wood, or breakable plastic; that contain no substantial metal parts, and that weigh not more than 1,500 grams, including the propellant, need not comply with Sec. 101.23 (b), (c), (g), and (h), provided:
(a) That person complies with all provisions of Sec. 101.25; and
(b) The operation is not conducted within 5 miles of an airport runway or other landing area unless the information required in Sec. 101.25 is also provided to the manager of that airport.

[Amdt. 101-6, 59 FR 50393, Oct. 3, 1994]

****

59 FR 50390, No. 190, Oct. 3, 1994

SUMMARY: This action amends the operational guidelines of the Federal Aviation Regulations (FAR) Part 101 for model rockets that: use not more than 125 grams (4.4 ounces) of propellant; are made of paper, wood, or breakable plastic; contain no substantial metal parts; and weigh not more than 1,500 grams (53 ounces). This amendment is necessary to provide for the operation of the technologically advanced, larger category, model rockets and to ensure that their operation is in concert with the maximum level of safety protection for aircraft, flight crews, and the flying public. The FAA believes that this amendment will foster important aeronautical education and research activities, while retaining appropriate operational safety precautions.

EFFECTIVE DATE: November 2, 1994.

****

Sec. 101.23 Operating limitations.

No person may operate an unmanned rocket--
(a) In a manner that creates a collision hazard with other aircraft;
(b) In controlled airspace;
(c) Within five miles of the boundary of any airport;
(d) At any altitude where clouds or obscuring phenomena of more than five-tenths coverage prevails;
(e) At any altitude where the horizontal visibility is less than five miles;
(f) Into any cloud;
(g) Within 1,500 feet of any person or property that is not associated with the operations; or
(h) Between sunset and sunrise.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101-4, 39 FR 22252, June 21, 1974]

Sec. 101.25 Notice requirements.

No person may operate an unmanned rocket unless that person gives the following information to the FAA ATC facility nearest to the place of intended operation no less than 24 hours prior to and no more than 48 hours prior to beginning the operation:
(a) The names and addresses of the operators; except when there are multiple participants at a single event, the name and address of the person so designated as the event launch coordinator, whose duties include coordination of the required launch data estimates and coordinating the launch event;
(b) The estimated number of rockets to be operated;
(c) The estimated size and the estimated weight of each rocket; and
(d) The estimated highest altitude or flight level to which each rocket

will be operated.
(e) The location of the operation.
(f) The date, time, and duration of the operation.
(g) Any other pertinent information requested by the ATC facility.

[Doc. No. 1580, 28 FR 6722, June 29, 1963, as amended by Amdt. 101-6, 59 FR 50393, Oct. 3, 1994]

****

59 FR 50390, No. 190, Oct. 3, 1994

SUMMARY: This action amends the operational guidelines of the Federal Aviation Regulations (FAR) Part 101 for model rockets that: use not more than 125 grams (4.4 ounces) of propellant; are made of paper, wood, or breakable plastic; contain no substantial metal parts; and weigh not more than 1,500 grams (53 ounces). This amendment is necessary to provide for the operation of the technologically advanced, larger category, model rockets and to ensure that their operation is in concert with the maximum level of safety protection for aircraft, flight crews, and the flying public. The FAA believes that this amendment will foster important aeronautical education and research activities, while retaining appropriate operational safety precautions.

EFFECTIVE DATE: November 2, 1994.

****

Subpart D--Unmanned Free Balloons

Source: Docket No. 1457, Amdt. 101-1, 29 FR 47, Jan. 3, 1964, unless otherwise noted.

Sec. 101.31 Applicability.

This subpart applies to the operation of unmanned free balloons. However, a person operating an unmanned free balloon within a restricted area must comply only with Sec. 101.33 (d) and (e) and with any additional limitations that are imposed by the using or controlling agency, as appropriate.

Sec. 101.33 Operating limitations.

No person may operate an unmanned free balloon--
(a) Unless otherwise authorized by ATC, below 2,000 feet above the surface within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport;
(b) At any altitude where there are clouds or obscuring phenomena of more than five-tenths coverage;
(c) At any altitude below 60,000 feet standard pressure altitude where the horizontal visibility is less than five miles;
(d) During the first 1,000 feet of ascent, over a congested area of a city, town, or settlement or an open-air assembly of persons not associated with the operation; or
(e) In such a manner that impact of the balloon, or part thereof including

its payload, with the surface creates a hazard to persons or property not associated with the operation.

[Dkt. 1457, Amdt. 101-1, 29 FR 47, Jan. 3, 1964, as amended by Amdt. 101-5, 56 FR 65662, Dec. 17, 1991]

EFFECTIVE DATE NOTE: Amdt. 101-5, 56 FR 65662, Dec. 17, 1991, revised paragraph (a) of Sec. 101.33 effective September 16, 1993. For the convenience of the user, the superseded text in effect until Sept. 16, 1993, is set forth as follows:

Sec. 101.33 Operating limitations.

* * * * *

(a) Unless otherwise authorized by ATC, in a control zone below 2,000 feet above the surface, or in an airport traffic area;

****

56 FR 65638, No. 242, Dec. 17, 1991

SUMMARY: This final rule amends the Federal Aviation Regulations (FAR) to adopt certain recommendations of the National Airspace Review (NAR) concerning changes to regulations and procedures in regard to airspace classifications. These changes are intended to: (1) Simplify airspace designations; (2) achieve international commonality of airspace designations; (3) increase standardization of equipment requirements for operations in various classifications of airspace; (4) describe appropriate pilot certificate requirements, visual flight rules (VFR) visibility and distance from cloud rules, and air traffic services offered in each class of airspace; and (5) satisfy the responsibilities of the United States as a member of the International Civil Aviation Organization (ICAO). The final rule also amends the requirement for minimum distance from clouds in certain airspace areas and the requirements for communications with air traffic control (ATC) in certain airspace areas; eliminates airport radar service areas (ARSAs), control zones, and terminal control areas (TCAs) as airspace classifications; and eliminates the term "airport traffic area." The FAA believes simplified airspace classifications will reduce existing airspace complexity and thereby enhance safety.

EFFECTIVE DATE: These regulations become effective September 16, 1993, except that Secs. 11.61(c), 91.215(d), 71.601, 71.603, 71.605, 71.607, and 71.609 and Part 75 become effective December 12, 1991, and except that amendatory instruction number 20, Sec. 71.1, is effective as of December 17, 1991 through September 15, 1993, and that Secs. 71.11 and 71.19 become effective October 15, 1992. The incorporation by reference of FAA Order 7400.7 in Sec. 71.1 (amendatory instruction number 20) is approved by the Director of the Federal Register as of December 17, 1991, through September 15, 1993. The incorporation by reference of FAA Order 7400.9 in Sec. 71.1 (amendatory instruction number 24) is approved by the Director of the Federal Register as of September 16, 1993 through September 15, 1994.

****

Sec. 101.35 Equipment and marking requirements.

(a) No person may operate an unmanned free balloon unless--
(1) It is equipped with at least two payload cut-down systems or devices that operate independently of each other;
(2) At least two methods, systems, devices, or combinations thereof, that function independently of each other, are employed for terminating the flight of the balloon envelope; and
(3) The balloon envelope is equipped with a radar reflective device(s) or material that will present an echo to surface radar operating in the 200 MHz to 2700 MHz frequency range.

The operator shall activate the appropriate devices required by paragraphs (a) (1) and (2) of this section when weather conditions are less than those prescribed for operation under this subpart, or if a malfunction or any other reason makes the further operation hazardous to other air traffic or to persons and property on the surface.
(b) No person may operate an unmanned free balloon below 60,000 feet standard pressure altitude between sunset and sunrise (as corrected to the altitude of operation) unless the balloon and its attachments and payload, whether or not they become separated during the operation, are equipped with lights that are visible for at least 5 miles and have a flash frequency of at least 40, and not more than 100, cycles per minute.
(c) No person may operate an unmanned free balloon that is equipped with a trailing antenna that requires an impact force of more than 50 pounds to break it at any point, unless the antenna has colored pennants or streamers that are attached at not more than 50 foot intervals and that are visible for at least one mile.
(d) No person may operate between sunrise and sunset an unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously colored open parachute) more than 50 feet along, unless the suspension device is colored in alternate bands of high conspicuity colors or has colored pennants or streamers attached which are visible for at least one mile.

(Sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)))

[Doc. No. 1457, Amdt. 101-1, 29 FR 47, Jan. 3, 1964, as amended by Amdt. 101-2, 32 FR 5254, Mar. 29, 1967; Amdt. 101-4, 39 FR 22252, June 21, 1974]

Sec. 101.37 Notice requirements.

(a) Prelaunch notice: Except as provided in paragraph (b) of this section, no person may operate an unmanned free balloon unless, within 6 to 24 hours before beginning the operation, he gives the following information to the FAA ATC facility that is nearest to the place of intended operation:
(1) The balloon identification.
(2) The estimated date and time of launching, amended as necessary to remain within plus or minus 30 minutes.
(3) The location of the launching site.
(4) The cruising altitude.

(5) The forecast trajectory and estimated time to cruising altitude or 60,000 feet standard pressure altitude, whichever is lower.
(6) The length and diameter of the balloon, length of the suspension device, weight of the payload, and length of the trailing antenna.
(7) The duration of flight.
(8) The forecast time and location of impact with the surface of the earth.
(b) For solar or cosmic disturbance investigations involving a critical time element, the information in paragraph (a) of this section shall be given within 30 minutes to 24 hours before beginning the operation.
(c) Cancellation notice: If the operation is canceled, the person who intended to conduct the operation shall immediately notify the nearest FAA ATC facility.
(d) Launch notice: Each person operating an unmanned free balloon shall notify the nearest FAA or military ATC facility of the launch time immediately after the balloon is launched.

Sec. 101.39 Balloon position reports.

(a) Each person operating an unmanned free balloon shall:
(1) Unless ATC requires otherwise, monitor the course of the balloon and record its position at least every two hours; and
(2) Forward any balloon position reports requested by ATC.
(b) One hour before beginning descent, each person operating an unmanned free balloon shall forward to the nearest FAA ATC facility the following information regarding the balloon:
(1) The current geographical position.
(2) The altitude.
(3) The forecast time of penetration of 60,000 feet standard pressure altitude (if applicable).
(4) The forecast trajectory for the balance of the flight.
(5) The forecast time and location of impact with the surface of the earth.
(c) If a balloon position report is not recorded for any two-hour period of flight, the person operating an unmanned free balloon shall immediately notify the nearest FAA ATC facility. The notice shall include the last recorded position and any revision of the forecast trajectory. The nearest FAA ATC facility shall be notified immediately when tracking of the balloon is re-established.
(d) Each person operating an unmanned free balloon shall notify the nearest FAA ATC facility when the operation is ended.

292. Spartan Packet Radio Experiment

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 04:45:49 UTC
From: tedwards@Glue.umd.edu
Message-ID: <3h6ttt$7rm@reggae.src.umd.edu>
Source record: 25642

Information about the Spartan Packet Radio Experiment is available from URL
http://w3eax.umd.edu/spre.html

SPRE will be attached to the SPARTAN spaceframe this month, and is targetted
for launch on the Shuttle in late '95.

The Spartan Packet Radio Experiment (SPRE) is an amateur radio (HAM
radio) communications experiment. This experiment is being developed
and built by the University of Maryland Amateur Radio Association with
assistance from volunteer engineers from Martin Marietta and NASA.

Objectives:

* Test packet radio protocol enhancements for LEO satellite
communications.
* Test a GPS and packet radio based tracking system.
* Provide telemetry for the REFLEX with a command uplink capability.
* Provide an unique hands-on educational opportunity for college
students.
* Provide an educational tool to help inspire elementary and high
school students to pursue science and engineering.

Description:

The SPRE hardware consists of an electronics box and two antenna
arrays. The electronics box contains the SPRE computer, packet terminal
node controller (TNC - modem like device), and two radios. The antenna
arrays are VHF patch antennas that are mounted on opposite sides of the
spacecraft.

SPRE will test a tracking system using packet radio and GPS
information. Ground stations will transmit their locations to SPRE.
SPRE will relay this back to earth. We have developed a software
package that will plot out on a map the locations of these stations.
This system can track mobile ground stations as well as the satellite
itself. Part of this experiment will involve both elementary and high
school students.

Telemetry from the REFLEX is transmitted to earth by the SPRE. This
telemetry will be used by the REFLEX experimenters to provide feedback
on how well their experiment is performing. SPRE also provides an
encrypted command uplink capability to be able to tweak REFLEX if
required.

The SPRE project consists of students and volunteers. All of the hardware and software has been designed and put together by these students and volunteers. This low cost project provides a very good hands-on opportunity to get real world work experience and do something really fun.

293. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 09:16:03 UTC
From: kthompso@WichitaKS.NCR.COM
Message-ID: <kthompso.416.000944BF@WichitaKS.NCR.COM>
Source record: 25656

>I would like to suggest that because hydrogen is a smaller atom, it
>will leak out of the balloon faster (I can't remember my chemistry;
>what is the term for dissipating through a membrane? Ossify?).

>I think helium will not have as much lift, but more longevity.

SO?
A balloon lasts at most 4 hours. Your hydrogen leakage will be minor compared
to that when the thing bursts.

294. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 13:34:22 UTC
From: zlau@arrl.org
Message-ID: <1995Feb7.133422.24427@arrl.org>
Source record: 25643

KE4ZV Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

: drawing the attention of the auto-notch on the bird. I'm not
: *recomending* FM operations on P3D, just noting that they seem
: feasible. You'd need a receiving setup that can hear the spin
: modulation of the transponder noise floor, but that's not hard,
: and is something all satellite operators should strive for anyway.

What does spin modulation of the noise floor
sound like on an FM receiver? I would have
thought that most of this is amplitude modulation
that high quality FM receivers are suppose to reject.

--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

295. Space Shuttle voice contacts

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 14:24:48 UTC
From: durham@lobby.ti.com
Message-ID: <3h7vrg$86m@superb.csc.ti.com>
Source record: 25655

This morning on the second pass, I listened for the Shuttle again, with no success. The packet BBS on MIR was going full blast on 145.550 with the same messages it had last evening. In addition, local QRM from automatic packet stations trying to connect was nearly continuous.

Are the American astronauts operating on another frequency? I read somewhere that they would be operating on voice today and that there was not a packet setup on board, but if they are on the air I couldn't tell.

Ken K5MBV durham@lobby.ti.com

296. Re: Shuttle - Mir rendezvous

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 16:21:40 UTC
From: jgrubs@voxbox.norden1.com
Message-ID: <TaV6Zc6w165w@voxbox.norden1.com>
Source record: 25644

```
-----BEGIN PGP SIGNED MESSAGE-----

giles.26@postbox.acs.ohio-state.edu (Aaron Giles) writes:

> When within about 200 feet of Mir, Discovery
> will begin air-to-air communications with cosmonauts on Mir
> using a VHF radio system.
>
> Will this be 145.550 Mhz simplex?

No. And it started being used at 140 MILES.

-----BEGIN PGP SIGNATURE-----
Version: 2.6.2

iQCVAwUBLzeeON74r4kaz3mVAQFZTgP9FV47QeKwr+AcHGjr1XBKfKOjEtZlniwK
LxYKNNOmlgfWy4kesQYTnLiezDfcfxNOYjPFR/SpZRP5i05Ag6QAMcwMq5xGcyjh
Vy9QXfJ3jY/PLQIXF/FV1EexMv8YECBA4kaRmSX2TBy+b444WWOd1KdrZbSjSagq
5BESB4um5II=
=hCb3
-----END PGP SIGNATURE-----
```

297. Re: shortwave to hear shuttle ?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 17:06:56 UTC
From: pieter.ibelings@sciatl.com
Message-ID: <pieter.ibelings.37.00111E1F@sciatl.com>
Source record: 25650

In article <3gvdgt$pdv@ixnews3.ix.netcom.com> Sono1@ix.netcom.com (MICHAEL MCCARTHY) writes:

>Just wondering if a regular shortwave radio can pick up shuttle
>transmisson. If so what frequencies.
>
I'm not sure but you can try 7184 or 7185 KHz. w3nan retransmit the shuttle audio.

-.. . .- -.-. ....- --- .--. -...- .... -.- .---- --.. .- -...
Pieter Ibelings
pieter.ibelings@sciatl.com
AC4OP, HK1ZAB, 5K0C ...

The views expressed above are MY OWN and not those of SCIENTIFIC ATLANTA......

298. STS-63 Element_Set (95038.678)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 17:30:48 UTC
From: elements-request@alsys.com
Message-ID: <STS-63.95038.678@alsys.com>
Source record: 25645
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-63
1 23469U 95004A 95038.67864645 .00026302 00000-0 24561-3 0 101
2 23469 51.6455 86.7464 0000590 249.1013 110.9885 15.59488653 715

Satellite: STS-63
Catalog number: 23469
Epoch time: 95038.67864645 = (07-Feb-95 16:17:15.05 UTC)
Element set: 010
Inclination: 51.6455 deg
RA of node: 86.7464 deg Space Shuttle Flight STS-63
Eccentricity: .0000590 Keplerian element set JSC-010
Arg of perigee: 249.1013 deg from NASA flight Day 5 vector
Mean anomaly: 110.9885 deg
Mean motion: 15.59488653 rev/day Gil Carman
Decay rate: 2.6302e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 71

This data is also available on the Shuttle Elements Mailing List. For
more information about the list, send a message to with only the command
"info elements" in the body of your message to "listserv@alsys.com".

--
--
Gary Morris Internet: garym@thomsoft.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

299. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 17:44:46 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb7.174446.14063@ke4zv.atl.ga.us>
Source record: 25646

In article <1995Feb6.095148.40728@cc.usu.edu> mark@PROBLEM_WITH_INEWS_DOMAIN_FILE (Markus Wilkinson) writes:
>I would like to suggest that because hydrogen is a smaller atom, it
>will leak out of the balloon faster (I can't remember my chemistry;
>what is the term for dissipating through a membrane? Ossify?).
>
>I think helium will not have as much lift, but more longevity.

If you used *atomic* hydrogen, your statement would be correct.
However, *atomic* hydrogen is unstable, so you will be using
the diatomic molecule H2 instead. That molecule is quite a bit
larger than, and diffuses less readily than, helium atoms. Helium,
being a noble gas, doesn't form into molecules. H2 is 2 AMU while
He is 4 AMU, so the hydrogen will have roughly twice the lift of
helium.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

300. Re: Elements via ftp?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 19:55:05 UTC
From: rbates@nermal.santarosa.edu
Message-ID: <3h8j6p$kr4@floyd.santarosa.edu>
Source record: 25647

John Boyer (boyer@rd.bbc.co.uk) wrote:
: Peter Pauly (ppp@netcom.com) wrote:
: : I have a userid (or did at one time) the Nasa BBS to get 2 line orbital
: : elements. Does anyone know if this BBS is accessible via the internet?
: : Anywhere else where one can get fairly recent elements via ftp?
: : Thanks.

: : --
: : ppp@netcom.com

: try archive.afit.af.mil in pub/space

: John B
: john.boyer@rd.eng.bbc.co.uk

You may try telneting into oig1.gsfc.nasa.gov the logname is oig and the password is goddard1. You can then get to a point that you can enter your name and password (just follow the directions at that point). You then answer a questionaire.

You can send the file containing the elements to your location by a variety of means (FTP too, but that is a little backwards even though it works). The kep file for amateur related birds is called amateur.dat but there are several that are grouped together (weather, amateur, visible, navigatn, etc.).

I haven't been into it for a few months, but it has all you need except the software to do the tracking. There is a list of files available, I suggest that you download that to save on line time (even though it is free).

Happy tracking,

Rick

301. Re: Frequencies of METEOSAT satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 20:36:34 UTC
From: aian3@mail.rrz.Uni-Koeln.DE
Message-ID: <3h8lki$d2p@news.rrz.uni-koeln.de>
Source record: 25648

In article <harry_ph.2.0014ADBF@euronet.nl>, harry_ph@euronet.nl
(Harry_H._Arends) says:
>
>Who nows where to obtain information about the METEOSAT satellites.
>Information such as frequencies, type of transmission and other stuff.

Harry, try 1691.0 MHz for Meteosat-5, channel 1, and 1694.5 MHz for
channel 2. I'm using these frequencies to get APT transmissions from
Meteosat-5 every day. On channel 1, you'll find typical on-line Meteosat-5
images, whereas on channel 2, they send a lot of transmissions from other
geostationary weather satellites. Channel 1 is busier than channel 2.
Hope that helps, Klaus (Koeln, Germany).

302. Re: shortwave to hear shuttle ?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-07 23:05:34 UTC
From: eareckso@netcom.com
Message-ID: <earecksoD3nK5A.Au5@netcom.com>
Source record: 25657

MICHAEL MCCARTHY (Sono1@ix.netcom.com) wrote:
: Just wondering if a regular shortwave radio can pick up shuttle
: transmisson. If so what frequencies.
:

Try these provided by the Amateur radio club (WA3NAN) Goddard Space
Flight Center. Contains shuttle mission audio:

3860, 7185, 14295, 21390, 28650.
VHF from Greenbelt, Md. 145.550, 147.450.

303. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-02-08 00:04:51 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.792201891@eel>
Source record: 25649

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

Mir
1 16609U 86017A 95038.16608943 .00007354 00000-0 10000-3 0 9168
2 16609 51.6463 89.3198 0000535 269.7333 90.3589 15.58728736512603
STS 63
1 23469U 95004A 95037.88414392 -.00000226 00000-0 35532-5 0 170
2 23469 51.6497 90.7343 0001734 41.3592 175.5563 15.59336986 572
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

304. Re: MONDAY: MIR AND SHUTTLE VIEWING WILL BE PERFECT IN SF!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-02-08 02:26:14 UTC
From: raybaycar@aol.com
Message-ID: <3h9a46$8s0@newsbf02.news.aol.com>
Source record: 25651

The viewing from New York City Tuesday morning at about 5:35 AM was near perfect. The MIR trailed the STS-63 by about a hand width at full arm's length. Some sight! <<Ray, N2RB>>

305. Re: shortwave to hear shuttle ?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-08 02:30:15 UTC
From: raybaycar@aol.com
Message-ID: <3h9abn$8tr@newsbf02.news.aol.com>
Source record: 25652

You will need Lower Side Band. The Goddard Amateur Radio Club transmits the shuttle audio on several frequencies: 3.860, 7.185, 14.295, 21.395, and 28.650 if the band is open. They are located near Washington, DC. I get them well in New York City on 3.860 at night and 7.185 days. Good Luck. Oh, they also give Keplerian elements to track the shuttle.

306. Re: Is SAREX onboard Discovery?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-08 03:23:56 UTC
From: mbordel@phoenix.net
Message-ID: <mbordel-0702952123560001@dial8.phoenix.net>
Source record: 25653

> <Is the Space shuttle Discovery carrying amateur radio this mission? Can
> <someone please post the discoveries KEP's?
>
> John,
> Yes discovery is carring Sarex, config. M - Voice only.
> keps are in this newsgroup or sci.space.shuttle.
>
> Tom Randall
> KB2SMS

No, SAREX is NOT being carried aboard the shuttle. They are using an imitation of our antenna. The only SAREX part they are using is the window frame for our cavity antenna.

The radio they are using is capable of TX/RX in the ham bands and will be used on future flights as Config "M." (sts-71)

There are no planned SAREX activities on this flight (even though we have several hams onboard) -- well, we might test the radio again later this week.

Any other Q's?

Matt Bordelon
SAREX training

--
New def: mouse potato -- one who spends much time in front of the computer.

307. Re: MIR/SHUTTLE VHF communications

Newsgroup: rec.radio.amateur.space
Date: 1995-02-08 03:26:13 UTC
From: mbordel@phoenix.net
Message-ID: <mbordel-0702952126130001@dial8.phoenix.net>
Source record: 25654

In article <8A2E4FE.00190001A8.uuout@vulcan.com>, wirenet!n4nr@vulcan.com (N4NR) wrote:

> Anybody know what frequency the shuttle and MIR will use (VHF) to
> communicate between the two, as advertised?
>
It should be the standard MIR/Soyuz freq (somewhere in the aircraft band, but using FM).

--
New def: mouse potato -- one who spends much time in front of the computer.

308. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-08 22:16:58 UTC
From: miles@mail.utexas.edu
Message-ID: <miles-0802951616580001@klingon.util.utexas.edu>
Source record: 25658

> being a noble gas, doesn't form into molecules. H2 is 2 AMU while
> He is 4 AMU, so the hydrogen will have roughly twice the lift of
> helium.

The 2x lift makes sense to me, but others have reported that He has 4% and
8% less lift than H2. I don't understand why so little difference.

Miles Abernathy, N5KOB	"I urge you to dream - I did, and one
U. of TX, P. O. Box 7580	day I found myself standing on the
Austin, Texas 78713 USA	surface of the moon." - Gene Cernan
---

309. Re: RS-15 Info Wanted--

Newsgroup: rec.radio.amateur.space
Date: 1995-02-08 22:17:57 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3hbfum$u0@news.doit.wisc.edu>
Source record: 25659

In article <3h6kp2$54i@news.rain.org>, leigh@rain.org () says:
>
>
>My QTH is in Southern California; what is the extreme range of contacts I
>can expect from it?

I just heard that a California ham worked G3RUH in England. It took a
lot of scheduled attempts, several one way contacts and finally a 30
second two way contact. Sorry, some files got erased and I don't know
the California ham's call.

Dave, N9LTD

310. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-02-08 23:14:17 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.792285257@eel>
Source record: 25660

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
Mir
1 16609U 86017A 95039.25598067 .00011090 00000-0 14726-3 0 9200
2 16609 51.6461 83.8459 0000831 296.4901 63.6005 15.58764259512771
STS 63
1 23469U 95004A 95039.27083333 -.00000241 00000-0 33348-5 0 194
2 23469 51.6488 83.7631 0000694 235.0473 212.0979 15.59650918 794
1995004B
1 23470U 95004B 95039.12710656 -.00111229 00000-0 -13753-2 0 22
2 23470 51.6458 84.4873 0000171 286.8754 73.2140 15.59745934 100
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

311. Anyone notice INTERMITTANT RS-15?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 00:23:07 UTC
From: KKEYSEEA@EUROPA.UMUC.EDU
Message-ID: <3hbn9b$rcv@nova.umuc.edu>
Source record: 25711

On RS-15 passes the last two days, I have noticed that RS-15
is displaying intermittant operation. Both the beacon and the
transponder passband is on for about 10 seconds, then off for about
30 seconds. The beacon makes a noticable "chirp" when it comes back
on. Has anyone else had that experience and/or know what this means
regarding the status of RS-15?

It seems the intermittant operation may not occur near AOS
and LOS at my QTH in Maryland. It makes me wonder if the satellite
has some feature to shut off if excessive uplink power is used....

Any observations or comments?

de WB4U
ops from Gaithersburg MD

(P.S. My CW downlink is OK with 50 Watts uplink through a vertical)

312. Re: Space Shuttle voice contacts

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 01:56:22 UTC
From: gregm50685@aol.com
Message-ID: <3hbso6$n2b@newsbf02.news.aol.com>
Source record: 25712

There is no packet on the shuttle this flight. (per AMSAT)

313. Re: RS-15 Info Wanted--

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 03:13:53 UTC
From: leigh@rain.org
Message-ID: <3hc19h$68k@news.rain.org>
Source record: 25713

> I just heard that a California ham worked G3RUH in England. It took a
> lot of scheduled attempts, several one way contacts and finally a 30
> second two way contact. Sorry, some files got erased and I don't know
> the California ham's call.

> Dave, N9LTD

Dave, that W6-land contact into England via RS-15 is very impressive! I listened to RS-15 for the first time a couple of nights ago, and only heard the US midwest. Sadly, the signal of RS-15 is weaker than either RS-10 or 12, and the "hash" noise from computers in my apartment building made it hard to copy many of the operators.

73. --Leigh/KM6JE.

314. Re: Is SAREX onboard Discovery?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 03:15:36 UTC
From: n7ryw@teleport.com
Message-ID: <3hc192$7p3@desiree.teleport.com>
Source record: 25714

In article <3guj91$oeq@newsbf02.news.aol.com>, tomsunman@aol.com said...
>
><Is the Space shuttle Discovery carrying amateur radio this mission?
Can
><someone please post the discoveries KEP's?
>
> John,
> Yes discovery is carring Sarex, config. M - Voice only.
>keps are in this newsgroup or sci.space.shuttle.

The equipment aboard is not sarex exactly. It is the same type of
equipment, but pre tuned for the frequencies used for the Mir comms.

The radio is tunable, but its front end and the antenna are both set up
for non-amateur frequencies, so actual operation on 145.55 is in doubt.
There may be a chance that they will try it, but I wouldn't hold out
much hope. I have tuned similar radios and antennas, and they don't work
very well outside of their tuned range.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

315. Re: Is SAREX onboard Discovery?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 03:37:27 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3hc2ln$e9o@paperboy.ids.net>
Source record: 25715

In article <3gtd30$guq@linda.teleport.com> John Jordan KB7VZL,
arbee@teleport.com writes:
>Is the Space shuttle Discovery carrying amateur radio this mission? Can
>someone please post the discoveries KEP's?

Qualified sort-of.

Discovery's STS-63 mission is carrying a VHF radio which was used for the direct Shuttle-to-Mir tranmissions. It's a Motorola UR 200, fairly large and heavy radio. For this mission an internal antenna is being used, similar to the SAREX Window 1-6 antenna - although not identical. Most importantly it is *NOT* tuneable.

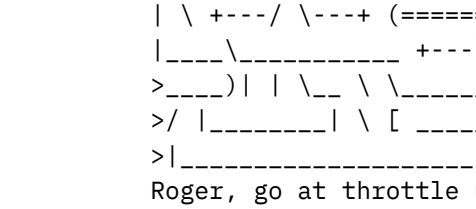
Some estimates indicate that you'll need a moonbounce station to be able to get a readable signal though ...

Mike Foale (and sorry Mike - I forgot your call sign!) has indicated that he is interested in making random ham contacts after the Mir rendezvous portion is completed (which happened yesterday).

By definition the contacts will be only random voice QSOs (no packet mode). He will use the normal SAREX operating frequencies.

But try anway - it's worth the effort.

Next SAREX mission - STS-67 March 1995 with Dr. Ron Parise WA4SIR and five other hams!

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

316. Re: DOCTORED RS-15 KEPS

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 08:01:43 UTC
From: kebsch@pdb.sni.de
Message-ID: <3hci57$4lu@nanette.pdb.sni.de>
Source record: 25716

In <3gj3rj$eak@superb.csc.ti.com> durham@lobby.ti.com (ken) writes:

>Could someone post a set of RS-15 KEPS that have been doctored to make
>them accurate? I have seen some posted, but they wouldn't autoload into
>Instantrack (a group of information was missing.) Mine were working until
>I updated with the latest Amateur Keps from the net which had a 20 minute
>error for RS-15 (this overwrote the fudged Keps.)

>Thanks, Ken K5MBV durham@lobby.ti.com

Hi Ken,

take this and be happy .., :-)

Have fun ..
73 de DK3VN
Waldemar
-------------------------------- snip -------------------------
SB KEPS @ AMSAT $ORBS-034.N
2Line Orbital Elements 034.AMSAT

HR AMSAT ORBITAL ELEMENTS FOR AMATEUR SATELLITES IN NASA FORMAT
>From WA5QGD FORT WORTH,TX February 3, 1995
BID: $ORBS-034.N

DECODE 2-LINE ELSETS WITH THE FOLLOWING KEY:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

TO ALL RADIO AMATEURS BT

AO-10
1 14129U 83058B 95022.06637884 .00000188 00000-0 10000-3 0 3378
2 14129 26.6077 286.7997 6021742 245.9578 41.7464 2.05877067 87291
UO-11
1 14781U 84021B 95029.53497394 .00000125 00000-0 28936-4 0 7713
2 14781 97.7802 38.5998 0010747 268.2209 91.7767 14.69298517583540
RS-10/11
1 18129U 87054A 95029.81708464 .00000048 00000-0 36184-4 0 177
2 18129 82.9253 161.3378 0013081 111.5236 248.7310 13.72347864380992
AO-13
1 19216U 88051B 95032.60051907 -.00000244 00000-0 10000-4 0 119
2 19216 57.6351 206.1374 7262194 0.9146 359.7475 2.09723401 50825
FO-20
1 20480U 90013C 95030.25279873 .00000019 00000-0 11434-3 0 7665

```
2 20480 99.0669 144.5321 0540208 185.3361 174.1822 12.83229967233250
AO-21
1 21087U 91006A 95032.18370123 .00000094 00000-0 82657-4 0 5629
2 21087 82.9466 333.2336 0034839 163.3811 196.8473 13.74550193201041
RS-12/13
1 21089U 91007A 95029.48529122 .00000028 00000-0 13812-4 0 7723
2 21089 82.9198 203.6193 0028460 196.2512 163.7733 13.74053450199729
ARSENE
1 22654U 93031B 95022.17402542 -.00000103 00000-0 00000 0 0 3042
2 22654 2.3034 89.6815 2905952 201.9970 142.2536 1.42203247 4316
RS-15
1 23439U 94085A 95029.78512545 -.00000039 00000-0 10000-3 0 256
2 23439 64.8142 118.8199 0167992 285.7880 72.4579 11.27524749 3916
UO-14
1 20437U 90005B 95030.23016510 -.00000008 00000-0 13759-4 0 714
2 20437 98.5785 116.7862 0010090 245.9616 114.0500 14.29872767262031
AO-16
1 20439U 90005D 95029.78733809 -.00000010 00000-0 13205-4 0 8695
2 20439 98.5882 117.8404 0010532 248.1918 111.8143 14.29926709261983
DO-17
1 20440U 90005E 95030.20926175 -.00000012 00000-0 12412-4 0 8697
2 20440 98.5894 118.6633 0010607 244.8407 115.1678 14.30067368262069
WO-18
1 20441U 90005F 95030.18880306 .00000007 00000-0 19801-4 0 8737
2 20441 98.5886 118.6256 0011118 245.7949 114.2070 14.30039762262064
LO-19
1 20442U 90005G 95030.22140151 .00000003 00000-0 18242-4 0 8699
2 20442 98.5870 118.9734 0011497 245.2987 114.7000 14.30139739262084
UO-22
1 21575U 91050B 95030.20801640 .00000030 00000-0 24489-4 0 5757
2 21575 98.4121 104.8473 0007802 340.1147 19.9729 14.36956477185688
KO-23
1 22077U 92052B 95029.80585512 -.00000037 00000-0 10000-3 0 4670
2 22077 66.0793 165.4976 0013094 234.8401 125.1387 12.86290266115936
AO-27
1 22825U 93061C 95030.17348827 .00000024 00000-0 27744-4 0 3667
2 22825 98.6328 108.4519 0008013 269.7686 90.2573 14.27649986 70077
IO-26
1 22826U 93061D 95030.20784082 .00000016 00000-0 24096-4 0 3645
2 22826 98.6315 108.5577 0008524 271.4602 88.5587 14.27756492 70081
KO-25
1 22828U 93061F 95030.23613549 .00000015 00000-0 23727-4 0 3435
2 22828 98.6291 108.6148 0009415 254.1138 105.9002 14.28084911 38185
NOAA-9
1 15427U 84123A 95032.56326916 .00000050 00000-0 50484-4 0 1233
2 15427 99.0189 90.3578 0014379 294.9731 64.9952 14.13680413522665
NOAA-10
1 16969U 86073A 95032.84670720 .00000011 00000-0 22695-4 0 326
2 16969 98.5088 39.8314 0014046 22.3097 337.8636 14.24922987435205
MET-2/17
```

```
1 18820U 88005A 95032.22212775 .00000037 00000-0 20090-4 0 5303
2 18820 82.5403 86.4173 0014978 257.7798 102.1680 13.84731013354052
MET-3/2
1 19336U 88064A 95029.86339305 .00000051 00000-0 10000-3 0 3679
2 19336 82.5430 163.2916 0018231 59.1670 301.1248 13.16970989313095
NOAA-11
1 19531U 88089A 95032.84787362 .00000023 00000-0 37579-4 0 9424
2 19531 99.1873 32.5906 0011115 206.0361 154.0252 14.13036257327575
MET-2/18
1 19851U 89018A 95029.87808287 .00000036 00000-0 19112-4 0 3680
2 19851 82.5214 323.1794 0013938 318.2693 41.7402 13.84382280299055
MET-3/3
1 20305U 89086A 95032.18864549 .00000044 00000-0 10000-3 0 2462
2 20305 82.5400 111.6595 0008671 89.3631 270.8449 13.04410318252751
MET-2/19
1 20670U 90057A 95029.91944520 .00000015 00000-0 18331-6 0 8699
2 20670 82.5417 28.3834 0014420 228.7992 131.1932 13.84169874231986
FY-1/2
1 20788U 90081A 95033.02239382 -.00000027 00000-0 10000-4 0 1977
2 20788 98.8205 50.6320 0015075 88.5360 271.7533 14.01369663225908
MET-2/20
1 20826U 90086A 95032.26314219 .00000048 00000-0 29525-4 0 8794
2 20826 82.5278 323.7116 0014179 119.4370 240.8227 13.83600260219435
MET-3/4
1 21232U 91030A 95029.42533773 .00000050 00000-0 10000-3 0 7775
2 21232 82.5387 9.6433 0013715 347.4559 12.6222 13.16466230181124
NOAA-12
1 21263U 91032A 95032.78649259 .00000089 00000-0 59090-4 0 3615
2 21263 98.5947 60.2485 0012076 293.1939 66.7966 14.22489625193146
MET-3/5
1 21655U 91056A 95029.85679346 .00000051 00000-0 10000-3 0 7755
2 21655 82.5509 316.6505 0013808 358.1164 1.9894 13.16836611166295
MET-2/21
1 22782U 93055A 95029.45017087 .00000024 00000-0 88423-5 0 3765
2 22782 82.5468 27.1368 0021524 316.4986 43.4472 13.83024508 71369
NOAA-14
1 23455U 94089A 95032.70958391 .00000024 00000-0 37393-4 0 536
2 23455 98.8880 336.3930 0008602 216.7664 143.2924 14.11487547 4693
POSAT
1 22829U 93061G 95030.24565307 .00000023 00000-0 26786-4 0 3588
2 22829 98.6303 108.6505 0009421 253.9759 106.0382 14.28061707 70109
MIR
1 16609U 86017A 95032.84485132 .00006600 00000-0 90425-4 0 9129
2 16609 51.6477 116.0135 0001369 199.3616 160.7324 15.58726545511799
HUBBLE
1 20580U 90037B 95032.12825475 .00000388 00000-0 23344-4 0 5891
2 20580 28.4704 205.1988 0006772 326.0645 33.9514 14.90786448 63581
GRO
1 21225U 91027B 95032.46497268 .00003033 00000-0 62962-4 0 1895
2 21225 28.4601 79.2619 0003117 283.6673 76.3584 15.42017467 92355
```

```
UARS
1 21701U 91063B 95029.91484496 -.00000016 00000-0 19741-4 0 6463
2 21701 56.9853 330.6112 0005654 98.4688 261.6987 14.96319276184873
/EX
--------------------------------- snip ------------------------
--
```

Waldemar Kebsch, c/o Siemens Nixdorf Informationssysteme AG,
33106 Paderborn, Federal Republic of Germany, kebsch.pad@sni.de

---

DK3VN - DXCC: 15 cfmd (since September 1994 QRV on 40/20/15/10)

317. <ad> GUARANTEED CREDIT REPAIR BY LAW FIRM

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 10:47:19 UTC
From: ccapc@cyber.sell.com
Message-ID: <3hcrrn$o88@panix.com>
Source record: 25717

Consumer Credit Advocates, PC
11 Pennsylvania Plaza, Suite 2101
New York, NY 10001
(212) 629-5261 (telephone) (212) 629-4762 (fax)
E-MAIL: ccapc@cyber.sell.com

Our LAW FIRM offers direct guaranteed effective credit restoration services by experienced attorneys. THIS IS NOT A DO-IT-YOURSELF KIT.

What can we do?

We have successfully facilitated the removal of Late Payments, Charge-offs, Foreclosures, Repossessions, Collection Accounts, Loan Defaults, Tax Liens, Judgments and Bankruptcies from our clients' credit reports. WE GUARANTEE THAT YOUR CREDIT CAN BE RESTORED!!!

Who needs our services?

Anyone who has experienced the inconvenience and embarrassment of being turned down for a credit card, a lease or a purchase of an automobile.

Anyone who is unable to buy the house of their dreams due to denial of a mortgage application or who has to pay thousands of dollars more in mortgage interest than someone with good credit.

Anyone who has been turned down for a job or promotion due to derogatory credit items on a credit report.

Anyone in business who has lost a deal because a person or firm wanted to see his/her credit report before doing business.

Anyone who has been unable to establish credit.

THE FOUR GREAT MYTHS OF CREDIT:

Myth #1: It is illegal or immoral to have your credit report cleared.

Fact: It is not illegal nor immoral. In fact, that is what the Fair Credit Reporting Act is all about. The act was enacted by Congress in 1971. One of its purposes as to give consumers the protection of the law and to help guard against

any unwarranted invasion of a consumer's right to privacy.

Myth #2: The information on a credit report cannot be changed.

Fact: Actually, the opposite is true under the Fair Credit Reporting Act. Federal and State laws require that items be removed if they are not 100% accurate or cannot be verified in a timely manner.

Myth #3: It is impossible to get a bankruptcy off a credit report.

Fact: Bankruptcies can come off credit reports like any other derogatory item. The nature of the derogatory item has nothing to do with its removal under the Fair Credit Reporting Act.

Myth #4: Credit Reporting Agencies are empowered with some kind of governmental authority.

Fact: Absolutely Not!! They are simply large corporations whose primary goal is to make a profit like any other business.

If you have ever applied for or received credit, a file exists in one or more of the credit bureaus. These companies collect, store and distribute as much credit information as they can find, retaining negative information on a credit report for 7 to 10 years. This information is evaluated by potential creditors to determine your credit worthiness.

Credit reporting agencies are in business to protect the interests of the creditors. the LAW FIRM's goal is to help and protect the individual consumer from inaccurate credit reporting.

The president of our LAW FIRM has been practicing consumer law since 1984. The staff of our firm has successfully processed, disputed and challenged thousands of client credit reports.

Our legal fee is based o the number of negative items that appear on a client's credit reports, issued b the three national credit bureaus. Our retainer agreement offers a MONEY BACK GUARANTEE stating that if any negative item is not deleted, upgraded or corrected from a client's credit file, it will give the client a full refund for that item or continue to process the client's file at no additional fee until that item is

corrected, upgraded or deleted. THE ONLY THING YOU HAVE TO LOSE IS YOUR BAD CREDIT!!

PLEASE CONTACT THE LAW FIRM AND LEAVE YOUR FULL NAME, MAILING ADDRESS AND TELEPHONE NUMBER SO WE MAY FORWARD FURTHER INFORMATION AND INSTRUCTIONS TO YOU ABOUT OUR SERVICE.

Consumer Credit Advocates, PC
11 Pennsylvania Plaza, Suite 2101
New York, NY 10001
(212) 629-5261 (telephone) (212) 629-4762 (fax)
E-MAIL: ccapc@cyber.sell.com

318. need satellite schedules (AO13)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 16:14:40 UTC
From: sherwood@oribi.cig.mot.com
Message-ID: <3hdf1g$dh5@delphinium.cig.mot.com>
Source record: 25718

Can someone tell me where I can find schedules?? A schedule tells
when a satellite such as AO13 changes from mode B to mode S and
back again. I have tried the sites specified in the following posting,
but no luck there. I would prefer an internet site, but a BSS will do.
Thanks.

Chuck Sherwood
sherwood@cig.mot.com

In article <tkelso.791858044@tiger> tkelso@afit.af.mil (TS Kelso) writes:
>
>The most current orbital elements from the NORAD two-line element sets are
>carried on the Celestial BBS, (334) 409-9280, and are updated daily (when
>
>As a service to the satellite user community, the most current of these
>elements are uploaded weekly to sci.space.news and rec.radio.amateur.space.
>
>Dr TS Kelso Adjunct Professor of Space Operations
>tkelso@afit.af.mil Air Force Institute of Technology

--
Chuck Sherwood
sherwood@cig.mot.com
708-632-7078

319. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 16:33:24 UTC
From: reinhart=40marlboro#%forwarder@shipco.geis.COM
Message-ID: <199502091632.AA053347574@relay2.geis.com>
Source record: 25719

Kenneth L. Keyseear writes:

On RS-15 passes the last two days, I have noticed that RS-15 is
displaying intermittant operation. Both the beacon and the
transponder passband is on for about 10 seconds, then off for about 30
seconds. .....

Yes, I have noticed this. So has K4ADK. I saw it on a 0200Z pass
on 8 Feb. I haven't had a chance to listen to the bird since. Both K4ADK
and I speculated that it might be a "notch" feature in operation. Some
signals I could hear on the downlink seemed quite loud and consistent,
however, so the situation is far from clear to me.
If the RS command team isn't on this mailing list, I hope someone
will forward these observations to them.

David Reinhart
wa6ilt@amsat.org
WA6ILT@K1UGM.#EMA.MA.NA

320. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 17:01:20 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb9.170120.24045@ke4zv.atl.ga.us>
Source record: 25720

In article <1995Feb7.133422.24427@arrl.org> zlau@arrl.org (Zack Lau (KH6CP)) writes:
>KE4ZV Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
>
>: drawing the attention of the auto-notch on the bird. I'm not
>: *recomending* FM operations on P3D, just noting that they seem
>: feasible. You'd need a receiving setup that can hear the spin
>: modulation of the transponder noise floor, but that's not hard,
>: and is something all satellite operators should strive for anyway.
>
>What does spin modulation of the noise floor
>sound like on an FM receiver? I would have
>thought that most of this is amplitude modulation
>that high quality FM receivers are suppose to reject.

There is some doppler spreading of the received noise to the
transponder when repeated, caused by the spin, and that gives
a pumping sound similar to what you hear with a SSB receiver,
but it is very small, and would be hard to hear on an FM receiver
that suppresses AM. But remember you should be well below
the receiver limiting threshold, so some types of FM detector
would have an AM response under this condition. (That wouldn't
be a very desirable type of FM detector to use for satellite
communications though.)

I don't really expect someone with just an FM receiver to hear the
spin modulation of the noise floor, however. Rather I was intending
to indicate the kind of receiving sensitivity needed, and that it
should be good enough, if you had an SSB detector, to hear the noise
floor pump. (Kind of hard for the guy with just an FM receiver to
test that, I'll admit.)

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

321. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 17:08:51 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb9.170851.24145@ke4zv.atl.ga.us>
Source record: 25721

In article <miles-0802951616580001@klingon.util.utexas.edu> miles@mail.utexas.edu (Miles Abernathy) writes:
>> being a noble gas, doesn't form into molecules. H2 is 2 AMU while
>> He is 4 AMU, so the hydrogen will have roughly twice the lift of
>> helium.
>
>The 2x lift makes sense to me, but others have reported that He has 4% and
>8% less lift than H2. I don't understand why so little difference.

The main reason is that the above ignores the mass of the balloon
envelope. That's constant for either gas, and greater than the mass
of either gas for small balloons. So it dominates the lift equation.

Since volume increases with the cube of the balloon radius, and
area only increases as the square of the radius, the difference
in lifting gases becomes more pronounced as balloon size increases.
When you approach the size of something like a zepplin, the difference
is quite marked. At weather balloon sizes, it's not so pronounced.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

322. STS-63 Element_Set (95039.703)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 17:45:36 UTC
From: elements-request@alsys.com
Message-ID: <STS-63.95039.703@alsys.com>
Source record: 25722
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-63
1 23469U 95004A 95039.70384109 .00109634 00000-0 13869-2 0 117
2 23469 51.6460 81.5935 0000816 293.8882 66.1993 15.59771750 870

Satellite: STS-63
Catalog number: 23469
Epoch time: 95039.70384109 = (08-Feb-95 16:53:31.87 UTC)
Element set: 011
Inclination: 51.6460 deg
RA of node: 81.5935 deg Space Shuttle Flight STS-63
Eccentricity: .0000816 Keplerian element set JSC-011
Arg of perigee: 293.8882 deg from NASA flight Day 6 vector
Mean anomaly: 66.1993 deg
Mean motion: 15.59771750 rev/day Gil Carman
Decay rate: 1.09634e-03 rev/day^2 NASA Johnson Space Center
Epoch rev: 87

This data is also available on the Shuttle Elements Mailing List. For
more information about the list, send a message to with only the command
"info elements" in the body of your message to "listserv@alsys.com".

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

323. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 18:59:29 UTC
From: rwa@aupair.cs.athabascau.ca
Message-ID: <rwa.792356369@aupair.cs.athabascau.ca>
Source record: 25723

mark@PROBLEM_WITH_INEWS_DOMAIN_FILE (Markus Wilkinson) writes:

>I would like to suggest that because hydrogen is a smaller atom, it
>will leak out of the balloon faster

But gaseous hydrogen is molecular (H-sub-2) whereas helium is atomic.
This somewhat ameliorates the problem. That is, the mass ratio is
2:4, not 1:4.

regards,
Ross ve6pdq
--
Ross Alexander VE6PDQ rwa@cs.athabascau.ca,
(403) 675 6311 rwa@auwow.cs.athabascau.ca

Television is chewing gum for the eyes. -- Frank Lloyd Wright

324. Re: DOCTORED RS-15 KEPS

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 19:50:50 UTC
From: greg@core.rose.hp.com
Message-ID: <D3r0Gr.Aoy@icon.rose.hp.com>
Source record: 25724

Waldemar Kebsch (kebsch@pdb.sni.de) wrote:
: take this and be happy .., :-)
:
: RS-15
: 1 23439U 94085A 95029.78512545 -.00000039 00000-0 10000-3 0 256
: 2 23439 64.8142 118.8199 0167992 285.7880 72.4579 11.27524749 3916

Uh, I was under the impression that RS-15 *satellite* was 23440, and that 23439 was the booster rocket. Have I been doing this backwards all this time? Sure would explain the difficulty in predicting the passes...

Greg KD6KGW

325. Re: HOAX against AmSoft

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 21:18:53 UTC
From: jholly@cup.hp.com
Message-ID: <D3r4JH.3LL@cup.hp.com>
Source record: 25725
Cross-posted to: rec.radio.amateur.policy,rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.misc,rec.radio.amateur.space

Michael P. Deignan (md@pstc3.pstc.brown.edu) wrote:
: In article <3h3h4n$sev@grape.epix.net>, Pete deVolpi <amsoft@epix.net> wrote:

: >Take a look at the LAST LOGIN DATE!
: >(Last login Fri Jan 20 20:39 on ttyrc from sa-pm1.texas.net)
: >So how is it that bob@texas.net has managed to post so many messages in
: >the rec.radio.amateur.* usenets as bob@texas.net since Jan 20 and
: >texas.net's finger has no record of it?

: Boy Pete, you really are a newbie without a clue as to how the net
: works or how networks in general function, aren't you? Your whole
: posting had me laughing. I hope your programming skills are better than
: your understanding of networks, for your company's sake.

At least his skill in dealing with people are better than yours. Talk about
a pompus jerk.

326. Re: Anyone notice INTERMITTANT RS-15?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 21:21:32 UTC
From: charlier@lsid.hp.com
Message-ID: <D3r4nx.D45@hpcvsnz.cv.hp.com>
Source record: 25726

Kenneth L. Keyseear (KKEYSEEA@EUROPA.UMUC.EDU) wrote:
: On RS-15 passes the last two days, I have noticed that RS-15
: is displaying intermittant operation. Both the beacon and the
: transponder passband is on for about 10 seconds, then off for about
: 30 seconds. The beacon makes a noticable "chirp" when it comes back
: on. Has anyone else had that experience and/or know what this means
: regarding the status of RS-15?

: Any observations or comments?

I noticed it too. Sorry that I don't remember exactly when, except
that it was within the last several days, and I believe the sat was
close to max elevation for me.

Gee, I hope it's not dying already!

Anyone else noticed that official news about this satellite
is extremely scarce? The ARRL, AMSAT, and the satellite news bulletin
that gets posted here have said hardly a thing about it. I for one
would be interested in learning about the prospects for full power
from the translator; is it just turned down for some reason, or is it
broken?

--
Charlie Panek KX7L Hewlett Packard Company
charlier@lsid.hp.com Lake Stevens Instrument Division
Everett, Washington

327. Re: Anyone notice INTERMITTANT RS-15?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 21:48:25 UTC
From: kf8bex@oeonline.com
Message-ID: <D3r5wq.AEA@oeonline.com>
Source record: 25727

In article <3hbn9b$rcv@nova.umuc.edu>, KKEYSEEA@EUROPA.UMUC.EDU (Kenneth L. Keyseear) says:
>
>
> On RS-15 passes the last two days, I have noticed that RS-15
>is displaying intermittant operation. Both the beacon and the
>transponder passband is on for about 10 seconds, then off for about
>30 seconds. The beacon makes a noticable "chirp" when it comes back
>on. Has anyone else had that experience and/or know what this means
>regarding the status of RS-15?
>
I have noticed the same thing. I E-Mailed the RS Group and, at first, they told me that it was propagation or spin modulation. I noticed it again last night and E-Mailed them again. Leo, at the RS Group, told me it may be a low-voltage condition during its eclipse with the earth. The RS Group can be E-Mailed at: rsgroup@olymp.msk.su
73 de Mike, KF8BE

328. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 22:01:41 UTC
From: n7ryw@teleport.com
Message-ID: <3he3c7$mrk@desiree.teleport.com>
Source record: 25728

In article <6be_9502010116@trisoft.com>,
Gary.Coffman@f1.n328.z1.fidonet.org said...

>P3D will have a power budget about 10x that of AO-10 and AO-13,
>yet both of those satellites have been able to support FSK and
>SSTV operations, both high duty cycle modes. Limited FM operations
>should be possible on P3D without significantly impacting the
>power budget.

I doubt that there would be a way to "Limit" FM if it got started. The passband would be filled with just a few signals, and few of those would be able to tune for Doppler properly. Most would be mobile radios, with their 5 kHz steps. With differing Doppler for different stations, they would end up overlapping.

The most compelling reason, though, for not wanting FM is conservation of bandwidth. In the 15+kHz of a single FM signal, five 3 kHz SSB signals can be carried. I would not want to see this satellites' resources wasted by using FM there.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

329. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-02-09 23:13:54 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.792371634@eel>
Source record: 25729

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
Mir
1 16609U 86017A 95040.21763988 .00006882 00000-0 93849-4 0 9212
2 16609 51.6467 79.0196 0000619 272.6778 87.4140 15.58773343513009
STS 63
1 23469U 95004A 95039.91666667 -.00000242 00000-0 33187-5 0 206
2 23469 51.6502 80.5213 0000736 296.4227 179.5067 15.59791543 882
1995004B
1 23470U 95004B 95039.51151995 .00001850 00000-0 28901-4 0 30
2 23470 51.6461 82.5543 0000515 249.4306 110.6635 15.59781393 167
1995004C
1 23471U 95004C 95040.24166631 .00017373 00000-0 10967-3 0 35
2 23471 51.6479 78.4301 0016896 326.9158 33.0792 15.76568084 945
1995004D
1 23472U 95004D 95040.17390555 .00029925 00000-0 17365-3 0 37
2 23472 51.6511 78.7249 0019048 343.4315 16.5936 15.78015654 935
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

330. Re: Anyone notice INTERMITTANT RS-15?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 01:45:20 UTC
From: stearns@gn2.getnet.com
Message-ID: <3hdnib$81s@infoman.net99.net>
Source record: 25730

KKEYSEEA@EUROPA.UMUC.EDU (Kenneth L. Keyseear) wrote:
>
> On RS-15 passes the last two days, I have noticed that RS-15
>is displaying intermittant operation. Both the beacon and the
>transponder passband is on for about 10 seconds, then off for about
>30 seconds. The beacon makes a noticable "chirp" when it comes back
>on. Has anyone else had that experience and/or know what this means
>regarding the status of RS-15?
>
> It seems the intermittant operation may not occur near AOS
>and LOS at my QTH in Maryland. It makes me wonder if the satellite
>has some feature to shut off if excessive uplink power is used....
>
>Any observations or comments?
>
>de WB4U
>ops from Gaithersburg MD
>
>(P.S. My CW downlink is OK with 50 Watts uplink through a vertical)
>
Ken,

I noticed the same thing on passes on 7 February. Was sure, at first, that
it was my 10 meter downlink antenna. Recived confirmation from other users
that is was common to all users. Have we got another broken satellite?

Ned

331. Re: Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 01:56:47 UTC
From: trapps@hpcc01.corp.hp.com
Message-ID: <58330001@hpcc01.corp.hp.com>
Source record: 25731

If I remember my chemistry:

Air is mostly Nitrogen, Atomic Wt = 7, Molecular Wt = 14 (N2)
(use 14.4 for the 20% Oxygen=8)

Hydrogen Atomic Wt = 1 Molecule is H2, molecular weight = 2

Helium Atomic Wt = 2 Molecule is He (inert gas) mol wt = 2 also

Gasses fill a volume to a constant number of molecules per volume at
a given pressure and temperature, remember P*V=N*R*T. I forget whos law.

Your lifting power is proportional to the difference in the molecular
weights, which is identical. Helium is probably a lot more expensive
but a lot safer (Hindenberg).

73,
Steve N4DG

332. Satellite Info

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 04:12:54 UTC
From: tmnichol@nps.navy.mil
Message-ID: <3hep46$pne@sagan.nps.navy.mil>
Source record: 25736

I am looking for a comprehensive list and data on all
amateur radio satellites (past and present). Would somebody
please point me in the right direction. By data, I mean how many
telemetry points the satellite has, how much storage, data rates,
etc.....

I am also looking for information on TT&C for amateur radio
satellites. Who is responsible for and where are the TT&C
operation conducted.

```
[][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][]
[] []
[] Troy M. Nichols tmnichol@sagan.nps.navy.mil []
[] []
[][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][][]
```

333. Re: Space Shuttle voice contacts

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 06:57:55 UTC
From: hemstree@vcd.hp.com
Message-ID: <hemstree-0902952257550001@b1shvb01.vcd.hp.com>
Source record: 25732

Correct me if I am wrong, but I believe that I have heard the distintive packet tones going out over 145.550mhz. I do believe packet is active on this shuttle mission.

Charles

In article <3hbso6$n2b@newsbf02.news.aol.com>, gregm50685@aol.com (GregM50685) wrote:

> There is no packet on the shuttle this flight. (per AMSAT)

334. TAPR/AMSAT DSP-93 April Production

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 08:22:06 UTC
From: gjones@tcet.unt.edu
Message-ID: <3hf7ne$pl6@hermes.unt.edu>
Source record: 25737

```
TAPR/AMSAT DSP-93 April Production 2/10/95
------------------------------------------------------------------------

TAPR is still taking orders to fill the 175 units being produced for the
April TAR/AMSAT DSP-93 Production. If you are interested in getting a
DSP-93, this is your chance. The next production, after April, is
scheduled for Sept/Oct time frame.

------------------------------------------------------------------------
Tucson Amateur Packet Radio
8987-309 E Tanque Verde Rd #337 * Tucson, Az * 85749-9399 * 817-383-0000
```

335. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 09:17:07 UTC
From: kthompso@WichitaKS.NCR.COM
Message-ID: <kthompso.429.0009494E@WichitaKS.NCR.COM>
Source record: 25745

In article <1995Feb9.170851.24145@ke4zv.atl.ga.us> gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>From: gary@ke4zv.atl.ga.us (Gary Coffman)
>Subject: Re: Balloon FAQ 1.0
>Date: Thu, 9 Feb 1995 17:08:51 GMT

>In article <miles-0802951616580001@klingon.util.utexas.edu>
>miles@mail.utexas.edu (Miles Abernathy) writes:
>>> being a noble gas, doesn't form into molecules. H2 is 2 AMU while
>>> He is 4 AMU, so the hydrogen will have roughly twice the lift of
>>> helium.
>>
>>The 2x lift makes sense to me, but others have reported that He has 4% and
>>8% less lift than H2. I don't understand why so little difference.

Someone's earlier logic was a bit off to. It is not that h2 is half the
weight of he but the ratio of each of their weights to that of air....
and the below business of mass/volumn.
bottom line the risk of fire only gains one 8% at most.
not worth it for my hobby.

>The main reason is that the above ignores the mass of the balloon
>envelope. That's constant for either gas, and greater than the mass
>of either gas for small balloons. So it dominates the lift equation.

>Since volume increases with the cube of the balloon radius, and

>Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
>Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
>534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
>Lawrenceville, GA 30244 | |

336. STS-63 Element_Set (95040.600)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 11:45:29 UTC
From: elements-request@alsys.com
Message-ID: <STS-63.95040.600@alsys.com>
Source record: 25734
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-63
1 23469U 95004A 95040.60068774 .00129363 00000-0 16108-2 0 126
2 23469 51.6484 77.0836 0000613 132.0052 228.0962 15.59766819 1016

Satellite: STS-63
Catalog number: 23469
Epoch time: 95040.60068774 = (09-Feb-95 14:24:59.42 UTC)
Element set: 012
Inclination: 51.6484 deg
RA of node: 77.0836 deg Space Shuttle Flight STS-63
Eccentricity: .0000613 Keplerian element set JSC-012
Arg of perigee: 132.0052 deg from NASA flight Day 7 vector
Mean anomaly: 228.0962 deg
Mean motion: 15.59766819 rev/day Gil Carman
Decay rate: 1.29363e-03 rev/day^2 NASA Johnson Space Center
Epoch rev: 101

This data is also available on the Shuttle Elements Mailing List. For
more information about the list, send a message to with only the command
"info elements" in the body of your message to "listserv@alsys.com".

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

337. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 15:19:54 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb10.151954.29230@ke4zv.atl.ga.us>
Source record: 25742

Let me retract some erroneous information I posted previously.
H2 has an AMU of 2, and helium has an AMU of 4, but that doesn't
mean the lift will be 2x greater. What counts for lift is the
difference in the mass of light displacing gas vis the mass of the
atmosphere. Air is 80% N2 with an AMU of 28, and 20% O2 with
an AMU of 32. So air has an average AMU of 28.8. Now the lift
for a given volume of lifting gas will be air-gas. In the case
of hydrogen, the number is 28.8-2=26.8, and for helium it is
28.8-4=24.8. So hydrogen lifts 26.8/24.8=1.08 times as much,
or an 8% greater lift.

Thanks to Ross Alexander for putting me straight on this.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

338. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 15:24:37 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb10.152437.29309@ke4zv.atl.ga.us>
Source record: 25743

In article <3he3c7$mrk@desiree.teleport.com> n7ryw@teleport.com (William Roth) writes:
>In article <6be_9502010116@trisoft.com>,
>Gary.Coffman@f1.n328.z1.fidonet.org said...
>
>>P3D will have a power budget about 10x that of AO-10 and AO-13,
>>yet both of those satellites have been able to support FSK and
>>SSTV operations, both high duty cycle modes. Limited FM operations
>>should be possible on P3D without significantly impacting the
>>power budget.
>
>I doubt that there would be a way to "Limit" FM if it got started. The
>passband would be filled with just a few signals, and few of those would
>be able to tune for Doppler properly. Most would be mobile radios, with
>their 5 kHz steps. With differing Doppler for different stations, they
>would end up overlapping.
>
>The most compelling reason, though, for not wanting FM is conservation of
>bandwidth. In the 15+kHz of a single FM signal, five 3 kHz SSB signals
>can be carried. I would not want to see this satellites' resources wasted
>by using FM there.

I think you are exaggerating transponder loading. The transponders
are rarely approaching full. However, I agree that lots of FM operation
would be bad. All I wanted to say was that usable FM signals should
be *possible* through P3D without adversely impacting its power budget.
I don't want to leave the impression that I think a lot of such operations
would be desirable on other counts.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

339. More Info on INTERMITTANT RS-15 de WB4U

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 16:51:53 UTC
From: KKEYSEEA@EUROPA.UMUC.EDU
Message-ID: <3hg5j9$bjv@nova.umuc.edu>
Source record: 25749

While observing RS-15 during Orbit #64, the beacon and transponder were operating fine at AOS. Shortly thereafter, the intermittant characteristic discussed earlier began. Then, the beacon and transponder abruptly became solid again. Since the pass was in the early morning hours, I tried a theory that the solid operation occurred after the satellite passed into the sunlight. YEP, just as the satellite was illuminated by the sun, according to STSPLUS, the operation became solid....

Apparently the amateur side of RS-15 is shut off when the power budget of the overall satellite is low. (Like in the shade and over the high-access U. S.)

So, to plan for enjoyable RS-15 ops, make sure the satellite is in sunlight for the anticipated pass.

[Caveat: One observation does not prove a theory. Continued observations and comments will help...]

[Recommendation: If the power budget is too low for continuous operation, shut off the transponder completely during the "crisis" rather than operate intermittantly (which is nearly useless and continues to use some power...]

Hope this info helps...I'm concentrating on DAYLIGHT passes now!

73 de WB4U
Ken Keyseear
Gaithersburg MD

340. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 19:36:48 UTC
From: greg@core.rose.hp.com
Message-ID: <D3suHD.Lxo@icon.rose.hp.com>
Source record: 25746

William Roth (n7ryw@teleport.com) wrote:
: I doubt that there would be a way to "Limit" FM if it got started. The
: passband would be filled with just a few signals, and few of those would
: be able to tune for Doppler properly. Most would be mobile radios, with
: their 5 kHz steps. With differing Doppler for different stations, they
: would end up overlapping.

In addition, few mobile radios have more than a high/medium/low power setting,
and limited S-meters (LED bar graph). I doubt that the operating rule of
being no louder than the beacon could be observed in practice.

Greg KD6KGW

341. Re: Space Shuttle voice contacts

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 19:47:40 UTC
From: greg@core.rose.hp.com
Message-ID: <D3suzH.M1J@icon.rose.hp.com>
Source record: 25747

Charles H. Hemstreet IV (hemstree@vcd.hp.com) wrote:
: Correct me if I am wrong, but I believe that I have heard the distintive
: packet tones going out over 145.550mhz. I do believe packet is active on
: this shuttle mission.
:

I heard them too, but they are probably from MIR. They seemed to align pretty closely with MIR's AOS/LOS last night (9 Feb).

BTW, right at the end of the 10pm (PST) pass I thought I heard a voice breaking in over the packet. I couldn't tell if it was coming from above, but it seemed to have an accent, and it was off frequency (doppler?) enough I couldn't copy it. Discovery had already set (unless the Keps are off), so my guess is MIR.

Greg KD6KGW

342. Re: Space Shuttle voice contacts

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 20:32:40 UTC
From: drted@ix.netcom.com
Message-ID: <3hgih8$5hb@ixnews2.ix.netcom.com>
Source record: 25748

In <hemstree-0902952257550001@b1shvb01.vcd.hp.com> hemstree@vcd.hp.com (Charles H. Hemstreet IV) writes:

>
>Correct me if I am wrong, but I believe that I have heard the distintive
>packet tones going out over 145.550mhz. I do believe packet is active on
>this shuttle mission.
>
>Charles
>
>In article <3hbso6$n2b@newsbf02.news.aol.com>, gregm50685@aol.com
>(GregM50685) wrote:
>
>> There is no packet on the shuttle this flight. (per AMSAT)
>

Charles, thanks for your compulsive optimism, but when the training director of SAREX posts just a couple of days ago that the SAREX package is not on STS-63, I am forced to believe that it isn't there. Over the past few days, the shuttle has been within a couple of degrees of the Mir. And the cosmonauts have made much effort to keep their packet station going even through the rendezvous. I have a crude setup, a broadband stick feeding an AOR AR-2500 scanner, decoded by a Universal M1200. Still, a couple of days ago, I received a clear packet from R0MIR acknowledging packet contact with a couple of midwestern stations. In the past few weeks, most Mir overhead passes have included some packet signals. Before the flight, it was reported that some of the shuttle crew had just received their amateur calls and may be making contact from the shuttle using HT's with the portable stick-on window SAREX antenna.
Bye... Ted..

343. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 21:21:03 UTC
From: durham@lobby.ti.com
Message-ID: <3hglbv$434@superb.csc.ti.com>
Source record: 25733

In article <1995Feb10.152437.29309@ke4zv.atl.ga.us>, gary@ke4zv.atl.ga.us (Gary Coffman) says:
>
Limited FM operations
>>>should be possible on P3D without significantly impacting the
>>>power budget.
Gary, The transponders on AO-13 are not full because the majority of the VHF stations are FM mobile and FM base stations, without the antennas required for satellite access. With a satellite having a high power transponder that can be heard by these rigs, the dual band mobiles and base stations would be able to overload and fill up the transponder if they are not discouraged from doing so. I don't believe that there can be any "limited" FM operation because of this.

Ken K5MBV durham@lobby.ti.com
>
>Gary
>
>--
>Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
>Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
>534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
>Lawrenceville, GA 30244 | |

344. test

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 21:56:02 UTC
From: Beau Winburn <beau@enterprise.america.com>
Message-ID: <NEWTNews.16923.792457013.beau@america.com>
Source record: 25750

```
test
```

345. STS-63 Element_Set (95041.561)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 22:31:02 UTC
From: elements-request@alsys.com
Message-ID: <STS-63.95041.561@alsys.com>
Source record: 25739
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-63
1 23469U 95004A 95041.56167309 .00092448 00000-0 11745-2 0 132
2 23469 51.6482 72.2533 0000323 237.1820 122.9111 15.59854021 1160

Satellite: STS-63
Catalog number: 23469
Epoch time: 95041.56167309 = (10-Feb-95 13:28:48.55 UTC)
Element set: 013
Inclination: 51.6482 deg
RA of node: 72.2533 deg Space Shuttle Flight STS-63
Eccentricity: .0000323 Keplerian element set JSC-013
Arg of perigee: 237.1820 deg from NASA flight Day 8 vector
Mean anomaly: 122.9111 deg
Mean motion: 15.59854021 rev/day Gil Carman
Decay rate: 9.2448e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 116

This data is also available on the Shuttle Elements Mailing List. For
more information about the list, send a message to with only the command
"info elements" in the body of your message to "listserv@alsys.com".

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

346. GPS Newbie has application, needs solution

Newsgroup: rec.radio.amateur.space
Date: 1995-02-10 23:58:05 UTC
From: Dale.Reed@ab.com
Message-ID: <3hguid$sms@news1.cle.ab.com>
Source record: 25735
Cross-posted to: sci.geo.satellite-nav,rec.radio.amateur.space

Folks,

I have just received the packet from USCG on GPS and have some other information, but I haven't found a simple solution to my problem yet. Haven't checked out any magazines or such yet, so I probably deserve to be flamed, but....

What I want to do is have a PC with a board in it that gets the time (only, don't need location/nav info) from GPS and sets the clock in the PC, which then exports the time to the network. I know with the proper location info, fancy board, etc., that I could have the PC clock accurate to ~100 ns. But all I need to do is keep the usual PC clock and set it once per while to the nearest second or so, just so the computers on my LAN show the same time. I WANT TO LOW-BALL THIS ON COST.

Any hints?

I know I could use WWV/WWVH/WWVB/CHU/etc., but I'd like something that
A.) doesn't depend on HF propagation
B.) can set the clock quickly after booting
C.) I can do as a hobbyist with a curiosity about GPS.

Thanx in advance for any info! Please reply by E-mail to Dale.Reed@ab.com

Regards,
Dale Reed WD8MLN
Allen-Bradley Co. Automation Group
Highland Heights, Ohio

This post represents my own personal stuff and not Company stuff. And yes, I know we are part of Rockwell, but I'm looking for hobbyist info!

347. Re: FREE HAM NEWSLETTER!

Newsgroup: rec.radio.amateur.space
Date: 1995-02-11 01:12:03 UTC
From: lenrev@wwa.com
Message-ID: <3hh2t3$omr@sashimi.wwa.com>
Source record: 25738
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amate

In article <NEWTNews.19038.791320464.amsoft@amsoft.epix.net>, AMSOFT@EPIX.NET says:
>
>
>A Free newsletter from AmSoft, a leader in Amateur Radio CD-ROM's is available
>by sending your E-Mail address to amsoft@epix.net. The newsletter contains the
>entire listing of the January 95 CD-ROM software library, and a one page
>description of the Amsoft CD-ROM. Please respond via E-Mail only.

Please forward newsletter to lenrev@wwa.com

348. Two-Line Orbital Element Sets (TLE549)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-11 03:53:48 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.792474828@eel>
Source record: 25740

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #549 -
Alouette 1
1 00424U 62049A 95039.53897668 -.00000391 00000-0 -47121-3 0 780
2 00424 80.4626 51.8139 0022053 224.8848 135.0514 13.67831153614719
ATS 1
1 02608U 66110A 95032.67412677 -.00000154 00000-0 10000-3 0 9219
2 02608 14.6236 358.0785 0008815 53.3164 306.8052 1.00314398 19834
ATS 3
1 03029U 67111A 95039.16901910 -.00000114 00000-0 10000-3 0 3291
2 03029 14.7766 5.0335 0010158 269.4152 178.9014 1.00272701 99803
Cosmos 398
1 04966U 71016A 95040.54593976 .00211344 82296-5 30456-3 0 7363
2 04966 51.4208 76.1686 0774928 20.1975 342.7920 14.48402058806391
Starlette
1 07646U 75010A 95038.41946210 -.00000126 00000-0 14539-4 0 8623
2 07646 49.8313 305.0933 0206354 33.1429 328.2214 13.82187790 10399
LAGEOS
1 08820U 76039A 95039.08869768 .00000029 00000-0 10000-3 0 829
2 08820 109.8217 216.3813 0044068 234.4679 125.1840 6.38664244182217
ETS-2
1 09852U 77014A 95035.35796859 -.00000352 00000-0 10000-3 0 151
2 09852 12.5396 38.7414 0001447 59.1584 300.9027 1.00018461 12653
GOES 2
1 10061U 77048A 95039.32547646 .00000105 00000-0 10000-3 0 4880
2 10061 11.6075 42.9862 0011918 103.5759 322.9470 1.00137785 9481
IUE
1 10637U 78012A 95038.09553721 -.00000294 00000-0 00000+0 0 1078
2 10637 34.9852 91.0887 1319205 42.8127 347.8849 1.00264478 14963
GPS BI-01
1 10684U 78020A 95041.03168994 -.00000000 00000-0 10000-3 0 3387
2 10684 64.7717 38.4712 0061068 163.8437 196.3884 1.98069525109645
```

```
GPS BI-02
1 10893U 78047A 95033.87671639 -.00000012 00000-0 10000-3 0 1477
2 10893 63.4059 277.0422 0219477 14.0573 346.6560 2.01627601122723
GOES 3
1 10953U 78062A 95038.53442709 .00000056 00000-0 10000-3 0 4529
2 10953 10.5609 45.7101 0002837 124.7794 343.1918 1.00269053 14081
SeaSat 1
1 10967U 78064A 95038.52850755 -.00000010 00000-0 41347-4 0 3731
2 10967 108.0013 229.2089 0002050 238.2435 121.8510 14.38010832870197
GPS BI-03
1 11054U 78093A 95034.76489999 -.00000015 00000-0 10000-3 0 2679
2 11054 63.0973 274.9143 0044277 178.6799 181.3918 1.93505228118996
Nimbus 7
1 11080U 78098A 95038.67330111 -.00000076 00000-0 -30749-4 0 4772
2 11080 99.0228 278.0919 0008294 218.2747 141.7816 13.83716202822645
GPS BI-04
1 11141U 78112A 95037.16809851 -.00000029 00000-0 00000+0 0 9596
2 11141 64.7723 40.2026 0048369 26.2974 333.9650 1.92894743 8298
GPS BI-05
1 11690U 80011A 95036.26004648 -.00000033 00000-0 10000-3 0 8822
2 11690 65.1055 40.2711 0145910 195.4526 164.1182 2.00561438124210
GPS BI-06
1 11783U 80032A 95038.91766195 .00000015 00000-0 10000-3 0 566
2 11783 62.5239 270.3071 0215987 29.4319 331.8440 2.03456570108755
GOES 5
1 12472U 81049A 95036.00061422 -.00000255 00000-0 10000-3 0 8352
2 12472 7.2760 55.5477 0005031 19.2802 340.8336 1.00321246 8109
Cosmos 1383
1 13301U 82066A 95038.31329776 .00000022 00000-0 80237-5 0 3783
2 13301 82.9334 137.3802 0027426 163.5476 196.6566 13.68062691629576
LandSat 4
1 13367U 82072A 95038.66348636 .00000077 00000-0 27149-4 0 6073
2 13367 98.1507 97.5415 0006240 246.1008 113.9539 14.57149770668350
IRAS
1 13777U 83004A 95040.53597656 .00000336 00000-0 26111-3 0 8663
2 13777 98.9671 231.5128 0013439 24.5467 335.6332 13.99227623284336
Cosmos 1447
1 13916U 83021A 95037.91670925 .00000034 00000-0 18941-4 0 4772
2 13916 82.9438 198.0809 0039288 94.2355 266.3292 13.74320253595570
TDRS 1
1 13969U 83026B 95038.71643209 -.00000199 00000-0 10000-3 0 3947
2 13969 8.1416 48.6831 0003324 324.6421 107.0662 1.00267208 16414
GOES 6
1 14050U 83041A 95039.30996451 .00000063 00000-0 10000-3 0 3547
2 14050 6.0955 58.5706 0004013 341.6755 76.2718 1.00288674101231
OSCAR 10
1 14129U 83058B 95036.14784478 -.00000444 00000-0 10000-3 0 3381
2 14129 26.5835 284.4740 6020691 249.7709 38.4130 2.05882209 59615
LandSat 5
1 14780U 84021A 95038.21918844 .00000044 00000-0 19744-4 0 1918
```

```
2 14780 98.1347 97.8910 0003794 257.8891 102.1882 14.57155297581700
UoSat 2
1 14781U 84021B 95038.04757768 .00000129 00000-0 29659-4 0 7732
2 14781 97.7804 46.7093 0010759 236.9670 123.0498 14.69301722584797
GPS BI-09
1 15039U 84059A 95039.19697154 -.00000017 00000-0 10000-3 0 2729
2 15039 64.4423 34.5485 0081591 16.9792 343.3113 1.92302250 77916
Cosmos 1574
1 15055U 84062A 95038.56909966 .00000044 00000-0 31333-4 0 6780
2 15055 82.9562 251.4532 0026338 283.6227 76.1993 13.73617042532946
GPS BI-10
1 15271U 84097A 95036.95795150 -.00000005 00000-0 00000+0 0 9139
2 15271 62.2371 270.6055 0153362 352.5568 7.2853 2.00592537 75299
Cosmos 1602
1 15331U 84105A 95038.55189860 .00000375 00000-0 41419-4 0 3664
2 15331 82.5325 217.3069 0020980 141.4426 218.8288 14.84553024559438
NOAA 9
1 15427U 84123A 95040.84412241 .00000088 00000-0 70663-4 0 1333
2 15427 99.0184 98.7062 0014104 269.5045 90.4511 14.13682794523831
GPS BI-11
1 16129U 85093A 95033.14990742 -.00000043 00000-0 10000-3 0 6337
2 16129 65.1155 37.6493 0153001 87.9262 273.8509 1.89367842 12432
Mir
1 16609U 86017A 95041.24340136 .00006214 00000-0 85323-4 0 9231
2 16609 51.6464 73.8702 0000628 270.3907 89.7014 15.58786406513166
SPOT 1
1 16613U 86019A 95040.72050529 .00000089 00000-0 62356-4 0 7798
2 16613 98.6676 114.8341 0000839 87.8812 272.2073 14.20049604150275
Cosmos 1766
1 16881U 86055A 95039.09733565 .00000371 00000-0 41947-4 0 2816
2 16881 82.5172 274.7104 0019966 163.8988 196.2858 14.83579341460431
EGP
1 16908U 86061A 95038.15608781 -.00000097 00000-0 00000+0 0 9745
2 16908 50.0095 82.0111 0011621 190.8343 169.2243 12.44411433 54640
NOAA 10
1 16969U 86073A 95040.92190014 .00000018 00000-0 26078-4 0 424
2 16969 98.5081 47.6601 0013526 359.6584 0.4587 14.24924276436351
MOS-1
1 17527U 87018A 95041.19393826 .00000168 00000-0 15749-3 0 1756
2 17527 99.0028 109.5503 0000602 100.8028 259.3307 13.94917810406127
GOES 7
1 17561U 87022A 95041.24085297 .00000083 00000-0 10000-3 0 2443
2 17561 2.0655 74.1792 0003187 327.7954 49.1954 1.00254202 12366
Kvant-1
1 17845U 87030A 95040.85873006 .00009831 00000-0 13120-3 0 1485
2 17845 51.6477 75.8039 0000667 278.3869 81.6399 15.58785480513153
DMSP B5D2-3
1 18123U 87053A 95040.89031975 -.00000016 00000-0 14277-4 0 8349
2 18123 98.7788 234.0107 0013424 219.8642 140.1547 14.15389555394719
RS-10/11
```

```
1 18129U 87054A 95037.83705513 .00000018 00000-0 26288-5 0 194
2 18129 82.9267 155.4135 0013229 90.2952 269.9717 13.72347740382096
Meteor 2-16
1 18312U 87068A 95038.03792490 .00000030 00000-0 13714-4 0 3721
2 18312 82.5516 25.5949 0012124 165.3787 194.7725 13.84048925377540
Meteor 2-17
1 18820U 88005A 95040.17039055 .00000037 00000-0 19868-4 0 5361
2 18820 82.5389 80.0925 0015048 233.1577 126.8201 13.84731574355158
DMSP B5D2-4
1 18822U 88006A 95040.56786832 .00000015 00000-0 25104-4 0 8717
2 18822 98.4167 250.3963 0006562 13.2109 346.9238 14.23140648364361
Glonass 34
1 19163U 88043A 95032.41866337 .00000006 00000-0 10000-3 0 9675
2 19163 65.0836 102.7381 0007866 145.7854 214.3319 2.13102396 51548
Glonass 36
1 19165U 88043C 95035.29025378 -.00000016 00000-0 10000-3 0 3641
2 19165 65.0769 102.6166 0002470 156.8322 203.2443 2.13102160 52224
METEOSAT 3
1 19215U 88051A 95040.16244457 -.00000269 00000-0 10000-3 0 815
2 19215 2.2359 70.8637 0001025 114.1481 300.0968 1.00297926 12296
AO-13
1 19216U 88051B 95035.46134473 -.00000330 00000-0 10000-4 0 134
2 19216 57.6532 205.6386 7260600 1.3225 359.6885 2.09724506 19383
OKEAN 1
1 19274U 88056A 95039.41299959 .00000242 00000-0 27317-4 0 9817
2 19274 82.5117 14.6426 0019230 318.5364 41.4380 14.82286193356072
Meteor 3-2
1 19336U 88064A 95038.37223309 .00000051 00000-0 10000-3 0 3693
2 19336 82.5431 157.2718 0018208 37.0791 323.1584 13.16971279314217
Glonass 39
1 19503U 88085C 95040.01019690 -.00000072 00000-0 10000-3 0 2606
2 19503 65.7057 341.3658 0007619 173.5669 186.4612 2.13101926 49815
NOAA 11
1 19531U 88089A 95040.92006805 .00000010 00000-0 30239-4 0 9510
2 19531 99.1888 40.8750 0011345 182.5873 177.5236 14.13037042328713
TDRS 2
1 19548U 88091B 95040.28489891 .00000093 00000-0 00000+0 0 914
2 19548 1.4953 75.7835 0000214 337.5205 17.0067 1.00264178 10571
Glonass 40
1 19749U 89001A 95040.04905446 -.00000020 00000-0 10000-3 0 4732
2 19749 65.0312 102.0516 0003050 214.3322 145.7198 2.13101805 47321
Glonass 41
1 19750U 89001B 95039.16638555 -.00000026 00000-0 10000-3 0 3790
2 19750 65.0420 102.1309 0006737 240.0077 120.0022 2.13101865 47320
GPS BII-01
1 19802U 89013A 95036.56315949 -.00000023 00000-0 00000+0 0 228
2 19802 55.1635 130.4398 0030004 178.7007 181.3296 2.00568220 43734
Akebono
1 19822U 89016A 95041.03026774 .00005828 00000-0 33768-3 0 4341
2 19822 75.0739 47.7595 3788836 115.5955 288.1297 7.83158307127847
```

```
Meteor 2-18
1 19851U 89018A 95038.26198155 .00000072 00000-0 51480-4 0 3706
2 19851 82.5219 316.4968 0013165 293.7347 66.2434 13.84383220300216
MOP-1
1 19876U 89020B 95037.35251272 -.00000074 00000-0 10000-3 0 987
2 19876 0.9503 70.8600 0001473 199.1015 345.0669 1.00275106 1705
TDRS 3
1 19883U 89021B 95037.52245612 -.00000272 00000-0 00000+0 0 420
2 19883 0.0507 265.6976 0002359 36.2347 341.2391 1.00268363194138
GPS BII-02
1 20061U 89044A 95039.89460357 -.00000068 00000-0 10000-3 0 295
2 20061 54.5156 306.7410 0137867 211.4913 147.7287 2.00563979 41542
Nadezhda 1
1 20103U 89050A 95040.86966866 .00000041 00000-0 28096-4 0 2886
2 20103 82.9615 112.4982 0037663 350.0613 9.9806 13.73849539280946
GPS BII-03
1 20185U 89064A 95037.24109403 -.00000028 00000-0 10000-3 0 514
2 20185 54.9725 130.9929 0053551 315.9796 43.5968 2.00552866 40061
GMS 4
1 20217U 89070A 95040.54328910 -.00000285 00000-0 10000-3 0 1516
2 20217 0.7606 75.6169 0000210 100.0525 299.3709 1.00271796 20478
INTERCOSMOS 24
1 20261U 89080A 95038.03972714 .00000194 00000-0 49917-4 0 3851
2 20261 82.5870 227.5819 1243376 89.7856 284.5294 12.47219431244059
GPS BII-04
1 20302U 89085A 95040.26187326 .00000053 00000-0 00000+0 0 325
2 20302 53.4430 246.8370 0006450 173.0376 187.0019 2.00553770 38927
Meteor 3-3
1 20305U 89086A 95039.16864088 .00000044 00000-0 10000-3 0 2498
2 20305 82.5463 106.8452 0008208 80.9866 279.2192 13.04406527253667
COBE
1 20322U 89089A 95040.53751703 .00000309 00000-0 22527-3 0 952
2 20322 98.9652 58.4419 0009134 334.0084 26.0633 14.03447371267683
Kvant-2
1 20335U 89093A 95040.85873006 .00009831 00000-0 13120-3 0 1765
2 20335 51.6477 75.8039 0000667 278.3869 81.6399 15.58785480513072
GPS BII-05
1 20361U 89097A 95038.28334862 -.00000042 00000-0 00000+0 0 8935
2 20361 55.6822 72.9430 0075679 118.6990 242.1314 2.00561242 28363
SPOT 2
1 20436U 90005A 95041.19640508 .00000095 00000-0 65161-4 0 8942
2 20436 98.7480 116.8392 0000587 74.2669 285.8571 14.20063057261875
UO-14
1 20437U 90005B 95039.18712717 .00000028 00000-0 27867-4 0 737
2 20437 98.5774 125.6069 0010147 216.7301 143.3187 14.29873912263318
UO-15
1 20438U 90005C 95038.74421712 .00000003 00000-0 18335-4 0 8709
2 20438 98.5707 123.8558 0009361 221.6637 138.3829 14.29197328263150
PACSAT
1 20439U 90005D 95038.25414619 .00000027 00000-0 27503-4 0 8718
```

```
2 20439 98.5874 126.1892 0010482 220.9068 139.1323 14.29927745263195
DO-17
1 20440U 90005E 95039.23496997 .00000035 00000-0 30359-4 0 8710
2 20440 98.5881 127.5652 0010596 216.8660 143.1797 14.30068834263357
WO-18
1 20441U 90005F 95038.72491183 .00000015 00000-0 22889-4 0 8757
2 20441 98.5877 127.0446 0011214 218.4635 141.5750 14.30040556263281
LO-19
1 20442U 90005G 95038.75691211 .00000028 00000-0 27596-4 0 8715
2 20442 98.5868 127.3947 0011510 217.4129 142.6251 14.30140941263307
GPS BII-06
1 20452U 90008A 95036.68922676 .00000043 00000-0 00000+0 0 42
2 20452 54.0378 187.0273 0058786 80.3851 280.2579 2.00566092 36832
MOS-1B
1 20478U 90013A 95039.80515483 .00000091 00000-0 10000-3 0 7402
2 20478 99.0082 112.4301 0000670 57.1475 302.9749 13.94914841175635
DEBUT
1 20479U 90013B 95038.83329841 -.00000076 00000-0 -10219-3 0 8707
2 20479 99.0685 151.6548 0540566 165.5173 196.2120 12.83329360234361
FO-20
1 20480U 90013C 95038.82959051 -.00000021 00000-0 20750-4 0 7687
2 20480 99.0672 151.5116 0540693 165.9295 195.7558 12.83229642234359
MOS-1B R/B
1 20491U 90013D 95039.02980573 -.00000003 00000-0 57449-4 0 1011
2 20491 99.0249 202.5887 0469902 14.4877 346.9165 13.02996371237371
LACE
1 20496U 90015A 95038.24511706 .00002225 00000-0 74576-4 0 5010
2 20496 43.1011 151.2653 0009166 77.6752 282.5155 15.34042139277615
Nadezhda 2
1 20508U 90017A 95040.94600819 .00000129 00000-0 12230-3 0 2892
2 20508 82.9531 247.0198 0043837 300.3152 59.3666 13.73489550248188
OKEAN 2
1 20510U 90018A 95038.85478956 .00000304 00000-0 38474-4 0 3815
2 20510 82.5237 325.9692 0019716 133.0186 227.2679 14.78444767266482
INTELSAT-6
1 20523U 90021A 95035.13572741 -.00000253 00000-0 10000-3 0 4895
2 20523 0.0237 27.4642 0000548 226.1049 254.5988 1.00269398 10899
GPS BII-07
1 20533U 90025A 95040.08667372 -.00000067 00000-0 00000+0 0 125
2 20533 54.8747 307.3105 0046752 77.1104 283.4550 2.00558521 35679
PegSat
1 20546U 90028A 95039.06578598 .00005176 00000-0 11225-3 0 7531
2 20546 94.1141 71.2573 0071050 111.9117 248.9706 15.41784199268571
HST
1 20580U 90037B 95038.62222946 .00000549 00000-0 39355-4 0 5917
2 20580 28.4700 163.4732 0006925 29.2983 330.7990 14.90792098 64559
MACSAT 2
1 20608U 90043B 95038.27834660 .00000147 00000-0 22714-4 0 716
2 20608 89.9279 177.5796 0106882 351.0611 8.8689 14.64794917253692
Glonass 44
```

```
1 20619U 90045A 95037.13301618 -.00000069 00000-0 00000+0 0 1620
2 20619 65.3194 340.9506 0025181 210.2943 149.5689 2.13102527 36715
Glonass 45
1 20620U 90045B 95036.78255778 -.00000069 00000-0 00000+0 0 1739
2 20620 65.3092 340.9590 0006959 39.1868 320.8909 2.13102396 36749
Glonass 46
1 20621U 90045C 95040.13325344 -.00000072 00000-0 10000-3 0 7714
2 20621 65.3261 340.8955 0011979 195.2693 164.6968 2.13101582 36813
Kristall
1 20635U 90048A 95040.85873006 .00009831 00000-0 13120-3 0 9690
2 20635 51.6477 75.8039 0000667 278.3869 81.6399 15.58785480513042
ROSAT
1 20638U 90049A 95040.30848338 .00000122 00000-0 27027-4 0 3885
2 20638 52.9914 2.6822 0013927 74.4624 285.7905 15.07069254257830
Meteor 2-19
1 20670U 90057A 95038.37693732 .00000033 00000-0 16291-4 0 8719
2 20670 82.5433 21.6651 0014700 203.1766 156.8739 13.84170287233154
CRRES
1 20712U 90065A 95040.35734809 .00000233 00000-0 35042-3 0 445
2 20712 17.9313 90.2364 7191793 9.0725 359.0917 2.35364865 31473
GPS BII-08
1 20724U 90068A 95039.90796044 -.00000043 00000-0 10000-3 0 8804
2 20724 54.7658 128.5552 0117176 168.8352 191.4161 2.00559882 31530
Feng Yun1-2
1 20788U 90081A 95040.87620466 -.00000027 00000-0 10000-4 0 2077
2 20788 98.8197 58.2243 0015363 67.1800 293.1176 14.01368100227007
Meteor 2-20
1 20826U 90086A 95040.79642020 .00000064 00000-0 44770-4 0 8815
2 20826 82.5283 316.9249 0014702 97.0367 263.2464 13.83601082220618
GPS BII-09
1 20830U 90088A 95039.46011791 -.00000032 00000-0 00000+0 0 8885
2 20830 55.6166 70.8866 0065118 102.4369 258.3562 2.00567961 32164
GPS BIIA-10
1 20959U 90103A 95040.35975496 -.00000041 00000-0 00000+0 0 8112
2 20959 55.0040 130.4593 0089749 228.3385 130.9222 2.00559267 30776
DMSP B5D2-5
1 20978U 90105A 95040.86245519 .00000158 00000-0 72327-4 0 775
2 20978 98.6545 109.4472 0078818 184.2427 175.8095 14.32511397219083
Glonass 47
1 21006U 90110A 95035.46786195 -.00000018 00000-0 00000+0 0 7366
2 21006 65.0125 101.5502 0059054 187.8795 172.0935 2.13102624 32386
Glonass 48
1 21007U 90110B 95040.34799936 -.00000016 00000-0 00000+0 0 8670
2 21007 65.0451 101.4512 0035456 179.7039 180.3605 2.13101101 32475
Glonass 49
1 21008U 90110C 95040.23741651 -.00000017 00000-0 00000+0 0 358
2 21008 65.0126 101.4003 0011050 271.9508 87.9918 2.13099498 32463
AO-21
1 21087U 91006A 95038.29826234 .00000094 00000-0 82657-4 0 5648
2 21087 82.9476 328.7108 0035673 146.2009 214.1432 13.74550150201888
```

```
RS-12/13
1 21089U 91007A 95037.85942790 .00000011 00000-0 -47246-5 0 7747
2 21089 82.9211 197.4094 0028826 172.5083 187.6515 13.74053582200879
MOP-2
1 21140U 91015B 95041.15788194 -.00000017 00000-0 00000+0 0 8881
2 21140 0.0250 113.9177 0001258 249.2049 192.4418 1.00271876 16662
Nadezhda 3
1 21152U 91019A 95040.84569910 .00000040 00000-0 27196-4 0 850
2 21152 82.9281 151.1999 0040663 275.4242 84.2273 13.73513810196029
Glonass 50
1 21216U 91025A 95036.42439339 -.00000069 00000-0 00000+0 0 3819
2 21216 65.0650 340.6753 0011488 204.1214 155.8331 2.13103050 29912
Glonass 51
1 21217U 91025B 95034.14609955 -.00000069 00000-0 00000+0 0 7915
2 21217 65.0575 340.7559 0012473 237.9606 121.9195 2.13101179 29853
Glonass 52
1 21218U 91025C 95038.95152100 -.00000072 00000-0 10000-3 0 2705
2 21218 65.0259 340.5944 0007061 282.9295 77.0006 2.13102634 29961
GRO
1 21225U 91027B 95039.06613147 .00002891 00000-0 59662-4 0 1911
2 21225 28.4602 33.3599 0003009 359.3724 0.6854 15.42056567 93379
Meteor 3-4
1 21232U 91030A 95037.86144114 .00000050 00000-0 10000-3 0 7791
2 21232 82.5422 3.6797 0012980 326.0619 33.9675 13.16466154182230
NOAA 12
1 21263U 91032A 95040.94582535 .00000064 00000-0 47873-4 0 3715
2 21263 98.5947 68.2084 0011953 268.0980 91.8826 14.22491392194306
OKEAN 3
1 21397U 91039A 95038.48663891 .00000290 00000-0 38444-4 0 814
2 21397 82.5216 238.9701 0021367 209.7551 150.2453 14.76319759198220
GPS BIIA-11
1 21552U 91047A 95040.13546672 -.00000023 00000-0 10000-6 0 8248
2 21552 55.9254 68.5137 0064180 241.0343 118.3875 2.00572720 26368
ERS-1
1 21574U 91050A 95040.44906178 .00000085 00000-0 44466-4 0 803
2 21574 98.4979 116.5552 0001131 77.4439 282.6878 14.35945198186759
UO-22
1 21575U 91050B 95039.19049849 .00000047 00000-0 30500-4 0 5770
2 21575 98.4113 113.6243 0007503 313.5746 46.4848 14.36958130186977
ORBCOMM-X
1 21576U 91050C 95038.73724976 .00000074 00000-0 39766-4 0 6720
2 21576 98.4086 111.7518 0003898 331.7590 28.3383 14.36362005186820
TUBSAT-A
1 21577U 91050D 95038.74271063 -.00000007 00000-0 12110-4 0 5715
2 21577 98.4094 112.2573 0006254 319.3976 40.6744 14.36470426186854
SARA
1 21578U 91050E 95039.19217939 .00000274 00000-0 10308-3 0 7711
2 21578 98.4254 117.3095 0004649 316.0158 44.0661 14.38938863187145
TDRS 4
1 21639U 91054B 95039.63985094 .00000080 00000-0 00000+0 0 8626
```

```
2 21639 0.0422 71.9796 0003051 243.0855 239.3340 1.00276145106946
Meteor 3-5
1 21655U 91056A 95038.21453839 .00000051 00000-0 10000-3 0 7774
2 21655 82.5585 310.7542 0013387 337.0172 23.0345 13.16837109167393
UARS
1 21701U 91063B 95038.53314000 .00000134 00000-0 32846-4 0 6487
2 21701 56.9850 296.0855 0005800 104.1422 256.0256 14.96326676186166
DMSP B5D2-6
1 21798U 91082A 95040.87374042 .00000017 00000-0 32502-4 0 7251
2 21798 98.9625 52.3222 0012309 182.4213 177.6910 14.13863620165210
Glonass 53
1 21853U 92005A 95037.75577168 -.00000030 00000-0 10000-3 0 9780
2 21853 64.9605 101.1620 0007611 177.7162 182.3515 2.13102315 23545
Glonass 54
1 21854U 92005B 95039.92361956 -.00000020 00000-0 00000+0 0 862
2 21854 64.9672 101.0862 0015583 11.9900 348.1144 2.13103402 23574
Glonass 55
1 21855U 92005C 95039.04801056 -.00000027 00000-0 00000+0 0 830
2 21855 64.9588 101.1222 0008165 210.9676 149.0462 2.13101963 23549
JERS-1
1 21867U 92007A 95039.84762246 .00000469 00000-0 43978-4 0 5087
2 21867 97.7276 117.9486 0002165 83.3942 276.7553 14.98633074163823
GPS BIIA-12
1 21890U 92009A 95034.61087321 .00000008 00000-0 00000+0 0 6207
2 21890 53.9996 247.2343 0056090 174.7336 185.3667 2.00552897 21624
GPS BIIA-13
1 21930U 92019A 95040.80233136 -.00000068 00000-0 00000+0 0 6014
2 21930 55.6796 8.3513 0042114 175.7499 184.2710 2.00565534 20677
EUVE
1 21987U 92031A 95035.04326243 .00001618 00000-0 65685-4 0 3813
2 21987 28.4354 297.2951 0009768 350.7089 9.3319 15.19029438147685
SAMPEX
1 22012U 92038A 95038.15275694 .00001481 00000-0 12771-3 0 6041
2 22012 81.6738 282.9467 0119130 353.2326 6.7184 14.91269534141296
GPS BIIA-14
1 22014U 92039A 95040.34384950 .00000035 00000-0 00000+0 0 5023
2 22014 54.8538 188.2772 0132371 314.0815 44.7762 2.00550578 12508
Glonass 56
1 22056U 92047A 95038.94793924 -.00000073 00000-0 00000+0 0 9988
2 22056 64.8972 340.7339 0006593 284.8824 75.0543 2.13103107 19632
Glonass 57
1 22057U 92047B 95038.77353849 -.00000072 00000-0 00000+0 0 12
2 22057 64.9150 340.7595 0009223 321.3954 38.5471 2.13102880 19608
Glonass 58
1 22058U 92047C 95040.12167045 -.00000073 00000-0 00000+0 0 9948
2 22058 64.9090 340.7215 0010129 269.0432 90.8485 2.13102883 19684
TOPEX
1 22076U 92052A 95038.04797629 -.00000038 00000-0 10000-3 0 8506
2 22076 66.0408 163.1775 0007594 269.0032 91.0110 12.80930271116575
KO-23
```

```
1 22077U 92052B 95038.74719712 -.00000037 00000-0 10000-3 0 4696
2 22077 66.0768 146.7727 0012796 231.6835 128.3028 12.86290041117084
S80/T
1 22078U 92052C 95038.39251572 -.00000037 00000-0 10000-3 0 4660
2 22078 66.0784 146.5534 0013659 226.7634 133.2241 12.86573695117113
GPS BIIA-15
1 22108U 92058A 95039.80870910 .00000051 00000-0 10000-3 0 5295
2 22108 54.2375 247.7555 0111496 145.2948 215.4960 2.00563568 17674
FREJA
1 22161U 92064A 95037.44615523 .00000042 00000-0 63339-4 0 4840
2 22161 62.9959 59.8218 0799783 335.5736 20.9253 13.21811438112762
LAGEOS II
1 22195U 92070B 95037.76041069 -.00000009 00000-0 10000-3 0 3778
2 22195 52.6723 305.4358 0138183 219.5549 139.4856 6.47293447 54138
GPS BIIA-16
1 22231U 92079A 95037.49912142 .00000048 00000-0 10000-3 0 5029
2 22231 54.6673 189.6119 0034664 290.3624 69.2539 2.00571762 16200
GPS BIIA-17
1 22275U 92089A 95040.13689954 .00000034 00000-0 00000+0 0 5317
2 22275 54.6406 187.0049 0051159 252.0970 107.2968 2.00553074 15667
TDRS 5
1 22314U 93003B 95032.39127066 -.00000296 00000-0 10000-3 0 4852
2 22314 1.5687 72.3296 0001534 186.5322 327.4995 1.00266912 7553
GPS BIIA-18
1 22446U 93007A 95034.22383692 -.00000073 00000-0 00000+0 0 5056
2 22446 54.5347 307.8402 0081949 350.5503 9.3600 2.00555261 14531
Glonass 59
1 22512U 93010A 95036.34931353 -.00000025 00000-0 00000+0 0 6803
2 22512 64.9820 101.0636 0008580 184.2060 175.8458 2.13101961 15088
Glonass 60
1 22513U 93010B 95037.69670139 -.00000030 00000-0 00000+0 0 7138
2 22513 64.9687 101.0290 0007975 203.0324 157.0080 2.13102466 15305
Glonass 61
1 22514U 93010C 95039.39802843 -.00000024 00000-0 00000+0 0 7118
2 22514 64.9801 100.9601 0012240 181.5048 178.5515 2.13002266 15344
ASTRO-D
1 22521U 93011A 95041.11198837 .00000697 00000-0 53287-4 0 3796
2 22521 31.1022 21.2088 0075849 258.5120 100.6990 14.93548055107692
UFO F1
1 22563U 93015A 95038.45210559 -.00000225 00000-0 10000-3 0 3899
2 22563 26.2335 296.3033 0006594 323.6774 160.3006 0.99251083 11176
GPS BIIA-19
1 22581U 93017A 95034.36669571 -.00000087 00000-0 00000+0 0 4004
2 22581 55.1805 8.2322 0053088 34.7683 325.5682 2.00555674 13599
ARSENE
1 22654U 93031B 95022.17402542 -.00000103 00000-0 00000+0 0 3042
2 22654 2.3034 89.6815 2905952 201.9970 142.2536 1.42203247 4316
GPS BIIA-20
1 22657U 93032A 95036.99746806 -.00000078 00000-0 00000+0 0 4373
2 22657 55.2066 7.9477 0068666 209.0332 150.5913 2.00571682 8972
```

```
RADCAL
1 22698U 93041A 95038.40897495 .00000064 00000-0 22199-4 0 3772
2 22698 89.5460 297.2764 0091869 139.7918 221.0136 14.21334207 84003
GPS BIIA-21
1 22700U 93042A 95039.45490610 .00000048 00000-0 00000+0 0 3832
2 22700 54.4311 248.5580 0035845 340.3146 19.5736 2.00560412 11822
NOAA-13
1 22739U 93050A 95040.78372651 -.00000039 00000-0 34632-5 0 7317
2 22739 98.9768 349.5767 0009337 168.3730 191.7657 14.10921944 77479
GPS BIIA-22
1 22779U 93054A 95036.05054583 -.00000078 00000-0 10000-3 0 4323
2 22779 54.6736 307.7327 0021318 245.0095 114.8240 2.00559270 10516
Meteor 2-21
1 22782U 93055A 95038.05933042 .00000053 00000-0 34825-4 0 3789
2 22782 82.5463 20.3115 0021368 291.7190 68.1674 13.83025302 72550
UFO F2
1 22787U 93056A 95039.79672417 -.00000057 00000-0 00000+0 0 3860
2 22787 4.6256 324.3386 0002923 326.4055 205.6664 1.00272030 5460
SPOT 3
1 22823U 93061A 95040.25060798 .00000403 00000-0 21025-3 0 4086
2 22823 98.7461 115.9141 0001206 97.1997 262.9310 14.20016699 71130
STELLA
1 22824U 93061B 95039.18761126 -.00000038 00000-0 23992-5 0 3665
2 22824 98.6313 117.1118 0005679 234.5408 125.5244 14.27099977 71335
AO-27
1 22825U 93061C 95039.21446088 .00000018 00000-0 25290-4 0 3688
2 22825 98.6322 117.3808 0007642 242.1458 117.8945 14.27650681 71366
IO-26
1 22826U 93061D 95041.21037274 .00000012 00000-0 22703-4 0 3674
2 22826 98.6308 119.4248 0008288 236.2604 123.7770 14.27757538 71659
HEATHSAT
1 22827U 93061E 95039.20986201 .00000047 00000-0 36640-4 0 4285
2 22827 98.6296 117.3978 0008502 227.0459 133.0005 14.27876382 71371
ITAMSAT
1 22828U 93061F 95039.20429343 .00000017 00000-0 24634-4 0 3450
2 22828 98.6280 117.4724 0009448 224.5527 135.4894 14.28085972 39467
PO-28
1 22829U 93061G 95039.21395508 .00000055 00000-0 39910-4 0 3609
2 22829 98.6291 117.5092 0009159 226.9076 133.1328 14.28063333 71384
KO-25
1 22830U 93061H 95039.20542520 -.00000035 00000-0 31686-5 0 3756
2 22830 98.5320 112.1509 0011165 201.2512 158.8203 14.28080301 71383
GPS BIIA-23
1 22877U 93068A 95038.09290417 -.00000044 00000-0 00000+0 0 2417
2 22877 55.3590 69.0259 0038502 293.2623 66.3760 2.00557976 9447
METEOSAT 6
1 22912U 93073B 95041.03961806 -.00000084 00000-0 00000+0 0 2355
2 22912 0.3873 268.4522 0001513 328.5436 267.2918 1.00269941 2918
HST Array
1 22920U 90037C 95040.44246535 .00007035 00000-0 54669-3 0 2817
```

```
2 22920 28.4673 124.8172 0004363 232.5631 127.4222 14.99483982 65109
Meteor 3-6
1 22969U 94003A 95037.65464651 .00000051 00000-0 10000-3 0 1447
2 22969 82.5579 250.8216 0016464 42.1221 318.1151 13.16727042 49706
TUBSAT-B
1 22970U 94003B 95038.61394099 .00000051 00000-0 10000-3 0 1343
2 22970 82.5572 250.0955 0017073 37.6015 322.6307 13.16823979 49833
ODERACS E
1 22994U 94006F 95041.21766645 .00311581 59320-4 29661-3 0 2836
2 22994 56.9714 310.4787 0002338 25.5115 334.6172 16.11440607 57991
ODERACS F
1 22995U 94006G 95041.22820872 .00296047 57784-4 21239-3 0 3320
2 22995 56.9791 309.1752 0001753 27.3962 332.7258 16.15528681 58015
BREMSAT
1 22998U 94006H 95041.05916925 .01520713 11348-4 27294-3 0 3479
2 22998 56.9800 309.6005 0001286 11.0706 349.1383 16.31951376 41845
GPS BIIA-24
1 23027U 94016A 95038.16950945 -.00000073 00000-0 00000+0 0 1642
2 23027 55.0513 9.9649 0063172 197.8524 161.9371 2.00573900 6759
Glonass 62
1 23043U 94021A 95040.88379034 -.00000072 00000-0 00000+0 0 1629
2 23043 64.7840 341.0975 0004885 206.2714 153.7048 2.13102879 6499
Glonass 63
1 23044U 94021B 95039.35878692 -.00000073 00000-0 00000+0 0 1489
2 23044 64.7788 341.1555 0028470 207.0501 152.8103 2.13103006 6467
Glonass 64
1 23045U 94021C 95038.12690399 -.00000072 00000-0 00000+0 0 1580
2 23045 64.7678 341.2091 0010378 29.4862 330.5816 2.13102324 6431
GOES 8
1 23051U 94022A 95040.47873645 -.00000233 00000-0 00000+0 0 2643
2 23051 0.2570 264.7001 0004027 220.6202 102.9895 1.00381238 2679
MSTI 2
1 23101U 94028A 95038.53212823 .00005464 00000-0 10270-3 0 1478
2 23101 97.1041 233.6777 0012056 8.2047 351.9383 15.48913633 42440
STRV-1A
1 23125U 94034B 95038.76464585 .00001971 00000-0 60529-3 0 1145
2 23125 7.3417 83.8323 7270704 15.0763 358.4820 2.29636473 4672
STRV-1B
1 23126U 94034C 95040.48186597 .00002142 00000-0 54509-3 0 1133
2 23126 7.3480 83.1673 7276881 16.2893 358.3405 2.29278650 4760
Nadezhda 4
1 23179U 94041A 95038.07625587 .00000028 00000-0 13092-4 0 760
2 23179 82.9461 244.2834 0038021 69.0301 291.4913 13.75663143 28585
Glonass 65
1 23203U 94050A 95039.20316830 .00000091 00000-0 00000+0 0 1077
2 23203 64.8216 220.7561 0007805 133.4780 226.6004 2.13101968 3855
Glonass 66
1 23204U 94050B 95038.96815412 .00000090 00000-0 00000+0 0 1158
2 23204 64.8071 220.7933 0015086 353.3418 6.6510 2.13102273 3846
Glonass 67
```

```
1 23205U 94050C 95040.25877283 .00000093 00000-0 00000+0 0 1038
2 23205 64.8110 220.7416 0001273 12.8776 347.1390 2.13101621 3872
DMSP B5D2-7
1 23233U 94057A 95040.90075545 .00000127 00000-0 92506-4 0 2226
2 23233 98.8952 100.0497 0013112 134.7371 225.4855 14.12576937 23181
Soyuz TM-20
1 23288U 94063A 95040.85873006 .00009831 00000-0 13120-3 0 1195
2 23288 51.6477 75.8039 0000667 278.3869 81.6399 15.58785480513061
OKEAN 1-7
1 23317U 94066A 95038.80851088 .00000203 00000-0 27576-4 0 418
2 23317 82.5437 154.6963 0024349 250.3029 109.5552 14.73893880 17561
ELEKTRO
1 23327U 94069A 95032.80754065 -.00000121 00000-0 00000+0 0 466
2 23327 1.0615 265.1565 0002852 143.3659 90.2368 1.00271596 975
RESURS 1-3
1 23342U 94074A 95038.60368278 .00000145 00000-0 32419-4 0 548
2 23342 98.0342 100.4715 0001520 89.2615 270.8766 14.69697077 14006
Progress M-25
1 23348U 94075A 95040.85873006 .00009831 00000-0 13120-3 0 936
2 23348 51.6477 75.8039 0000667 278.3869 81.6399 15.58785480 14132
Glonass 68
1 23396U 94076A 95039.16379922 -.00000026 00000-0 00000+0 0 522
2 23396 64.9048 101.0672 0030199 193.0148 166.9681 2.13102496 1692
Glonass 69
1 23397U 94076B 95037.46213690 -.00000030 00000-0 00000+0 0 584
2 23397 64.8927 101.1450 0013441 318.5529 41.4104 2.13102284 1659
Glonass 70
1 23398U 94076C 95040.16095470 -.00000018 00000-0 00000+0 0 564
2 23398 64.8866 101.0383 0004059 285.1034 74.9135 2.13101908 1726
RS-15
1 23439U 94085A 95038.21103243 -.00000039 00000-0 10000-3 0 277
2 23439 64.8153 105.1975 0168219 284.9379 73.2973 11.27525462 4861
NOAA 14
1 23455U 94089A 95040.86155005 .00000101 00000-0 79908-4 0 638
2 23455 98.8889 344.4671 0008970 190.3621 169.7367 14.11489787 5842
Tsikada
1 23463U 95002A 95038.88193421 .00000014 00000-0 -46010-6 0 124
2 23463 82.9257 198.8388 0038068 250.4914 109.2145 13.71837832 2016
ASTRID
1 23464U 95002B 95038.45147867 -.00000014 00000-0 -31891-4 0 97
2 23464 82.9273 199.1705 0041148 252.5397 107.1250 13.71146472 1941
FAISAT
1 23465U 95002C 95039.97973589 -.00000087 00000-0 -11274-3 0 108
2 23465 82.9256 198.0366 0036458 247.4568 112.2644 13.71505938 2148
1995002D
1 23466U 95002D 95040.39558609 .00000546 00000-0 57024-3 0 177
2 23466 82.9200 197.6906 0030853 239.6074 120.2084 13.73384331 2221
1995003A
1 23467U 95003A 95038.38594155 .00000093 00000-0 00000+0 0 165
2 23467 5.1348 322.5473 0034104 183.6660 319.2307 1.00262253 166
```

```
1995003B
1 23468U 95003B 95039.51560602 .00000408 00000-0 25127-3 0 84
2 23468 26.9415 316.3460 6706775 183.2253 168.1002 3.01381526 329
STS 63
1 23469U 95004A 95040.91666667 -.00000223 00000-0 35541-5 0 225
2 23469 51.6504 75.4912 0000653 318.0743 17.6406 15.59839457 1040
1995004B
1 23470U 95004B 95039.51151995 .00001850 00000-0 28901-4 0 30
2 23470 51.6461 82.5543 0000515 249.4306 110.6635 15.59781393 167
1995004C
1 23471U 95004C 95041.19242825 .00020252 00000-0 12682-3 0 69
2 23471 51.6482 73.5303 0016850 330.7055 29.2842 15.76621020 1096
1995004D
1 23472U 95004D 95040.36387885 .00033567 00000-0 19398-3 0 46
2 23472 51.6498 77.7449 0018963 343.4903 16.5579 15.78045295 968
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

349. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-02-11 03:55:36 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.792474936@eel>
Source record: 25741

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
Mir
1 16609U 86017A 95041.24340136 .00006214 00000-0 85323-4 0 9231
2 16609 51.6464 73.8702 0000628 270.3907 89.7014 15.58786406513166
STS 63
1 23469U 95004A 95040.91666667 -.00000223 00000-0 35541-5 0 225
2 23469 51.6504 75.4912 0000653 318.0743 17.6406 15.59839457 1040
1995004B
1 23470U 95004B 95039.51151995 .00001850 00000-0 28901-4 0 30
2 23470 51.6461 82.5543 0000515 249.4306 110.6635 15.59781393 167
1995004C
1 23471U 95004C 95041.19242825 .00020252 00000-0 12682-3 0 69
2 23471 51.6482 73.5303 0016850 330.7055 29.2842 15.76621020 1096
1995004D
1 23472U 95004D 95040.36387885 .00033567 00000-0 19398-3 0 46
2 23472 51.6498 77.7449 0018963 343.4903 16.5579 15.78045295 968
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

350. Re: RS-15 Info Wanted--

Newsgroup: rec.radio.amateur.space
Date: 1995-02-11 12:59:00 UTC
From: james.mollica@pics.com
Message-ID: <8A3521B.0A24000053.uuout@pics.com>
Source record: 25744

```
LO> I just heard that a California ham worked G3RUH in England. It took a
> lot of scheduled attempts, several one way contacts and finally a 30
> second two way contact. Sorry, some files got erased and I don't know
> the California ham's call.

It was Dennis, N6DD.

* 1st 2.00b #1439 * DXING OSCAR 13 / SAREX / OSCAR ZERO N2NRD@AMSAT.ORG

---
+-----------------------------------------------------------------------+
| Pics OnLine MultiUser System 609/753-2540 HST 609-753-1534 VFC V34BIS|
| Massive File Collection - ftp,telnet,gopher,www,etc 2500+ Newsgroups |
| http://www.pics.com telnet://bbs.pics.com - Reverse FTP from the Board |
+-----------------------------------------------------------------------+
```

351. ARLK006 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-02-11 17:56:50 UTC
From: w1aw@arrl.org
Message-ID: <$arlk006.1995@ampr.org>
Source record: 25751
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK006
ARLK006 Keplerian data

ZCZC SK31
QST de W1AW
Keplerian Bulletin 6 ARLK006
From ARRL Headquarters
Newington, CT February 11, 1995
To all radio amateurs

SB KEP ARL ARLK006
ARLK006 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-63
1 23469U 95004A 95038.67864645 .00026302 00000-0 24561-3 0 101
2 23469 51.6455 86.7464 0000590 249.1013 110.9885 15.59488653 715
AO-10
1 14129U 83058B 95036.14784478 -.00000444 00000-0 10000-3 0 3381
2 14129 26.5835 284.4740 6020691 249.7709 38.4130 2.05882209 59615
RS-10/11
1 18129U 87054A 95037.83705513 .00000018 00000-0 26288-5 0 194
2 18129 82.9267 155.4135 0013229 90.2952 269.9717 13.72347740382096
UO-11
1 14781U 84021B 95038.04757768 .00000129 00000-0 29659-4 0 7732
2 14781 97.7804 46.7093 0010759 236.9670 123.0498 14.69301722584797
RS-12/13
1 21089U 91007A 95037.85942790 .00000011 00000-0 -47246-5 0 7747
2 21089 82.9211 197.4094 0028826 172.5083 187.6515 13.74053582200879
AO-13
1 19216U 88051B 95035.46134473 -.00000330 00000-0 10000-4 0 134
2 19216 57.6532 205.6386 7260600 1.3225 359.6885 2.09724506 19383
UO-14
1 20437U 90005B 95034.77862339 -.00000014 00000-0 11559-4 0 729
2 20437 98.5779 121.2652 0010085 231.2480 128.7801 14.29873033262687
RS-15
1 23439U 94085A 95038.21103243 -.00000039 00000-0 10000-3 0 277
2 23439 64.8153 105.1975 0168219 284.9379 73.2973 11.27525462 4861
```

```
AO-16
1 20439U 90005D 95034.19567706 -.00000003 00000-0 15792-4 0 8704
2 20439 98.5880 122.1883 0010484 233.7750 126.2466 14.29926935262611
DO-17
1 20440U 90005E 95034.75709978 .00000008 00000-0 20189-4 0 8707
2 20440 98.5888 123.1492 0010623 230.5810 129.4431 14.30067946262713
WO-18
1 20441U 90005F 95034.24695371 -.00000014 00000-0 11651-4 0 8749
2 20441 98.5884 122.6286 0011125 233.5444 126.4709 14.30039838262645
LO-19
1 20442U 90005G 95034.27926817 -.00000002 00000-0 16247-4 0 8704
2 20442 98.5870 122.9773 0011458 232.2240 127.7904 14.30140002262663
FO-20
1 20480U 90013C 95034.30728395 -.00000031 00000-0 55996-6 0 7673
2 20480 99.0670 147.8313 0540579 176.1606 184.3899 12.83229560233773
AO-21
1 21087U 91006A 95035.24098255 .00000094 00000-0 82657-4 0 5633
2 21087 82.9465 330.9725 0035311 154.5185 205.7712 13.74550189201465
UO-22
1 21575U 91050B 95034.73407340 .00000064 00000-0 36198-4 0 5766
2 21575 98.4117 109.2701 0007889 327.1638 32.9054 14.36957618186338
KO-23
1 22077U 92052B 95034.39315267 -.00000037 00000-0 10000-3 0 4689
2 22077 66.0773 155.8898 0012804 232.8339 127.1498 12.86290075116525
KO-25
1 22828U 93061F 95034.72021493 .00000004 00000-0 19320-4 0 3447
2 22828 98.6288 113.0441 0009420 239.4698 120.5544 14.28085274 38828
IO-26
1 22826U 93061D 95034.69295053 -.00000003 00000-0 16554-4 0 3655
2 22826 98.6312 112.9875 0008481 257.0874 102.9363 14.27756638 70727
AO-27
1 22825U 93061C 95034.72901764 -.00000013 00000-0 12354-4 0 3678
2 22825 98.6326 112.9509 0007905 254.4923 105.5383 14.27649966 70727
PO-28
1 22829U 93061G 95034.72980450 .00000028 00000-0 28795-4 0 3593
2 22829 98.6300 113.0810 0009368 240.2859 119.7389 14.28062414 70749
Mir
1 16609U 86017A 95038.16608943 .00007354 00000-0 10000-3 0 9168
2 16609 51.6463 89.3198 0000535 269.7333 90.3589 15.58728736512603

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
February 14, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

352. New to satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-02-11 20:15:20 UTC
From: gsmith@alpha.wright.edu
Message-ID: <3hj5so$fa8@mercury.wright.edu>
Source record: 25752

HI all:
I have a couple of newbie questions, I want to try some of the
satelites that have HF uplinks and downlinks, what are the satelites, and
what are the frequencies?
-73- De Greg, N8PPZ/ag

353. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-11 20:56:34 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb11.205634.6881@ke4zv.atl.ga.us>
Source record: 25753

In article <58330001@hpcc01.corp.hp.com> trapps@hpcc01.corp.hp.com (Stephen M Trapp) writes:
>If I remember my chemistry:
>
>Air is mostly Nitrogen, Atomic Wt = 7, Molecular Wt = 14 (N2)
> (use 14.4 for the 20% Oxygen=8)

No. The atomic number of nitrogen is 7, the atomic weight of the most common isotope is 14. The atomic number of oxygen is 8, and the atomic weight of the most common isotope is 16. Use 28.8 for the atomic mass of the atmosphere.

>Hydrogen Atomic Wt = 1 Molecule is H2, molecular weight = 2

No. The atomic *number* of hydrogen is 1. The atomic weight can be 1, 2, or 3 depending on which isotope of hydrogen is involved. The most common isotope has an atomic weight of 1.

>
>Helium Atomic Wt = 2 Molecule is He (inert gas) mol wt = 2 also

No. Helium consists of 2 protons, so the atomic number is 2, and also 2 neutrons, so the atomic weight is 4. (There is also He3 which is an isotope of helium containing 2 protons and only one neutron, but it's not found in any abundance on Earth.)

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

354. Re: Space Shuttle voice contacts

Newsgroup: rec.radio.amateur.space
Date: 1995-02-11 22:04:30 UTC
From: hemstree@vcd.hp.com
Message-ID: <hemstree-1102951404300001@b1shvb01.vcd.hp.com>
Source record: 25754

Yep,

I agree and must recant. I realized last night how foolish I was before after hearing the cosmonaut's last night. After looking at my sat tracking program, I saw that MIR was about 3-5 minutes behind the shuttle. So it must be MIR's packet I heard.

Thanks for the correction.

Charles

In article <3hgih8$5hb@ixnews2.ix.netcom.com>, drted@ix.netcom.com (Ted Viens) wrote:

> In <hemstree-0902952257550001@b1shvb01.vcd.hp.com> hemstree@vcd.hp.com
> (Charles H. Hemstreet IV) writes:
>
> >
> >Correct me if I am wrong, but I believe that I have heard the
> distintive
> >packet tones going out over 145.550mhz. I do believe packet is active
> on
> >this shuttle mission.
> >
> >Charles
> >
> >In article <3hbso6$n2b@newsbf02.news.aol.com>, gregm50685@aol.com
> >(GregM50685) wrote:
> >
> >> There is no packet on the shuttle this flight. (per AMSAT)
> >
>
> Charles, thanks for your compulsive optimism, but when the training
> director of SAREX posts just a couple of days ago that the SAREX package
> is not on STS-63, I am forced to believe that it isn't there. Over the
> past few days, the shuttle has been within a couple of degrees of the
> Mir. And the cosmonauts have made much effort to keep their packet
> station going even through the rendezvous. I have a crude setup, a
> broadband stick feeding an AOR AR-2500 scanner, decoded by a Universal
> M1200. Still, a couple of days ago, I received a clear packet from
> R0MIR acknowledging packet contact with a couple of midwestern stations.
> In the past few weeks, most Mir overhead passes have included some
> packet signals. Before the flight, it was reported that some of the
> shuttle crew had just received their amateur calls and may be making
> contact from the shuttle using HT's with the portable stick-on window
> SAREX antenna.

> Bye... Ted..

355. Re: New to satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 13:18:02 UTC
From: rparsons@bga.com
Message-ID: <rparsons-1202950718020001@lia-a2.ip.realtime.net>
Source record: 25755

In article <3hj5so$fa8@mercury.wright.edu>, gsmith@alpha.wright.edu
(Gregory Smith) wrote:

> HI all:
> I have a couple of newbie questions, I want to try some of the
> satelites that have HF uplinks and downlinks, what are the satelites, and
> what are the frequencies?
> -73- De Greg, N8PPZ/ag

Try:

Satellite UPLINK DNLINK TYPE

RS-10 145.865-145.905 USB/CW 29.360-29.400 Mode A Analog

RS-12 21.21-21.25 USB/CW 29.41-29.4 Mode K Analog

RS-15 145.858-145.898 USB/CW 29.354-29.394 Mode A Analog

356. GOES Where ?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 15:57:54 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <xa05j7i.sak1@delphi.com>
Source record: 25756

Where are the currently active GOES satellites with ATP transmissions located?

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " sak1@delphi.com " \ / *
* \ __\/__ / OPEN YOUR MIND \/ *
**********************************************************************
```

357. Re: Anyone notice INTERMITTANT RS-15?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 19:32:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A362F0.14E60000E0.uuout@freddy.supernet.ab.ca>
Source record: 25757

Just a note of observation....RS-15 seems to be overloaded and shutting down when over the lower part of north america....probably the power drain on the bird is too much....I also noticed that the problem goes away when the bird gets north of about 35 to 40 degrees north lat. and heads off toward europe.

Well, my best guess is too may users with too much power. Try keeping power down to a minimum level to sustain contact (not 5-9 signals).

Best of luck guys.

73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca)

358. Prop Pitch Motor Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 19:37:00 UTC
From: ernie.koch@freddy.supernet.ab.ca
Message-ID: <8A362F5.14E60000E1.uuout@freddy.supernet.ab.ca>
Source record: 25758

Hi, I am looking for a prop pitch motor (preferably complete and at a reasonable price).

Anyone with info on this critter please send email as to spects and price. Thanks

73 de Ernie VE6LU (ernie.koch@freddy.supernet.ab.ca) (ve6lu@freddy.supernet.ab.ca)

359. Re: Satellite Info

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 20:16:00 UTC
From: jimn2ete@aol.com
Message-ID: <3hlqa0$jfv@newsbf02.news.aol.com>
Source record: 25759

Notify AMSAT P.O. Box 27 Washington, D.C. 20044

360. AO13 Schedules

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 20:18:40 UTC
From: n7ryw@teleport.com
Message-ID: <3hlqf2$k3i@desiree.teleport.com>
Source record: 25760

In article <3hdf1g$dh5@delphinium.cig.mot.com>,
sherwood@oribi.cig.mot.com said...
>
>
>Can someone tell me where I can find schedules?? A schedule tells
>when a satellite such as AO13 changes from mode B to mode S and
>back again. I have tried the sites specified in the following
posting,
>but no luck there. I would prefer an internet site, but a BSS will
do.
>Thanks.

Since the schedule is changing soon, I'll post it here.

The Mode Schedule from December 19 to February 20 will be:

Mode-B : MA 0 to MA 100
Mode-BS : MA 100 to MA 130
Mode-S : MA 130 to MA 132 <- S beacon only; B trsp. is OFF
Mode-S : MA 132 to MA 155 <- S transponder; B trsp. is OFF
Mode-S : MA 155 to MA 160 <- S beacon only; B trsp. is OFF
Mode-BS : MA 160 to MA 180
Mode-B : MA 180 to MA 256
Omnis : MA 230 to MA 25
Alon/Alat 180/0 Move to attitude 230/0, Feb 20

Please be sure to check the schedule before transmitting on mode B.
Many don't, and end up interfering with mode S. If the B transponder
is not
received, DON'T TRANSMIT MODE B!
Note: The 145.812 beacon is active during mode S transponder!

The wisp string is:
000Omni025B100BS130S Bcn132S155S Bcn160BS180B230Omni256
Wisp now takes this entry in "Edit Satellite Data" in "Database".

The next schedule will probably be:

QST *** AO-13 TRANSPONDER SCHEDULE *** 1995 Feb 20 - May 22
Mode-B : MA 0 to MA 190 | *** P R O V I S I O N A L
Mode-BS : MA 190 to MA 218 |
Mode-S : MA 218 to MA 220 |<- S beacon only
Mode-S : MA 220 to MA 230 |<- S transponder; B trsp. is OFF
Mode-B : MA 230 to MA 256 | Alon/Alat 230/0
Omnis : MA 250 to MA 140 | Move to attitude 180/0, May 22

It is also available at ftp.amsat.org as well as on the AO-13
beacon on 145.812.
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

361. Re: (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 20:24:26 UTC
From: n7ryw@teleport.com
Message-ID: <3hlqpr$k3i@desiree.teleport.com>
Source record: 25761

In article <199502091632.AA053347574@relay2.geis.com>,
reinhart=40marlboro#%forwarder@shipco.geis.COM said...
> Both K4ADK
> and I speculated that it might be a "notch" feature in operation.
Some
> signals I could hear on the downlink seemed quite loud and
consistent,
> however, so the situation is far from clear to me.

The RS-15 passband is indeed divided up into sections for the AGC. I am surprised that it took this long for there to be overpowering signals that compress one or more of the passbands. There is not a lot of output power on this satellite, and many will keep using more and more power to try to get heard.

It happens on AO-13 a lot. If you get a chance, you might listen for the offending station and gently remind them that this is not HF, and more power doesn't make up for an insufficient antenna.
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

362. Re: Space Shuttle voice contacts

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 21:22:07 UTC
From: mbordel@phoenix.net
Message-ID: <mbordel-1202951522070001@dial20.phoenix.net>
Source record: 25762

In article <3h7vrg$86m@superb.csc.ti.com>, durham@lobby.ti.com (ken) wrote:

> Are the American astronauts operating on another frequency? I read some-
> where that they would be operating on voice today and that there was not
> a packet setup on board, but if they are on the air I couldn't tell.

I repeat, there was no SAREX aboard STS-63. The SAREX team did, however, attempt a test (on the last day of the flight) of the Shuttle/Mir VHF radio using ham frequencies. Since two of the crewmembers had done SAREX before and a third had his license, we had no shortage of amateurs onboard. We've concluded from the test that the radio will work marginally, but we probably will not use it with a window antenna on STS-71 (there will be payload bay antenna).

For each of these MIR rendezvous flights we will use Config M (voice only). Obviously, it will be voice only, since we will be in close proximity to MIR and its packet station.

--
Matt Bordelon KC5BTL
SAREX training

-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: 2.6.2

mQCPAy86OVEAAAEEALhqyXqqkrVcTH2/DSEj0OfxsMTzYeVwWlv2fJJRBXhUWo7c
2fenbLpKn7UToL5HpD+KVxDg5PVmH0/BrD6PvNifnwgrfXIhtFTR+v+bR9PEj6lb
ByC9dyr5ktiVCDTk1t3C5mN15vD89U+6sUvNKapSASCNYJ7rUOPCe/MuQrNtABEB
AAG0KU1hdHRoZXcgRy4gQm9yZGVsb24gPG1ib3JkZWxAcGhvZW5peC5uZXQ+
=11am
-----END PGP PUBLIC KEY BLOCK-----

363. Graduate Research Opportunity with SEDSAT 1 project at UAH

Newsgroup: rec.radio.amateur.space
Date: 1995-02-12 23:24:38 UTC
From: chrisl@gamma1.LPL.Arizona.EDU
Message-ID: <3hm5bm$4t9@news.CCIT.Arizona.EDU>
Source record: 25763

[Reposted by chrisl@lpl.arizona.edu for Dennis Wingo]

From: wingod@CSPARC.UAH.EDU

This is a notice that there is an opportunity for a graduate
student to come to UAH for their graduate engineering degree
and get to work at NASA and on the SEDSAT 1 satellite.

What We Need

We need someone in software engineering, Power systems or EE discipline
and or a Mechanical/Aerospace Engineer.

What is offered

This is through the Alabama Space Grant Consortium and it involves
a stipend of $16,000 dollars per year plus $4000 for tuition and travel.

What it Takes

We want the best out there. We have a very cool project that is flying
on STS85 in the Summer of 1997. If you have good grades and a very
strong desire to make an impact on student space flight projects
we want you.

When it Starts

This position would begin in fall term (August 1995) and is has the
potential to run up to three years. There will be one year of
work out at NASA for your own benefit under the program. Actually
you would work full time here at UAH on the satellite and at the
Marshall Space Flight Center.

What Part of the satellite we need help with

We need someone to take over the imaging experiment and bring it to
its successful conclusion. We also very much need people to write
software for the imaging experiment. Mechanical design and testing
is also needed for the satellite.

When do you need to respond?

NOW. The deadline is March 1 1995. We have to get approvals from
NASA MSFC for support as well as approvals from the University before
it is submitted so hurry!!

Is this a sure thing?

No. This is a proposal that is going to the Alabama Space Grant Consortium and you will be in competition with students from all over the state of Alabama as well as students at the other four campuses of the University of Alabama System.

BUT. We have an excellent chance of winning and we will do everything possible to help.

So please contact us now!

Contact

Dennis Wingo
University of Alabama in Huntsville
Huntsville, AL 35899
Phone (205)895-6912
Fax 895-6791

email wingod@csparc.uah.edu
or wingo@seds.lpl.arizona.edu

364. Req: reviews from AEA ST-1/Trakbox users

Newsgroup: rec.radio.amateur.space
Date: 1995-02-13 06:12:53 UTC
From: bob@texas.net
Message-ID: <3hmt95$bue@empire.texas.net>
Source record: 25764

I'd like to hear from anyone out there who's using the AEA ST-1
satellite interface or the Trakbox. I'm putting my first satellite
station together using the Icom 275/475 twins, a DSP-2232, an SSB
UEK2000, and a Yaesu G-5400B rotator. I'd like to discuss some
details on how the interfaces work, especially if the CT-16 satellite
interface is used (can the CT-16 and ST-1 co-control the rig, will
running mode S with a transverter into the 275 pose a problem, etc?)

Tnx

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

365. APT-Satellites: Report FEB 12, 1995

Newsgroup: rec.radio.amateur.space
Date: 1995-02-13 09:02:17 UTC
From: peter.henne@gmd.de
Message-ID: <peter.henne-080295083844@oskar.gmd.de>
Source record: 25765

```
Observed 50.61 deg NLat, 7.55 deg ELon; FEB 12, 1995

Following the satellite-name you read the approx.
hour (local=sun-time) and motion-direction of the
pass (N=northbound, S=southbound).
This time +/-1.5h is valid for the next 10+ days
to expect the satellite to be visible in range of
northern-hemisphere-stations, add 11h and switch
S<->N for another pass to observe.

NOAA-9 11:S APT 137.62 MHz On
NOAA-10 17:N APT 137.50 MHz On
NOAA-12 19:N APT 137.50 MHz On
NOAA-14 13:N APT 137.62 MHz On
Meteor 3-5 12:N APT 137.85 MHz On

Not active: Meteor 2-21 and OKEAN 1-7. Leo Wikholm
from Finland told me that he was able to copy APT
of OKEAN 1-7 from passes over northern Russia from
time to time (below my horizon).
Did not check for NOAA-11 (AVHRR is dead).
At my latitude when NOAA-9 is setting NOAA-14 is just
rising, both birds are just 1 deg above horizon
causing some minor interference, but no problem
(NOAA-9 rev. #52418 and 52419). Excellent images
from NOAA-14.

+----------------------------------------+
|Peter Henne (peter.henne@gmd.de) |
| (henne@gmd.de) |
|German Nat.Research Center.f.Comp.Science |
|D-53754 St.AUGUSTIN, Germany |
+----------------------------------------+
```

366. Re: Balloon FAQ 1.0

Newsgroup: rec.radio.amateur.space
Date: 1995-02-13 14:43:05 UTC
From: neill.taylor@ukaea.ORG.UK
Message-ID: <9502131443.AA22205@fusrs3b.culham.aea.orgn.uk>
Source record: 25766

Stephen M Trapp wrote:
>If I remember my chemistry:
[.... lines deleted.....]
>Helium Atomic Wt = 2 Molecule is He (inert gas) mol wt = 2 also

I'm afraid you don't. He is molecular weight 4.

Neill G4HLX

Dr. Neill Taylor UKAEA Government Division
Fusion
Culham, Abingdon,
Oxfordshire OX14 3DB, UK. PLEASE NOTE MY NEW
Internet: neill.taylor@ukaea.org.uk <<<<<<<<<<<<<<< INTERNET ADDRESS
Tel: +44 1235 463348 FAX: +44 1235 463435
---

367. Re: FM sat question

Newsgroup: rec.radio.amateur.space
Date: 1995-02-13 15:42:07 UTC
From: zlau@arrl.org
Message-ID: <1995Feb13.154207.20728@arrl.org>
Source record: 25767

KE4ZV Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

: I think you are exaggerating transponder loading. The transponders
: are rarely approaching full. However, I agree that lots of FM operation
: would be bad. All I wanted to say was that usable FM signals should
: be *possible* through P3D without adversely impacting its power budget.
: I don't want to leave the impression that I think a lot of such operations
: would be desirable on other counts.

I'd agree that there are times when AO-10 and 13 aren't used much.

However, if all goes to plan so that you can stick up a fixed
set of antennas (no $500 rotator) and get good signals without
buying bricks and mast mounted preamps (another couple more
C-notes), the satellite will have a lot more activity.

While I've commented that basic physics makes it tough to have
FM transponders in high earth orbit, a bigger problem is keeping
hogging the satellite by running high power/big antennas.
Whether or not little stations with have fun with the satellite
depends a lot on the notching device. As it is now, people often
need amplifiers because other people are running amplifiers...
--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

368. Build radio telescope?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-14 01:48:57 UTC
From: billnoe@delphi.com
Message-ID: <5Q65j9x.billnoe@delphi.com>
Source record: 25787

As a high school teacher, I would like to
build a primitive radio telescope with my
physics students. Anyone help me get started?
Thanks - we have lots of chicken wire!
Bill

369. to AMSAT and interested hams attending Orlando Hamcation

Newsgroup: rec.radio.amateur.space
Date: 1995-02-14 08:32:18 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3hppqi$6mo@paperboy.ids.net>
Source record: 25768

To all hams and interested parties attending the Orlando Hamcation (Feb 17-19 Orlando Florida Fairgrounds):

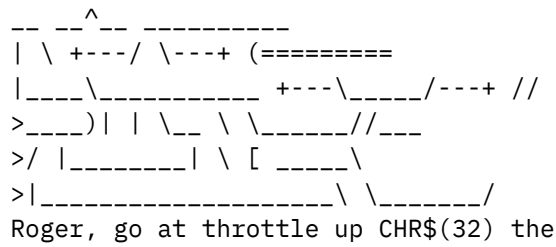
AMSAT will have a booth there with the lastest information on the Phase 3-D spacecraft project. We are planning an open house for hams at the facility who are interested in volunteering to work on the spacecraft.

Drop by the booth and say hi if you're interested.

Philip Chien KC4YER
AMSAT Spacecraft Integration Team
KC4YER@AMSAT.ORG

This is an unofficial notice, blah blah blah.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET



Roger, go at throttle up CHR$(32) the final frontier

370. Re: Build radio telescope?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-14 17:39:23 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Feb14.173923.20705@ke4zv.atl.ga.us>
Source record: 25769

In article <5Q65j9x.billnoe@delphi.com> billnoe@delphi.com writes:
>As a high school teacher, I would like to
>build a primitive radio telescope with my
>physics students. Anyone help me get started?
>Thanks - we have lots of chicken wire!
>Bill

How primitive do you want it to be?

You can receive radio noise from Jupiter on the HF bands.
Or you can copy Sun noise on most of the VHF/UHF bands.
If you want to be able to hear hydrogen emissions at the
water hole frequency, that'll be a little tougher. If
you want to map quasi-stellar sources, that's ambitious.
Define what you want to do, and we'll see if we can
help.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

371. Re: GPS Newbie has application, needs solution

Newsgroup: rec.radio.amateur.space
Date: 1995-02-15 09:11:35 UTC
From: rolf@login.dknet.dk
Message-ID: <7LSGICRQ0HGO073yn@login.dknet.dk>
Source record: 25770
Cross-posted to: sci.geo.satellite-nav,rec.radio.amateur.space

>)What I want to do is have a PC with a board in it that gets the time (only, don't
>)need location/nav info) from GPS and sets the clock in the PC, which then exports
>)the time to the network. I know with the proper location info, fancy board, etc.,
>)that I could have the PC clock accurate to ~100 ns. But all I need to do is keep
>)the usual PC clock and set it once per while to the nearest second or so, just
>)so the computers on my LAN show the same time. I WANT TO LOW-BALL THIS ON COST.

I just finished development of both software and hardware for this.
The company I work for will be able to sell the complete kit to You,
but it will not be cheap. It will handle both DOS and Windows PC's,
and updates entire Novell or WFWG/NT networks. The product is intended
for use with our fleet-management software, where timing is important
both for the statistics collected, and for timing the pre-assigned
time slots. The fleet-management software is based on GPS and
Inmarsat-C for communication.

If You have some specific questions I might be able to answer them.

Regards,

Rolf V. Oestergaard, T&T, Copenhagen, Denmark \ /\ /
e-mail: rolf@login.dknet.dk \/ \/

372. WANTED FREQ SPECTRUM DIAGRAM

Newsgroup: rec.radio.amateur.space
Date: 1995-02-16 04:33:02 UTC
From: dcb@tauon.ph.unimelb.edu.au
Message-ID: <3hukhu$m7a@news.unimelb.EDU.AU>
Source record: 25771

I am looking for a nice frequency spectrum diagram
with wavelength /frequency scale and broken up into
the band splitup ie what each band area is used for.

radio astro and other excluded bands shown.
I would like it in postscript or a format for computers.
If you know of a source could you let me know?
THANKS

DAVID

--

David Bell |E-mail: dcb@electron.ph.unimelb.edu.au
School of Physics |Phone : +61 3 344 5451
The University of Melbourne |Fax : +61 3 344 4783
Parkville, Victoria, AUST, 3052 |

373. Re: WANTED FREQ SPECTRUM DIAGRAM

Newsgroup: rec.radio.amateur.space
Date: 1995-02-16 09:48:30 UTC
From: bcieslak@mkelan5.remnet.ab.com
Message-ID: <bcieslak.68.0009CEE0@mkelan5.remnet.ab.com>
Source record: 25772

Omega Technologies Company has a big wall sized one that is broken out into a lot of detail,,very colorful and informative. They are an insturmentation company. Ask for chart UFRP-1

In article <3hukhu$m7a@news.unimelb.EDU.AU> dcb@tauon.ph.unimelb.edu.au (David Bell) writes:>From: dcb@tauon.ph.unimelb.edu.au (David Bell)
>Subject: WANTED FREQ SPECTRUM DIAGRAM
>Date: 16 Feb 1995 04:33:02 GMT

>I am looking for a nice frequency spectrum diagram
>with wavelength /frequency scale and broken up into
>the band splitup ie what each band area is used for.

>radio astro and other excluded bands shown.
>I would like it in postscript or a format for computers.
>If you know of a source could you let me know?
>THANKS

>DAVID

>--
>--
>David Bell |E-mail: dcb@electron.ph.unimelb.edu.au
>School of Physics |Phone : +61 3 344 5451
>The University of Melbourne |Fax : +61 3 344 4783
>Parkville, Victoria, AUST, 3052 |

374. Re: DSP2232 Sat Use

Newsgroup: rec.radio.amateur.space
Date: 1995-02-17 08:06:28 UTC
From: tedwards@Glue.umd.edu
Message-ID: <3i1le4$58j@thrash.src.umd.edu>
Source record: 25773

In article <Pine.SV4.3.91.950216100539.8424A-100000@outland.dtcc.edu>,
Samuel Guccione <sguccion@outland.dtcc.edu> wrote:
>would like to find someone that is using the aea 2232 for sat comm.
>would like to call you on land line.

I've used the DSP-1232 to do 1200 bps PACSATs a few times. We never used
the automative tuning though, just manually kept the bargraph lined up.
There are some special sat programs for the AEA DSP on w3eax.umd.edu
in /pub/aea-dsp.

-Thomas
N3HAU

375. data over MIR audio link

Newsgroup: rec.radio.amateur.space
Date: 1995-02-17 09:55:35 UTC
From: mario@wguser.wg.estec.esa.nl
Message-ID: <3i1rqn$akc@wgserv.wg.estec.esa.nl>
Source record: 25776

I'm responsible for an experiment to be flown on the EuroMIR '95 mission (later this year) and considering to up-/download data to my onboard equipment using a secondary voice loop the Russian can make available for the experiment.
The data link I need should be 9600 baud so that in the (average) 10 min. visibility of MIR I can transfer up to 256 KBytes data. My first idea was to use a commercial modem and adapt it (2-wires to 4-wires) to the headset/mike audio interface.
The voice link I can get is full duplex (2 separate simultaneous channels) with no push-to-talk, 300Hz to 3.5 KHz bandwidth, 1200 ohms impedance (both input and output) and (I think) FM modulated on UHF.
Can anybody suggest me any hardware that I could use for that? I'm looking for an half-size PC board (ISA bus) and some comms protocol I can interface to the (MS-DOS based) onboard software.
(of course it should also be hacker-proof to avoid people messing around with delicate instruments but I promise to give you some hints to receive something really interesting from onboard MIR).

Mario Uggiano
(mario@wg.estec.esa.nl)
European Space Agency
Noordwijk, The Netherlands

376. Ariane V's first test flight ?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-17 13:57:57 UTC
From: e94_adu@elixir.e.kth.se
Message-ID: <3i2a15$9ot@news.kth.se>
Source record: 25774

Hi ?

I'd like to know when the first scheduled
test flight of the Ariane V rocket is
planed to take place ...
We all know that Phase 3D is launched with
the second test flight so if the first
launch is succesful the risc or failiure
in the second test flight ought to be lower ...

73 de Andy SM0TTV

377. Any STS-63/ Mir Contacts During the Past Mission?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-17 22:22:49 UTC
From: kf8bex@oeonline.com
Message-ID: <D460u5.D2A@oeonline.com>
Source record: 25775

Did anyone contact either the Shuttle or Mir during the last
mission? They were supposed to have taken some 2-Meter equipment
with them, but I haven't heard of anyone using it up there.

73 de Mike, KF8BE

378. ARLK007 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-02-18 21:58:53 UTC
From: w1aw@arrl.org
Message-ID: <$arlk007.1995@ampr.org>
Source record: 25777
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK007
ARLK007 Keplerian data

ZCZC SK32
QST de W1AW
Keplerian Bulletin 7 ARLK007
From ARRL Headquarters
Newington, CT February 18, 1995
To all radio amateurs

SB KEP ARL ARLK007
ARLK007 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-67
1 99967U 95999A 95061.32643015 .00011689 00000-0 86071-4 0 44
2 99967 28.4675 88.9985 0004519 287.7960 72.2100 15.71297841 28
AO-10
1 14129U 83058B 95045.85960153 .00000205 00000-0 10000-3 0 3390
2 14129 26.5694 282.8718 6019168 252.4242 36.3604 2.05878612 59813
RS-10/11
1 18129U 87054A 95046.22156292 .00000038 00000-0 24621-4 0 214
2 18129 82.9265 149.2197 0013311 70.0222 290.2367 13.72348199383246
UO-11
1 14781U 84021B 95046.56017156 .00000112 00000-0 26736-4 0 7755
2 14781 97.7806 54.8195 0011082 207.0415 153.0216 14.69304196586047
RS-12/13
1 21089U 91007A 95045.86946859 .00000048 00000-0 34673-4 0 7767
2 21089 82.9219 191.4712 0029367 149.8997 210.3850 13.74054117201973
AO-13
1 19216U 88051B 95045.47450518 -.00000472 00000-0 10000-4 0 156
2 19216 57.6414 203.8202 7262952 2.1919 359.5469 2.09725598 19592
UO-14
1 20437U 90005B 95047.72422886 -.00000005 00000-0 14844-4 0 750
2 20437 98.5763 134.0123 0010428 189.7513 170.3468 14.29874603264532
RS-15
1 23439U 94085A 95046.54824140 -.00000039 00000-0 10000-3 0 290
2 23439 64.8134 91.7100 0167780 283.1671 75.0580 11.27525542 5806
```

```
AO-16
1 20439U 90005D 95047.21076680 .00000017 00000-0 23610-4 0 8732
2 20439 98.5863 135.0196 0010557 192.8871 167.2043 14.29928687264470
DO-17
1 20440U 90005E 95048.19070826 .00000021 00000-0 24841-4 0 8730
2 20440 98.5873 136.3980 0010751 188.9705 171.1285 14.30069749264633
WO-18
1 20441U 90005F 95047.19104907 .00000018 00000-0 23897-4 0 8778
2 20441 98.5872 135.3952 0011229 192.6688 167.4212 14.30041655264492
LO-19
1 20442U 90005G 95047.78216157 .00000015 00000-0 22585-4 0 8731
2 20442 98.5863 136.2979 0011531 189.9625 170.1330 14.30142073264597
FO-20
1 20480U 90013C 95047.79618975 -.00000043 00000-0 -30991-4 0 7706
2 20480 99.0675 158.8076 0540720 145.6428 218.0934 12.83229512235502
AO-21
1 21087U 91006A 95045.21353224 .00000094 00000-0 82657-4 0 5664
2 21087 82.9471 323.5943 0035729 126.8915 233.5517 13.74550767202834
UO-22
1 21575U 91050B 95047.68555281 .00000042 00000-0 28699-4 0 5798
2 21575 98.4097 121.9206 0007302 288.6111 71.4279 14.36959555188198
KO-23
1 22077U 92052B 95047.61078714 -.00000037 00000-0 10000-3 0 4715
2 22077 66.0759 128.2129 0012439 229.5482 130.4448 12.86290004118229
KO-25
1 22828U 93061F 95048.24251222 -.00000007 00000-0 14980-4 0 3478
2 22828 98.6266 126.3971 0009715 196.4044 163.6823 14.28086827 40751
IO-26
1 22826U 93061D 95045.69548085 .00000001 00000-0 18132-4 0 3687
2 22826 98.6303 123.8530 0008239 222.0688 137.9858 14.27757931 72290
AO-27
1 22825U 93061C 95048.18534653 -.00000016 00000-0 11407-4 0 3707
2 22825 98.6309 126.2368 0007669 212.5534 147.5194 14.27651256 72643
PO-28
1 22829U 93061G 95047.76186584 .00000005 00000-0 19741-4 0 3627
2 22829 98.6276 125.9495 0009265 199.8757 160.2065 14.28063897 72609
Mir
1 16609U 86017A 95048.36459025 .00005093 00000-0 74154-4 0 9413
2 16609 51.6463 38.1835 0004595 130.8399 229.2992 15.57644491514183

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
February 21, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

379. Re: Mir Tracking troubles

Newsgroup: rec.radio.amateur.space
Date: 1995-02-18 22:09:12 UTC
From: drted@ix.netcom.com
Message-ID: <3i5r68$ap1@ixnews3.ix.netcom.com>
Source record: 25778

The important question is "How recent are your keps?" At 400 kilometers, Mir is still affected by atmospheric drag. Every few months they fire boosters and reestablish their design altitude. An important part of the all too irregular supply flights is the fuel needed to do this. Of course, when this is done, your keps become useless. My last keps were from 10 feb 95 and last night, I believe I heard packet while my tracking program showed them overhead. Someday, I will install something better than a broadband whip to catch satellites with. FTP to archive.afit.af.mil in pub/space to get keps that are updated daily. Bye... Ted.. <drted@ix.netcom.com>

In <950217190254_24826198@aol.com> EdCaffray@aol.COM writes:

>
>As of late I can not seem to get a proper track of MIR. It seems to be off by
>10 Min. I have latest AMSAT.keps. Both WISP and WinTrak do the same. All
>other Sat times are correct? Any Ideas??
>Eddie
>EdCaffray@AOL.COM
>

380. Re: data over MIR audio link

Newsgroup: rec.radio.amateur.space
Date: 1995-02-18 22:22:07 UTC
From: n7ryw@teleport.com
Message-ID: <3i5ru5$7mc@desiree.teleport.com>
Source record: 25779

>In article <3i1rqn$akc@wgserv.wg.estec.esa.nl>
mario@wguser.wg.estec.esa.nl (Mario Ug
>giano) writes:

>The voice link I can get is full duplex (2 separate simultaneous
channels)
>with no push-to-talk, 300Hz to 3.5 KHz bandwidth, 1200 ohms impedance
>(both input and output) and (I think) FM modulated on UHF.

At 3.5 kHz, it won't work for 9600 bps, which uses 4.8 kHz in its
standard form. A normal modem can be used, however, with a modification
to remove the telephone 2-wire interface. You will probably need
matching transformers to get the impedances close. 9600 modems are
getting rather cheap, and they can set their speed to whatever your link
can handle. You can use standard software to transfer files, such as
Z-Modem.

One possible problem is Doppler Shift on the link. This can cause a
little static for voice, but can completey destroy a data link that needs
and uses the full bandwidth. You may need to set your bit rate in the
modem down to 2400 or even 1200 bps. Experimentation will tell!

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

381. $20 Weak Signal Challenge

Newsgroup: rec.radio.amateur.space
Date: 1995-02-19 01:47:17 UTC
From: ir000411@interramp.com
Message-ID: <3i67v5$p99@usenet.interramp.com>
Source record: 25780

Do you think you're good at pulling out that weak CW signal?
If you have a web browser, point it at my home page for a
challenge that can put $20 in your pocket:

http://www.webcom.com/~af9y/

de Mike, AF9Y

382. Re: Mir Tracking Troubles

Newsgroup: rec.radio.amateur.space
Date: 1995-02-19 02:40:38 UTC
From: manfred@isi5.ssl.berkeley.edu
Message-ID: <3i6b36$clc@agate.berkeley.edu>
Source record: 25781

We just had a beautiful visible Mir pass over the San Francisco Bay Area.
Mir was right on time with the following TLE set, which is about 5.5 days
old:

Mir
1 16609U 86017A 95044.57928636 .00005164 00000-0 75227-4 0 9377
2 16609 51.6463 57.1538 0004677 119.5491 240.5969 15.57600124513760

Hope this helps.

73 de Manfred --- W6/DL5KR

383. Is AO-27 Still Online in FM Mode?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-20 04:15:03 UTC
From: leigh@rain.org
Message-ID: <3i9507$o5i@news.rain.org>
Source record: 25782

Today and yesterday, (February 18th and 19th), I attempted to monitor AO-27 in the FM mode on 436 mHz, but heard nothing. Yes, I listened during daylight hours on a weekend.

BTW, I used two different sets of keps, with a tracking program that works for the RS-birds, but heard nothing for several different scheduled passes of AO-27.

Was AO-27 shut off in the FM repeater mode over Southern California this weekend, or am I doing something wrong?

Thanks. --Leigh/KM6JE in Santa Barbara.

384. Re: WANTED FREQ SPECTRUM DIAGRAM

Newsgroup: rec.radio.amateur.space
Date: 1995-02-20 13:34:04 UTC
From: bkobb@newsignals.com
Message-ID: <netnewsD4AwCt.9LB@netcom.com>
Source record: 25783

In article <3hukhu$m7a@news.unimelb.EDU.AU>
dcb@tauon.ph.unimelb.edu.au (David Bell) writes:

> I am looking for a nice frequency spectrum diagram
> with wavelength /frequency scale and broken up into
> the band splitup ie what each band area is used for.

Spectrum Guide: Radio Frequency Allocations in the United States, 30 MHz-300 GHz (ISBN 0-9641546-0-9) explains the regulation, usage and trends in the 325 VHF through EHF bands in the U.S. 312 pages. For price and availability E-mail bkobb@newsignals.com.

Bennett Z. Kobb

385. MS SKEDS WANTED

Newsgroup: rec.radio.amateur.space
Date: 1995-02-20 18:34:04 UTC
From: YPAK35A@prodigy.com
Message-ID: <3ianas$m8o@usenetw1.news.prodigy.com>
Source record: 25784

I am seeking 2 and 6 meter meteor scatter skeds for the month of MARCH.
New commers to meteor scatter welcome. I am in grid em51jq in Miss.
Reply by e-mail and please give phone # and best time to call , brief
desription of your station and the band or bands you are interested in.
E-mail your reply. Larry- WB5KYK

386. Available General Information

Newsgroup: rec.radio.amateur.space
Date: 1995-02-21 06:48:21 UTC
From: logos@primenet.com
Message-ID: <logos.1.0108B7CB@primenet.com>
Source record: 25786

Does anyone out there have any information in regards to starting up a packet radio system...the requirements for licensing...equipment requirements, etc?

I don't really know anything about computers and ham radio. Even if you could point me to more information--that would be helpful.

I appreciate the help.

KEVIN

387. 1691 down converter ?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-21 09:09:56 UTC
From: rrook@sefl
Message-ID: <3ical4$7dm@sefl.satelnet.org>
Source record: 25785

I just acquired a 1691mhz downconverter and preamp. They are made by Microwave Modules Ltd, the preamp has the model number mmg 1691, the converter has no model number. I unfortunately was not able to get the manual for either unit. Does anyone have an address for this company or have manuals they would be willing to copy for me? It is easy to figure out how to hook up the antenna but the power plug has several pins and I am not sure of the hook up. Tnx and 73.

****
* *
* Bob Rook KD4DII *
* *
* rrook@satelnet.org *
* *
****

388. Re: GPS Satellite names?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-22 18:54:53 UTC
From: dbraun@ilx049.iil.intel.com
Message-ID: <3ig19t$2vt@inews.sc.intel.com>
Source record: 25806

In article <kevin.jessup.354.012F3C1E@mail.mei.com>, kevin.jessup@mail.mei.com (Kevin Jessup) writes:
|>
|> How do the GPS satellite names (such as BI-01, BII-04,
|> BIIA-15, etc) in the GPS.TLE file relate to the satellite
|> numbers on my Garmin GPS40 handheld (such as 10, 15, 20)??

Here is some information that might make the connection:

Designations, Epoch, Frequency,
National Name and Orbit Information Remarks

1984-097A (15271) September 9, 1991 [Also known as NAVSTAR 10 and
USA 5 1575.42 MHz GPS 10. PRN: 12.]
1227.60 MHz
Inclination: 62.973 deg
1985-093A (16129) *October 28, 1994 [Also known as NAVSTAR 11
USA 10 1575.42 MHz and GPS 11. PRN: 3.]
1227.60 MHz DEACTIVATED ON 13 Apr 94.
Inclination: 64.115 deg
1989-013A (19802) August 17, 1991 [Also known as GPS 2-1
USA 35 1575.42 MHz (Second Generation Global
1227.60 MHz Positioning Satellite) and
Inclination: 55.033 deg NAVSTAR 14. PRN: 14.]
1989-044A (20061) August 19, 1991 [Also known as GPS 2-2 and
USA 38 1575.42 MHz NAVSTAR 13. PRN: 2.]
1227.60 MHz
Inclination: 54.937 deg
1989-064A (20185) July 9, 1991 [Also known as GPS 2-3 and
USA 42 1575.42 MHz NAVSTAR 16. PRN: 16.]
1227.60 MHz
Inclination: 54.873 deg
1989-085A (20302) August 26, 1994 [Also known as GPS 2-4 and
USA 47 1575.42 MHz NAVSTAR 19. PRN: 19.]
1227.60 MHz
Inclination: 54.368 deg
1989-097A (20361) August 26, 1994 [Also known as GPS 2-5 and
USA 49 1575.42 MHz NAVSTAR 17. PRN: 17.]
1227.60 MHz
Inclination: 55.058 deg
1990-008A (20452) August 23, 1991 [Also known as GPS 2-6
USA 50 1575.42 MHz and NAVSTAR 18. PRN: 18.]
1227.60 MHz
Inclination: 54.329 deg

1990-025A (20533) August 26, 1994 [Also known as GPS 2-7
USA 54 1575.42 MHz NAVSTAR 20. PRN: 20.]
1227.60 MHz
Inclination: 55.202 deg
1990-068A (20724) August 23, 1991 [Also known as GPS 2-8
USA 63 1575.42 MHz and NAVSTAR 21. PRN: 21.]
1227.60 MHz
Inclination: 54.671 deg
1990-088A (20830) August 24, 1991 [Also known as GPS 2-9
USA 64 1575.42 MHz and NAVSTAR 15. PRN: 15.]
1227.60 MHz
Inclination: 54.984 deg
1990-103A (20959) September 4, 1994 [Also known as GPS 2-10,
USA 66 1575.42 MHz GPS 2A-1, and NAVSTAR 23.
1227.60 MHz PRN: 23.]
Inclination: 54.893 deg
1991-047A (21552) September 4, 1994 [Also known as GPS 2-11,
USA 71 1575.42 MHz GPS 2A-2, and NAVSTAR 24.
1227.60 MHz PRN: 24.]
Inclination: 55.275 deg
1992-009A (21890) September 4, 1994 [Also known as GPS 2-12,
USA 79 1575.42 MHz GPS 2A-3, and NAVSTAR 25.
1227.60 MHz PRN: 25.]
Inclination: 55.57 deg
1992-019A (21930) September 4, 1994 [Also known as GPS 2-13,
USA 80 1575.42 MHz GPS 2A-4, and NAVSTAR 28.
1227.60 MHz PRN: 28.]
Inclination: 55.24 deg
1992-039A (22014) September 4, 1994 [Also known as GPS 2-14,
USA 83 1575.42 MHz GPS 2A-5, and NAVSTAR 26.
1227.60 MHz PRN: 26.]
Inclination: 55.04 deg
1992-058A (22108) September 4, 1994 [Also known as GPS 2-15,
USA 84 1575.42 MHz GPS 2A-6,and NAVSTAR 27.
1227.60 MHz PRN: 27.]
Inclination: 54.78 deg
1992-079A (22231) September 4, 1994 [Also known as GPS 2-16,
USA 85 1575.42 MHz GPS 2A-7, and NAVSTAR 32.
1227.60 MHz PRN: 1.]
Inclination: 53.50 deg
1992-089A (22275) September 4, 1994 [Also known as GPS 2-17,
USA 87 1575.42 MHz GPS 2A-8,and NAVSTAR 29.
1227.60 MHz PRN: 29.]
Inclination: 54.74 deg
1993-007A (22446) September 4, 1994 [Also known as GPS 2-18,
USA 88 1575.42 MHz GPS 2A-9, and NAVSTAR 22.
1227.60 MHz PRN: 22.]
Inclination: 54.83 deg
1993-017A (22581) September 4, 1994 [Also known as GPS 2-19,
USA 90 1575.42 MHz GPS 2A-10, and NAVSTAR 31.

1227.60 MHz PRN: 31.]
Inclination: 54.80 deg
1993-032A (22657) September 4, 1994 [Also known as GPS 2-20,
USA 91 1575.42 MHz GPS 2A-11, and NAVSTAR 37.
1227.60 MHz PRN: 7.]
Inclination: 54.97 deg
1993-042A (22700) September 4, 1994 [Also known as GPS 2-21,
USA 92 1575.42 MHz GPS 2A-12, and NAVSTAR 39.
1227.60 MHz PRN: 9.]
Inclination: 54.70 deg
1993-054A (22779) September 4, 1994 [Also known as GPS 2-22,
USA 94 1575.42 MHz GPS 2A-13, and NAVSTAR 35.
1227.60 MHz PRN: 5.]
Inclination: 54.90 deg
1993-068A (22877) August 26, 1994 [Also known as GPS 2-23,
USA 96 1575.42 MHz GPS 2A-14,and NAVSTAR 34.
1227.60 MHz PRN: 4]
Inclination: 54.90 deg
1994-016A (23027) August 26, 1994 [Also known as GPS 2-24,
USA 100 1575.42 MHz GPS 2A-15,and NAVSTAR 36.
1227.60 MHz PRN: 6]

The GPS 2-NN series orbit in six distinct planes that are 60 deg apart.
Each plane has four "slots." Following are the members of the planes/slots.
The RAAN pertains to August 1994 and reduces a little each month.

PLANE RAAN OF PLANE SLOT-1 SLOT-2 SLOT-3 SLOT-4

A 256 2-21 2-12 2-15 2-04
B 316 2-18 2-07 2-02 2-22
C 16 2-24 2-13 2-19 2-20
D 76 2-11 2-09 2-05 2-23
E 136 2-01 2-08 2-03 2-10
F 196 2-16 2-14 2-06 2-17

Send money to:

Doug Braun Intel Israel, Ltd. M/S: IDC-42
Tel: 011-972-4-655069 dbraun@inside.intel.com

389. Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-02-23 03:10:35 UTC
From: tmnichol@nps.navy.mil
Message-ID: <3igubb$2db@sagan.nps.navy.mil>
Source record: 25788

A while back (two weeks?), there was a posting on this news group about 2 line elements and a way one could automatically get satellite elements emailed to them. Would whoever posted that message please repost it.

390. Inmarsat Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-02-24 01:30:52 UTC
From: hartsell@cts.com
Message-ID: <D4HDJG.HIJ@crash.cts.com>
Source record: 25789

Does anyone else out there listen to Inmarsat Satellites ? If so how is you reception from the Satellites ? Do you hear both sides of
the conversation ? I seem to only hear one side of the conversation, Am I doing something wrong ? I have A Icom 9000. Let me hear
from other Inmarsat listeners.

==========

Weather Satellites John Hartsell
TVRO Encinitas, Ca.
Inmarsat USA
Wefax hartsell@cts.com

==========

391. Re: Thoughts on Kenwood 9130 2m All-mode For Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-02-24 03:45:55 UTC
From: Robert D Houghton <rhought@cello.gina.calstate.edu>
Message-ID: <3ijkpj$nrm@cello.gina.calstate.edu>
Source record: 25790

I, for one am hoping that Yaesu will replace the FT-736R with something a little more modern. Although I like my 736R, a newer design would probably be set up with a data port that could handle 9600 baud, and *maybe* an AFC based upon the discriminator output that could be used for doppler correction in FM mode.

I also don't think that the memory function is as intuitive as on Yaesu's newer radios.

Oh yeah, a little pet peave. Why would an $1800 radio not come standard with CTCSS encoding when every cheap 2m ht now includes this feature? Surely, even a dedicated satellite freak (such as I :-) *might* occasionally want to talk to other Earthlings!

My two cents worth.

++++++++++++++++++++++++++++++	++
	AMSAT member #26148
Robert D. Houghton	digital satellites: KC6LVG@PACSAT
Science Department Chairman	Packet radio: kc6lvg@k6unq.#cas.na
John A. Rowland High School	Other internet:
Rowland Heights, CA 91748	kc6lvg@amsat.org
	rdhoughton@vms4.sci.csupomona.edu
++++++++++++++++++++++++++++++	++

392. FO-20 with omnis?

Newsgroup: rec.radio.amateur.space
Date: 1995-02-24 04:20:31 UTC
From: wk02593@WorldLink.com
Message-ID: <9502232320.AA31128@worldlink.com>
Source record: 25791

Howdy, all!

There's 100 kHz of bandwidth available on FO-20 Mode JA. I've worked the satellite (once), but I had temporary Yagis at the time. I'm back to my normal omni antennas. Has anybody had success with FO-20 (CW, SSB, or both) with omni antennas? I'm using a preamp on the 70cm downlink, of course.

73, Walt KE3HP

393. Webersat

Newsgroup: rec.radio.amateur.space
Date: 1995-02-24 18:43:30 UTC
From: tmnichol@nps.navy.mil
Message-ID: <3il9ci$so@ro140211.cc.nps.navy.mil>
Source record: 25792

I am looking for phone numbers and email addresses for people at Weber State who worked on the Webersat. If anybody has this info, it would be much appriciated if you mailed it to me.

Of particular interest is the ground station and operations aspect of Webersat.

Thanx

394. Re: Webersat

Newsgroup: rec.radio.amateur.space
Date: 1995-02-24 23:14:48 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3ilp98$ej0@news.cc.utah.edu>
Source record: 25793

Troy M. Nichols (tmnichol@nps.navy.mil) wrote:
: I am looking for phone numbers and email addresses for people at Weber State
: who worked on the Webersat. If anybody has this info, it would be much

Don't have an email address but I believe you can reach Bob Twiggs at
801.626-7272.

Patrick Wiggins, Hansen Planetarium, SLC, UT

395. Re: Inmarsat Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-02-25 02:18:11 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <JQ+ZEL7.sak1@delphi.com>
Source record: 25794

What kind of antenna do you use? Inmarsat is at 1550 MHz or so?

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " sak1@delphi.com " \ / *
* \ __\/__ / OPEN YOUR MIND \/ *
**********************************************************************
```

396. west virginia on mode a

Newsgroup: rec.radio.amateur.space
Date: 1995-02-26 06:38:47 UTC
From: n3aas@aol.com
Message-ID: <3ip7ln$i53@newsbf02.news.aol.com>
Source record: 25795

This is Pat in FORT Ashby, WV. If anyone needs WV on mode a please let me know either via e-mail or preferably via packet at :N3AAS@N8YIB.WV.USA>NA Thanks look forward to hearing from you. I am temporarily off the air on mode b but hope to be back on again soon. 73 de Pat ... N3AAS ...

397. Kenwood TM-255A

Newsgroup: rec.radio.amateur.space
Date: 1995-02-26 14:26:37 UTC
From: Gary_Rogers@DGC.ceo.dg.COM
Message-ID: <9502261426.AC00021@rtp41.rtp.dg.com>
Source record: 25796

Message:
Has anyone used the TM-255A yet? I'm particulary interested in if
would work well in satellite operations. The built in 1200/9600 baud
packet port seems a plus. I have yet to see one "up close and
personal" or read a fact sheet on it. Does it do CW? Are there
provisions for keying external devices? Does it have an adjustable
low power setting? Any input and/or opinions welcome. Thanks.

Gary WA4YMZ FM05pp Apex, NC Gary Rogers@DGC.CEO.DG.COM
"Not speaking for Data General Corporation", etc.

398. New Bbs

Newsgroup: rec.radio.amateur.space
Date: 1995-02-26 19:19:24 UTC
From: Chris.Ogg@f418.n109.z1.fidonet.org
Message-ID: <6c6_9502262002@blkcat.fidonet.org>
Source record: 25797

```
a new bbs is here check it out 301-294-2422
---------
Fidonet: Chris Ogg 1:109/418
Internet: Chris.Ogg@f418.n109.z1.fidonet.org
```

399. Re: Question abt. Kepler elements

Newsgroup: rec.radio.amateur.space
Date: 1995-02-27 04:03:28 UTC
From: jimn2ete@aol.com
Message-ID: <3iriug$35k@newsbf02.news.aol.com>
Source record: 25798

I do mine once a week, but you can keep the ones you have for no more than one month. At least that is what I have been told.

Jim N2ETE

400. ?Sat calculation

Newsgroup: rec.radio.amateur.space
Date: 1995-02-27 07:03:03 UTC
From: koellner@wall.scn.de
Message-ID: <3irtf7$nim@marina.scn.de>
Source record: 25799

Hello,

I am working for a rotor interface running on a 80C535 system. The language used is C. There are only standard-4-byte floats available.

Until now i have routines to calculate sat and moon. they are accurate for slow flying objects (moon, ao-13 eg) but not for fast flying (uosat, noaa).

has ony // sri. has anyone routines to caclulate sat positions from keplerian dats using standard floats?

thansk a lot

(keying errors not corrected, i am not used to work with VI editor)

guenter, dl4mea

koellner@scn.de
dl4mea@db0kcp.#bay.deu.eu
guenter.koellner@p51.mch4.siemens.scn.dbp.de

401. Re: WANTED FREQ SPECTRUM DIAGRAM

Newsgroup: rec.radio.amateur.space
Date: 1995-02-27 12:30:40 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <3isglg$4gh@kocrsv08.delcoelect.com>
Source record: 25800

dcb@tauon.ph.unimelb.edu.au (David Bell) writes:
> I am looking for a nice frequency spectrum diagram
> with wavelength /frequency scale and broken up into
> the band splitup ie what each band area is used for.

There is a wall chart in a nearby conference room labeled
"United States Frequency Allocations -- The Radio Spectrum"
It shows usage from 3 kHz to 300 GHz. It's apparently put
out by the U.S. Department of Commerce.

At the bottom left, in small print, is this notice:
"For sale by the Superintendent of Documents, U.S. Government
Printing Office, Washington, D.C. 20402"
and at the bottom right it says:
"U.S. Government Printing Office 1994--366-677"

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson | Ignorance can be fixed,
(I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.

402. Sun flux figures from Boulder

Newsgroup: rec.radio.amateur.space
Date: 1995-02-27 15:13:04 UTC
From: ke4hw@aol.com
Message-ID: <3isq60$8f2@newsbf02.news.aol.com>
Source record: 25801

Does anyone have an address for Boulder sun spot info for radio propagation, same as being transmitted on HF 18 min. past the hour, or available as voice info on telephone. I'm looking for an internet source for this info.

73, George, KE4HW

403. Two-Line Orbital Element Sets (TLE555)

Newsgroup: rec.radio.amateur.space
Date: 1995-02-28 01:37:41 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.793935461@eel>
Source record: 25802

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #555 -
Alouette 1
1 00424U 62049A 95051.02300985 .00000038 00000-0 33925-4 0 817
2 00424 80.4620 40.4790 0022453 194.3502 165.7003 13.67833077616286
ATS 1
1 02608U 66110A 95045.63291947 -.00000123 00000-0 10000-3 0 9221
2 02608 14.6246 357.9410 0008770 52.5523 307.5822 1.00313762 19969
ATS 3
1 03029U 67111A 95053.41982494 -.00000122 00000-0 10000-3 0 3335
2 03029 14.7838 4.8930 0009500 273.1334 279.6397 1.00272785 99944
Cosmos 398
1 04966U 71016A 95054.73438636 .00156241 85730-5 21557-3 0 7519
2 04966 51.4181 14.8788 0754319 66.5422 301.2711 14.53569937808459
Starlette
1 07646U 75010A 95051.21695727 -.00000057 00000-0 69884-4 0 8659
2 07646 49.8291 254.5972 0205787 75.5186 286.8537 13.82188690 12168
LAGEOS
1 08820U 76039A 95051.45941975 .00000029 00000-0 10000-3 0 858
2 08820 109.8225 220.6148 0043947 231.8521 127.8095 6.38664319183009
ETS-2
1 09852U 77014A 95048.35541909 -.00000364 00000-0 10000-3 0 163
2 09852 12.5597 38.5900 0001681 48.4626 311.6233 1.00012402 12783
GOES 2
1 10061U 77048A 95055.25174981 .00000098 00000-0 10000-3 0 4935
2 10061 11.6258 42.6992 0011810 101.1648 307.3367 1.00145457 9642
IUE
1 10637U 78012A 95050.09782421 -.00000233 00000-0 00000+0 0 1098
2 10637 34.9960 90.8874 1320073 43.1722 359.9342 1.00260944 15086
GPS BI-01
1 10684U 78020A 95046.08041611 .00000002 00000-0 10000-3 0 3395
2 10684 64.7745 38.3206 0061691 163.4137 196.8166 1.98069529109741
```

```
GPS BI-02
1 10893U 78047A 95033.87671639 -.00000012 00000-0 10000-3 0 1477
2 10893 63.4059 277.0422 0219477 14.0573 346.6560 2.01627601122723
GOES 3
1 10953U 78062A 95055.22589370 .00000045 00000-0 10000-3 0 4584
2 10953 10.5824 45.4890 0002879 132.1131 241.4211 1.00274636 14254
SeaSat 1
1 10967U 78064A 95051.74566776 .00000010 00000-0 47800-4 0 3769
2 10967 108.0026 256.5621 0002677 253.8416 106.2435 14.38014027872097
GPS BI-03
1 11054U 78093A 95054.91924529 .00000048 00000-0 10000-3 0 2698
2 11054 63.0801 274.3159 0044547 177.9274 182.1173 1.93505335119382
Nimbus 7
1 11080U 78098A 95051.68878192 -.00000039 00000-0 23977-5 0 4802
2 11080 99.0221 290.5790 0008797 180.2600 179.8552 13.83715722824443
GPS BI-04
1 11141U 78112A 95051.16532585 .00000003 00000-0 00000+0 0 9613
2 11141 64.7743 39.8095 0048532 25.9651 334.2443 1.92894781 8566
GPS BI-05
1 11690U 80011A 95049.22360591 .00000001 00000-0 10000-3 0 8851
2 11690 65.1195 39.8817 0147354 195.5176 164.0359 2.00561683124477
GPS BI-06
1 11783U 80032A 95052.18818576 .00000044 00000-0 10000-3 0 586
2 11783 62.5176 269.8620 0216252 29.3610 331.8995 2.03456796109023
GOES 5
1 12472U 81049A 95051.94914326 -.00000264 00000-0 10000-3 0 8385
2 12472 7.3064 55.3429 0005102 16.9847 343.1677 1.00316370 8267
Cosmos 1383
1 13301U 82066A 95051.25857742 .00000029 00000-0 15800-4 0 3814
2 13301 82.9329 127.8933 0028390 128.1557 232.2153 13.68062993631349
LandSat 4
1 13367U 82072A 95054.66307860 -.00000001 00000-0 96995-5 0 6125
2 13367 98.1485 113.1861 0006646 184.8324 175.2810 14.57152419670680
IRAS
1 13777U 83004A 95054.55136455 -.00000111 00000-0 -46226-4 0 8805
2 13777 98.9687 245.2348 0013258 344.1631 15.9111 13.99227746286298
Cosmos 1447
1 13916U 83021A 95054.80725907 .00000037 00000-0 23273-4 0 4812
2 13916 82.9445 185.5909 0039426 48.9061 311.5493 13.74321761597892
TDRS 1
1 13969U 83026B 95052.75020824 -.00000201 00000-0 10000-3 0 3976
2 13969 8.1666 48.5405 0000706 45.3046 52.2704 1.00265018 16558
GOES 6
1 14050U 83041A 95052.31589480 .00000053 00000-0 10000-3 0 3597
2 14050 6.1241 58.4751 0003447 327.2682 106.6398 1.00293388101362
OSCAR 10
1 14129U 83058B 95049.74423524 -.00000256 00000-0 10000-3 0 3407
2 14129 26.5642 282.2218 6017196 253.4768 35.4795 2.05881639 59890
LandSat 5
1 14780U 84021A 95053.80674505 .00000145 00000-0 42008-4 0 2038
```

```
2 14780 98.1248 113.0979 0004438 192.0966 168.0128 14.57152072583978
UoSat 2
1 14781U 84021B 95051.05481353 .00000200 00000-0 41702-4 0 7768
2 14781 97.7809 59.1025 0011198 191.6804 168.4140 14.69306688586705
GPS BI-09
1 15039U 84059A 95053.23737792 -.00000003 00000-0 10000-3 0 2740
2 15039 64.4492 34.1532 0081639 17.0068 343.2614 1.92302250 78187
Cosmos 1574
1 15055U 84062A 95055.03128406 .00000039 00000-0 25391-4 0 6829
2 15055 82.9521 239.3049 0026085 234.7905 125.0806 13.73617922535204
GPS BI-10
1 15271U 84097A 95050.91646577 .00000041 00000-0 00000+0 0 9183
2 15271 62.2225 270.1457 0153832 352.9085 6.9334 2.00593399 75576
Cosmos 1602
1 15331U 84105A 95051.42565604 .00000433 00000-0 48177-4 0 3695
2 15331 82.5326 205.2490 0021803 100.7114 259.6543 14.84563241561342
NOAA 9
1 15427U 84123A 95054.78708626 .00000049 00000-0 49804-4 0 1505
2 15427 99.0171 112.7590 0014133 227.9149 132.0816 14.13685896525801
GPS BI-11
1 16129U 85093A 95053.74476039 .00000003 00000-0 10000-3 0 6372
2 16129 65.1184 37.0852 0152914 87.7430 274.0077 1.89368084 12829
Mir
1 16609U 86017A 95054.20272938 .00006949 00000-0 98457-4 0 9489
2 16609 51.6449 8.9256 0004600 148.7758 211.3506 15.57718057515097
SPOT 1
1 16613U 86019A 95054.74202129 .00000090 00000-0 62356-4 0 7848
2 16613 98.6601 128.5644 0000930 48.8842 311.2414 14.20051296152267
Cosmos 1766
1 16881U 86055A 95051.64234342 .00000294 00000-0 32666-4 0 2845
2 16881 82.5171 262.9522 0020327 123.1311 237.1854 14.83583619462295
EGP
1 16908U 86061A 95055.18256736 -.00000083 00000-0 10000-3 0 9780
2 16908 50.0113 29.6641 0011417 233.2247 126.7535 12.44411547 56767
NOAA 10
1 16969U 86073A 95054.89550908 -.00000025 00000-0 74085-5 0 619
2 16969 98.5086 61.2091 0012344 318.6796 41.3451 14.24921851438349
MOS-1
1 17527U 87018A 95052.59867233 -.00000157 00000-0 -84286-4 0 1786
2 17527 99.0017 120.6764 0000365 2.3884 357.7275 13.94917454407717
GOES 7
1 17561U 87022A 95052.32558472 .00000078 00000-0 10000-3 0 2617
2 17561 2.0880 73.5235 0002476 318.3422 100.1310 1.00258608 12477
Kvant-1
1 17845U 87030A 95055.03674640 -.00014238 00000-0 -18199-3 0 1608
2 17845 51.6486 4.7544 0004233 156.8666 203.3587 15.57707642515363
DMSP B5D2-3
1 18123U 87053A 95054.88724880 -.00000016 00000-0 14012-4 0 8524
2 18123 98.7813 247.7956 0013885 178.5507 181.5709 14.15390922396691
RS-10/11
```

```
1 18129U 87054A 95054.24152110 .00000050 00000-0 38711-4 0 231
2 18129 82.9270 143.2954 0013248 50.3553 309.8769 13.72348704384341
Meteor 2-16
1 18312U 87068A 95050.90600223 .00000034 00000-0 17065-4 0 3753
2 18312 82.5532 15.3871 0012928 129.8409 230.3876 13.84049526379327
Meteor 2-17
1 18820U 88005A 95054.54952491 .00000053 00000-0 34294-4 0 5486
2 18820 82.5380 68.6482 0015565 189.9839 170.1011 13.84732607357142
DMSP B5D2-4
1 18822U 88006A 95055.05112789 .00000018 00000-0 26228-4 0 8813
2 18822 98.4153 264.2434 0005963 332.3260 27.7601 14.23142816366426
Glonass 34
1 19163U 88043A 95053.06601915 .00000012 00000-0 10000-3 0 9709
2 19163 65.0867 102.0447 0007541 148.8704 211.2423 2.13102526 51981
Glonass 36
1 19165U 88043C 95050.30660057 .00000028 00000-0 10000-3 0 3674
2 19165 65.0642 102.1048 0002658 181.5131 178.5780 2.13102008 52543
METEOSAT 3
1 19215U 88051A 95054.12507015 -.00000285 00000-0 10000-3 0 872
2 19215 2.2652 70.6797 0000969 117.1567 298.7979 1.00293608 12435
AO-13
1 19216U 88051B 95049.28904588 .00000198 00000-0 10000-4 0 165
2 19216 57.6335 203.1417 7263730 2.4585 359.5096 2.09718773 19674
OKEAN 1
1 19274U 88056A 95052.37390937 .00000344 00000-0 40113-4 0 9840
2 19274 82.5124 2.5148 0017962 272.9037 87.0121 14.82294083357995
Meteor 3-2
1 19336U 88064A 95055.23795707 .00000051 00000-0 10000-3 0 3738
2 19336 82.5411 145.3409 0018076 356.2757 3.8197 13.16971576316439
Glonass 39
1 19503U 88085C 95055.02662533 -.00000070 00000-0 10000-3 0 2634
2 19503 65.7129 340.8587 0007276 175.2727 184.7511 2.13101928 50131
NOAA 11
1 19531U 88089A 95054.86937056 .00000023 00000-0 37637-4 0 9680
2 19531 99.1891 55.1915 0011949 142.2461 217.9548 14.13039252330684
TDRS 2
1 19548U 88091B 95051.45736839 .00000088 00000-0 00000+0 0 950
2 19548 1.5022 75.7457 0001355 259.5499 167.8749 1.00268430 10693
Glonass 40
1 19749U 89001A 95053.18844121 .00000012 00000-0 10000-3 0 4777
2 19749 65.0420 101.6094 0005948 270.4488 89.5877 2.13101522 47607
Glonass 41
1 19750U 89001B 95055.12125445 .00000019 00000-0 10000-3 0 3862
2 19750 65.0550 101.5895 0004937 227.9782 132.0571 2.13101521 47662
GPS BII-01
1 19802U 89013A 95053.51429924 -.00000021 00000-0 00000+0 0 263
2 19802 55.1628 129.7759 0028585 181.9840 178.0532 2.00569656 44078
Akebono
1 19822U 89016A 95052.39683610 .00005883 00000-0 34354-3 0 4398
2 19822 75.0806 41.2834 3787758 107.1370 297.1386 7.83279647128736
```

```
Meteor 2-18
1 19851U 89018A 95051.19920440 .00000056 00000-0 36508-4 0 3732
2 19851 82.5231 306.1859 0012581 250.8652 109.1150 13.84384341302005
MOP-1
1 19876U 89020B 95053.41846442 -.00000080 00000-0 10000-3 0 1002
2 19876 0.9927 71.3726 0000737 248.3402 335.1068 1.00276061 1860
TDRS 3
1 19883U 89021B 95055.23793024 -.00000287 00000-0 10000-3 0 479
2 19883 0.0482 295.7364 0003607 24.5517 238.0162 1.00270227194312
GPS BII-02
1 20061U 89044A 95052.85748819 -.00000043 00000-0 10000-3 0 347
2 20061 54.5040 306.2050 0138669 212.9400 146.2381 2.00564450 41800
Nadezhda 1
1 20103U 89050A 95054.85281983 .00000051 00000-0 38991-4 0 3023
2 20103 82.9598 102.1860 0036838 310.8256 48.9705 13.73850371282867
GPS BII-03
1 20185U 89064A 95054.19379450 -.00000027 00000-0 10000-3 0 584
2 20185 54.9810 130.3237 0059221 312.7824 46.7447 2.00552741 40406
GMS 4
1 20217U 89070A 95054.60418090 -.00000302 00000-0 10000-3 0 1562
2 20217 0.7944 75.5443 0000276 348.1216 87.0628 1.00267256 20615
INTERCOSMOS 24
1 20261U 89080A 95051.51591182 .00000173 00000-0 44357-4 0 3888
2 20261 82.5870 218.9773 1243330 59.1282 312.6154 12.47224466245734
GPS BII-04
1 20302U 89085A 95053.22516140 .00000058 00000-0 00000+0 0 353
2 20302 53.5497 246.2233 0009960 203.5299 156.4105 2.00553501 39182
Meteor 3-3
1 20305U 89086A 95054.58576343 .00000044 00000-0 10000-3 0 2619
2 20305 82.5550 96.1963 0007787 54.0011 306.1898 13.04425140255675
COBE
1 20322U 89089A 95052.58590393 -.00000125 00000-0 -52032-4 0 982
2 20322 98.9658 70.3210 0008428 300.3020 59.7308 14.03448542269373
Kvant-2
1 20335U 89093A 95055.03674640 -.00014238 00000-0 -18199-3 0 1865
2 20335 51.6486 4.7544 0004233 156.8666 203.3587 15.57707642515282
GPS BII-05
1 20361U 89097A 95051.24655913 -.00000002 00000-0 00000+0 0 8979
2 20361 55.6870 72.4294 0075709 119.4330 241.3730 2.00561088 28620
SPOT 2
1 20436U 90005A 95053.73850331 -.00000044 00000-0 00000+0 0 9012
2 20436 98.7472 129.2344 0000426 124.0148 236.1069 14.20019919263656
UO-14
1 20437U 90005B 95051.78284869 .00000032 00000-0 29161-4 0 766
2 20437 98.5701 138.0030 0010572 177.3416 182.7823 14.29875641265110
UO-15
1 20438U 90005C 95051.69594516 .00000016 00000-0 23266-4 0 8737
2 20438 98.5710 136.5917 0009509 181.7169 178.3989 14.29198412265006
PACSAT
1 20439U 90005D 95051.26923344 .00000047 00000-0 35055-4 0 8740
```

```
2 20439 98.5861 139.0213 0010733 180.0512 180.0666 14.29929392265052
DO-17
1 20440U 90005E 95052.24877550 .00000036 00000-0 30911-4 0 8742
2 20440 98.5867 140.3996 0010906 175.8210 184.3057 14.30070345265218
WO-18
1 20441U 90005F 95051.24919697 -.00000000 00000-0 16721-4 0 8780
2 20441 98.5867 139.3971 0011479 179.6607 180.4583 14.30041832265072
LO-19
1 20442U 90005G 95052.18983901 .00000024 00000-0 25998-4 0 8741
2 20442 98.5820 140.6432 0011759 176.4324 183.6941 14.30142836265227
GPS BII-06
1 20452U 90008A 95051.14772665 .00000043 00000-0 00000+0 0 74
2 20452 54.0243 186.4341 0059966 80.9317 279.7310 2.00566720 37123
MOS-1B
1 20478U 90013A 95054.22251611 .00000091 00000-0 10000-3 0 7450
2 20478 99.0084 126.5082 0001435 96.7466 263.3859 13.94915227177642
DEBUT
1 20479U 90013B 95051.85331290 -.00000042 00000-0 -28439-4 0 8735
2 20479 99.0668 162.2467 0540717 136.0973 228.4434 12.83329119236033
FO-20
1 20480U 90013C 95052.24046705 -.00000033 00000-0 -80046-5 0 7715
2 20480 99.0676 162.4233 0540725 135.5840 228.9949 12.83229469236070
MOS-1B R/B
1 20491U 90013D 95051.46845510 -.00000869 00000-0 -15731-2 0 1055
2 20491 99.0273 213.0163 0469522 345.2795 13.5024 13.02975452238991
LACE
1 20496U 90015A 95054.39213442 .00002644 00000-0 86764-4 0 5051
2 20496 43.1026 59.3174 0009564 195.5418 164.5147 15.34126526280097
Nadezhda 2
1 20508U 90017A 95054.86001539 .00000045 00000-0 32763-4 0 3030
2 20508 82.9496 236.7485 0043169 260.4322 99.1957 13.73489782250090
OKEAN 2
1 20510U 90018A 95052.18777784 .00000337 00000-0 42863-4 0 3844
2 20510 82.5248 313.5888 0020859 92.7507 267.6093 14.78452287268455
INTELSAT-6
1 20523U 90021A 95046.24267361 -.00000245 00000-0 10000-3 0 4923
2 20523 0.0307 59.1086 0000619 210.1210 288.3792 1.00269743 11009
GPS BII-07
1 20533U 90025A 95054.04723403 -.00000045 00000-0 00000+0 0 175
2 20533 54.8629 306.7402 0047454 78.1492 282.4293 2.00559215 35957
PegSat
1 20546U 90028A 95053.53851728 .00007717 00000-0 16564-3 0 7587
2 20546 94.1126 79.4307 0071380 58.4287 302.3913 15.42005154270800
HST
1 20580U 90037B 95055.22521660 .00000635 00000-0 47891-4 0 5962
2 20580 28.4688 56.7891 0005699 199.0604 160.9769 14.90807897 67034
MACSAT 2
1 20608U 90043B 95050.84800363 .00000172 00000-0 27310-4 0 744
2 20608 89.9288 177.4742 0104940 307.0677 52.0979 14.64798740255534
Glonass 44
```

```
1 20619U 90045A 95048.86451189 -.00000040 00000-0 00000+0 0 1664
2 20619 65.3321 340.5502 0028284 210.9982 148.8843 2.13102569 36963
Glonass 45
1 20620U 90045B 95048.04480155 -.00000041 00000-0 00000+0 0 1763
2 20620 65.3238 340.5816 0007543 30.2398 329.8235 2.13102467 36984
Glonass 46
1 20621U 90045C 95050.92636793 -.00000044 00000-0 10000-3 0 7769
2 20621 65.3243 340.5266 0012022 186.0810 173.9305 2.13101534 37045
Kristall
1 20635U 90048A 95055.03674640 -.00014238 00000-0 -18199-3 0 9790
2 20635 51.6486 4.7544 0004233 156.8666 203.3587 15.57707642515252
ROSAT
1 20638U 90049A 95052.11282327 .00000231 00000-0 34201-4 0 3925
2 20638 52.9926 309.5496 0014493 103.8041 256.4547 15.07087460259612
Meteor 2-19
1 20670U 90057A 95051.02703452 .00000005 00000-0 -91289-5 0 8741
2 20670 82.5437 11.6146 0015497 165.5571 194.6024 13.84170403234906
CRRES
1 20712U 90065A 95055.22632361 .00000087 00000-0 19336-3 0 510
2 20712 17.9644 84.1732 7186625 20.2130 357.7960 2.35370085 31827
GPS BII-08
1 20724U 90068A 95043.89668611 -.00000014 00000-0 10000-3 0 8825
2 20724 54.7912 128.4032 0116233 169.4224 190.8533 2.00560427 31615
Feng Yun1-2
1 20788U 90081A 95055.22729261 -.00000027 00000-0 10000-4 0 2390
2 20788 98.8192 72.0993 0015508 29.9852 330.3073 14.01363626229013
Meteor 2-20
1 20826U 90086A 95054.17483799 .00000188 00000-0 15652-3 0 8844
2 20826 82.5271 306.2821 0015406 60.7377 299.5317 13.83604241222467
GPS BII-09
1 20830U 90088A 95053.42001071 -.00000002 00000-0 00000+0 0 8918
2 20830 55.6284 70.3314 0064676 102.2201 258.5514 2.00568371 32445
GPS BIIA-10
1 20959U 90103A 95054.32058474 -.00000027 00000-0 00000+0 0 8194
2 20959 55.0145 129.9091 0094461 243.0660 116.0186 2.00558138 31057
DMSP B5D2-5
1 20978U 90105A 95054.55263229 .00000172 00000-0 76766-4 0 939
2 20978 98.6536 123.1128 0079557 143.8317 216.8285 14.32516579221047
Glonass 47
1 21006U 90110A 95055.17673319 .00000020 00000-0 00000+0 0 7394
2 21006 65.0179 100.8860 0059360 187.6885 172.3062 2.13102704 32802
Glonass 48
1 21007U 90110B 95053.48734114 .00000013 00000-0 00000+0 0 8694
2 21007 65.0486 100.9914 0034736 177.8206 182.2283 2.13101062 32758
Glonass 49
1 21008U 90110C 95055.25394854 .00000020 00000-0 00000+0 0 415
2 21008 65.0207 100.8987 0011032 274.0581 85.8869 2.13099074 32789
AO-21
1 21087U 91006A 95055.18606429 .00000094 00000-0 82657-4 0 5692
2 21087 82.9453 316.2170 0036194 99.8313 260.6932 13.74551220204203
```

```
RS-12/13
1 21089U 91007A 95054.82614381 .00000028 00000-0 13642-4 0 7788
2 21089 82.9215 184.8298 0030075 125.4781 234.9187 13.74054216203206
MOP-2
1 21140U 91015B 95054.09056713 -.00000032 00000-0 00000+0 0 9005
2 21140 0.1430 126.9060 0004561 295.4929 121.6577 1.00270895 16792
Nadezhda 3
1 21152U 91019A 95054.75947663 .00000081 00000-0 70213-4 0 987
2 21152 82.9280 140.9007 0040807 235.0756 124.6561 13.73515076197932
Glonass 50
1 21216U 91025A 95052.37924587 -.00000052 00000-0 00000+0 0 3840
2 21216 65.0621 340.1261 0011078 203.3572 156.6199 2.13103052 30254
Glonass 51
1 21217U 91025B 95051.97811731 -.00000050 00000-0 00000+0 0 7967
2 21217 65.0680 340.1543 0011076 239.3410 120.5546 2.13101522 30235
Glonass 52
1 21218U 91025C 95053.02935641 -.00000057 00000-0 10000-3 0 2735
2 21218 65.0468 340.0882 0008471 301.8059 58.1298 2.13102655 30265
GRO
1 21225U 91027B 95052.00907740 .00003519 00000-0 73690-4 0 1954
2 21225 28.4638 303.3473 0003106 153.1228 206.9667 15.42141881 95375
Meteor 3-4
1 21232U 91030A 95054.88565542 .00000050 00000-0 10000-3 0 7839
2 21232 82.5468 351.6491 0011769 280.5237 79.4548 13.16466277184479
NOAA 12
1 21263U 91032A 95054.80261186 .00000070 00000-0 50563-4 0 3864
2 21263 98.5937 81.7255 0012109 224.9963 135.0235 14.22494505196273
OKEAN 3
1 21397U 91039A 95051.49993352 .00000376 00000-0 50791-4 0 845
2 21397 82.5225 226.9218 0022076 165.8681 194.3115 14.76328062200140
GPS BIIA-11
1 21552U 91047A 95054.09507333 .00000001 00000-0 10000-6 0 8288
2 21552 55.9333 67.9599 0063997 241.6539 117.7432 2.00572630 26642
ERS-1
1 21574U 91050A 95053.75805042 .00000058 00000-0 34946-4 0 845
2 21574 98.4939 129.6730 0000894 101.8346 258.2997 14.35947900188668
UO-22
1 21575U 91050B 95051.72418395 .00000029 00000-0 24171-4 0 5800
2 21575 98.4089 125.8638 0006933 275.4171 84.6224 14.36960112188771
ORBCOMM-X
1 21576U 91050C 95051.69409775 .00000074 00000-0 40094-4 0 6756
2 21576 98.4065 124.3914 0003343 290.5250 69.5552 14.36364422188683
TUBSAT-A
1 21577U 91050D 95051.69857822 .00000025 00000-0 23232-4 0 5746
2 21577 98.4072 124.8982 0005830 279.3958 80.6555 14.36472472188711
SARA
1 21578U 91050E 95052.19534770 .00000297 00000-0 11042-3 0 7745
2 21578 98.4241 130.0764 0004136 272.8834 87.1882 14.38947185189015
TDRS 4
1 21639U 91054B 95051.45458110 .00000075 00000-0 00000+0 0 8640
```

```
2 21639 0.0651 98.0606 0002858 234.1953 167.0107 1.00275297107063
Meteor 3-5
1 21655U 91056A 95055.08198896 .00000051 00000-0 10000-3 0 7812
2 21655 82.5572 298.8445 0012162 292.8061 67.1780 13.16838092169613
UARS
1 21701U 91063B 95055.16835298 .00000045 00000-0 25025-4 0 6529
2 21701 56.9825 229.4346 0005539 104.4385 255.7256 14.96337674188655
DMSP B5D2-6
1 21798U 91082A 95054.88571106 .00000029 00000-0 39142-4 0 7437
2 21798 98.9619 66.3668 0012953 141.8907 218.3172 14.13866598167195
Glonass 53
1 21853U 92005A 95051.36433161 .00000020 00000-0 10000-3 0 9819
2 21853 64.9617 100.6972 0008208 175.1596 184.9281 2.13102317 23830
Glonass 54
1 21854U 92005B 95053.53204979 .00000013 00000-0 00000+0 0 957
2 21854 64.9700 100.6259 0015769 10.5017 349.6006 2.13103741 23862
Glonass 55
1 21855U 92005C 95054.53358999 .00000016 00000-0 00000+0 0 909
2 21855 64.9712 100.5988 0008047 214.8777 145.1391 2.13101974 23870
JERS-1
1 21867U 92007A 95054.73708774 .00000862 00000-0 76704-4 0 5178
2 21867 97.7281 132.6908 0001146 74.7401 285.3948 14.98629773166057
GPS BIIA-12
1 21890U 92009A 95052.56067450 .00000058 00000-0 00000+0 0 6252
2 21890 53.9968 246.4899 0056531 175.3671 184.6963 2.00551528 21989
GPS BIIA-13
1 21930U 92019A 95052.26958953 -.00000056 00000-0 00000+0 0 6048
2 21930 55.6840 7.8854 0041867 175.6279 184.4082 2.00565859 20908
EUVE
1 21987U 92031A 95052.97911418 .00001726 00000-0 70572-4 0 3853
2 21987 28.4296 176.8361 0009674 184.9709 175.0795 15.19078286150418
SAMPEX
1 22012U 92038A 95053.04816907 .00000464 00000-0 38704-4 0 6083
2 22012 81.6730 267.2259 0117564 304.2801 54.7322 14.91289920143511
GPS BIIA-14
1 22014U 92039A 95054.30502966 .00000014 00000-0 00000+0 0 5086
2 22014 54.8520 187.7182 0138009 314.0953 44.7236 2.00551017 12780
Glonass 56
1 22056U 92047A 95053.49498787 -.00000061 00000-0 00000+0 0 38
2 22056 64.9032 340.2252 0005528 289.2188 70.7429 2.13103472 19942
Glonass 57
1 22057U 92047B 95052.38209845 -.00000053 00000-0 00000+0 0 54
2 22057 64.9148 340.2936 0009300 322.7843 37.1764 2.13102758 19892
Glonass 58
1 22058U 92047C 95048.09909746 -.00000042 00000-0 00000+0 0 9951
2 22058 64.9076 340.4447 0010099 269.0643 90.8419 2.13102890 19856
TOPEX
1 22076U 92052A 95055.22468150 -.00000038 00000-0 10000-3 0 8543
2 22076 66.0382 127.5026 0007485 266.4616 93.5541 12.80930536118770
KO-23
```

```
1 22077U 92052B 95051.65382773 -.00000037 00000-0 10000-3 0 4728
2 22077 66.0759 119.7482 0012269 228.8031 131.1923 12.86290070118745
S80/T
1 22078U 92052C 95051.21856449 -.00000037 00000-0 10000-3 0 4693
2 22078 66.0786 119.6854 0013434 221.2604 138.7395 12.86574005118767
GPS BIIA-15
1 22108U 92058A 95050.77742335 .00000051 00000-0 10000-3 0 5327
2 22108 54.2280 247.3100 0112793 144.8097 215.9717 2.00563721 17892
FREJA
1 22161U 92064A 95052.42534808 .00000179 00000-0 11971-3 0 4891
2 22161 62.9934 21.8937 0801670 336.8309 19.8370 13.21817737114746
LAGEOS II
1 22195U 92070B 95054.13315507 -.00000009 00000-0 10000-3 0 3814
2 22195 52.6684 295.0940 0138475 226.7476 132.1456 6.47293568 55195
GPS BIIA-16
1 22231U 92079A 95051.45883537 .00000046 00000-0 10000-3 0 5068
2 22231 54.6660 189.0121 0032910 291.0570 68.5545 2.00568700 16480
GPS BIIA-17
1 22275U 92089A 95051.10615711 .00000044 00000-0 00000+0 0 5339
2 22275 54.6348 186.5749 0050814 252.9086 106.5108 2.00553480 15880
TDRS 5
1 22314U 93003B 95047.38667245 -.00000284 00000-0 10000-3 0 4885
2 22314 1.5834 72.2960 0000962 221.5505 305.1660 1.00260896 7705
GPS BIIA-18
1 22446U 93007A 95054.66680965 -.00000046 00000-0 00000+0 0 5093
2 22446 54.5105 306.9838 0094844 358.7074 1.3472 2.00555549 14940
Glonass 59
1 22512U 93010A 95051.36562915 .00000020 00000-0 00000+0 0 6833
2 22512 64.9858 100.5553 0008760 185.2144 174.8465 2.13102005 15408
Glonass 60
1 22513U 93010B 95052.24373416 .00000015 00000-0 00000+0 0 7181
2 22513 64.9744 100.5446 0007024 208.1013 151.9330 2.13102504 15610
Glonass 61
1 22514U 93010C 95052.53737734 .00000014 00000-0 00000+0 0 7191
2 22514 65.0025 100.5087 0010739 195.0216 165.0213 2.13103000 15621
ASTRO-D
1 22521U 93011A 95050.77355153 .00001557 00000-0 10587-3 0 3830
2 22521 31.1017 265.4365 0056775 54.8374 305.7565 15.01949197109703
UFO F1
1 22563U 93015A 95047.54444566 -.00000007 00000-0 10000-3 0 3917
2 22563 26.2157 296.1661 0005988 325.0944 167.6885 0.99247601 11260
GPS BIIA-19
1 22581U 93017A 95051.31918868 -.00000055 00000-0 00000+0 0 4043
2 22581 55.1735 7.5496 0054466 33.0258 327.3080 2.00555063 13938
ARSENE
1 22654U 93031B 95042.56342009 -.00000118 00000-0 00000+0 0 3055
2 22654 2.3414 88.9055 2904881 203.5882 140.0535 1.42203306 4609
GPS BIIA-20
1 22657U 93032A 95053.94846296 -.00000066 00000-0 00000+0 0 4413
2 22657 55.2293 7.2750 0070034 214.4795 145.0460 2.00572559 9315
```

```
RADCAL
1 22698U 93041A 95051.22206806 .00000089 00000-0 32865-4 0 3809
2 22698 89.5443 296.6121 0093182 98.6339 262.5399 14.21335954 85826
GPS BIIA-21
1 22700U 93042A 95053.41519627 .00000059 00000-0 00000+0 0 3881
2 22700 54.3904 247.9791 0034703 338.4272 21.4733 2.00561645 12106
NOAA-13
1 22739U 93050A 95054.32847951 .00000056 00000-0 55964-4 0 7411
2 22739 98.9792 3.1164 0010185 129.8487 230.3594 14.10924209 79383
GPS BIIA-22
1 22779U 93054A 95053.99967150 -.00000046 00000-0 10000-3 0 4378
2 22779 54.6564 306.9954 0020697 247.1247 112.7561 2.00562311 10875
Meteor 2-21
1 22782U 93055A 95051.00925496 .00000036 00000-0 19883-4 0 3815
2 22782 82.5491 10.0484 0020675 252.0238 107.8655 13.83025855 74341
UFO F2
1 22787U 93056A 95052.79557425 -.00000068 00000-0 00000+0 0 3903
2 22787 4.6847 324.5904 0003391 337.3075 206.9089 1.00272872 5590
SPOT 3
1 22823U 93061A 95055.25887778 .00000025 00000-0 32453-4 0 4120
2 22823 98.7466 130.7502 0001125 69.5828 290.5469 14.20017876 73263
STELLA
1 22824U 93061B 95052.22845777 -.00000043 00000-0 37987-6 0 3699
2 22824 98.6257 129.9763 0005462 198.2992 161.7992 14.27100020 73193
AO-27
1 22825U 93061C 95052.25027600 .00000036 00000-0 32482-4 0 3717
2 22825 98.6303 130.2492 0007666 199.3078 160.7809 14.27652265 73228
IO-26
1 22826U 93061D 95054.24521395 .00000034 00000-0 31685-4 0 3700
2 22826 98.6294 132.2951 0008451 193.6503 166.4448 14.27759184 73515
HEATHSAT
1 22827U 93061E 95052.17354647 .00000032 00000-0 30786-4 0 4312
2 22827 98.6277 130.1961 0008827 186.1881 173.9195 14.27878138 73229
ITAMSAT
1 22828U 93061F 95052.72658672 .00000047 00000-0 36399-4 0 3488
2 22828 98.6256 130.8232 0009867 182.2990 177.8148 14.28088003 41397
PO-28
1 22829U 93061G 95052.17594782 .00000036 00000-0 32023-4 0 3634
2 22829 98.6272 130.3088 0009343 185.9617 174.1459 14.28064800 73237
KO-25
1 22830U 93061H 95052.23735694 -.00000013 00000-0 11868-4 0 3788
2 22830 98.5293 124.8731 0011463 162.1093 198.0491 14.28080700 73244
GPS BIIA-23
1 22877U 93068A 95052.05371157 -.00000005 00000-0 00000+0 0 2473
2 22877 55.3802 68.4820 0043311 294.0005 65.5703 2.00556491 9727
METEOSAT 6
1 22912U 93073B 95054.36691551 -.00000099 00000-0 00000+0 0 2516
2 22912 0.3462 252.2597 0001280 206.4098 176.5049 1.00272352 3046
HST Array
1 22920U 90037C 95051.35745974 .00008441 00000-0 65535-3 0 2850
```

```
2 22920 28.4647 53.7131 0002304 10.8691 349.1948 14.99667472 66748
Meteor 3-6
1 22969U 94003A 95054.97941129 .00000051 00000-0 10000-3 0 1485
2 22969 82.5583 238.5946 0016005 359.4203 0.6880 13.16728001 51980
TUBSAT-B
1 22970U 94003B 95051.53058497 .00000051 00000-0 10000-3 0 1371
2 22970 82.5570 240.9786 0016865 6.9960 353.1375 13.16824211 51531
ODERACS E
1 22994U 94006F 95055.19618868 .00651751 11115-4 27071-3 0 3189
2 22994 56.9694 243.4250 0004903 328.4776 31.5903 16.22568452 60255
ODERACS F
1 22995U 94006G 95055.26151840 .04176524 11659-4 18961-3 0 3769
2 22995 56.9588 241.0746 0006868 318.2679 41.8505 16.42858360 60291
BREMSAT
1 22998U 94006H 95043.56065712 .17295105 11911-4 80942-4 0 3585
2 22998 56.9722 297.2852 0005621 127.6632 233.8874 16.55784471 42255
GPS BIIA-24
1 23027U 94016A 95054.12364428 -.00000066 00000-0 00000+0 0 1700
2 23027 55.0456 9.3128 0063203 196.1693 163.3128 2.00549621 7070
Glonass 62
1 23043U 94021A 95054.49233169 -.00000068 00000-0 00000+0 0 1668
2 23043 64.7841 340.6228 0004701 199.9797 160.0233 2.13102990 6785
Glonass 63
1 23044U 94021B 95053.43656701 -.00000061 00000-0 00000+0 0 1521
2 23044 64.7790 340.6638 0027931 206.7431 153.1360 2.13103227 6762
Glonass 64
1 23045U 94021C 95054.08177810 -.00000065 00000-0 00000+0 0 1628
2 23045 64.7648 340.6573 0010615 30.4963 329.5852 2.13102387 6778
GOES 8
1 23051U 94022A 95053.51028212 -.00000265 00000-0 00000+0 0 2728
2 23051 0.2271 264.4132 0004076 216.4822 136.6161 1.00376826 2806
MSTI 2
1 23101U 94028A 95054.10059135 .00006489 00000-0 12084-3 0 1523
2 23101 97.1044 249.0063 0010211 306.0361 53.9886 15.49129221 44858
STRV-1A
1 23125U 94034B 95052.69585818 .00001554 00000-0 52668-3 0 1205
2 23125 7.3763 77.9901 7267882 26.5930 357.1638 2.29705734 4993
STRV-1B
1 23126U 94034C 95052.25495714 .00001414 00000-0 42420-3 0 1225
2 23126 7.3854 78.2262 7273363 26.0250 357.2273 2.29336721 5038
Nadezhda 4
1 23179U 94041A 95054.87758131 .00000052 00000-0 38035-4 0 804
2 23179 82.9449 231.8269 0037486 24.2859 336.0056 13.75664068 30898
Glonass 65
1 23203U 94050A 95052.34241361 .00000087 00000-0 00000+0 0 1113
2 23203 64.8117 220.3147 0007956 132.3989 227.6573 2.13101752 4132
Glonass 66
1 23204U 94050B 95052.10738287 .00000087 00000-0 00000+0 0 1206
2 23204 64.8070 220.3514 0015167 352.3083 7.6576 2.13101417 4127
Glonass 67
```

```
1 23205U 94050C 95051.99021670 .00000087 00000-0 00000+0 0 1080
2 23205 64.8094 220.3394 0001543 12.4596 347.5316 2.13101909 4120
DMSP B5D2-7
1 23233U 94057A 95054.71299707 .00000079 00000-0 66564-4 0 2410
2 23233 98.8946 113.7613 0013516 97.6560 262.6144 14.12579824 25139
Soyuz TM-20
1 23288U 94063A 95055.03674640 -.00014238 00000-0 -18199-3 0 1307
2 23288 51.6486 4.7544 0004233 156.8666 203.3587 15.57707642515271
OKEAN 1-7
1 23317U 94066A 95051.23220767 .00000338 00000-0 48064-4 0 441
2 23317 82.5466 143.2779 0024360 208.1373 151.8533 14.73900666 19391
ELEKTRO
1 23327U 94069A 95048.81914810 -.00000110 00000-0 00000+0 0 479
2 23327 1.0320 265.3190 0002507 151.4502 102.0177 1.00271884 1137
RESURS 1-3
1 23342U 94074A 95053.24131801 .00000165 00000-0 35896-4 0 594
2 23342 98.0309 114.8756 0001651 76.1362 284.0028 14.69703235 16152
Progress M-25
1 23348U 94075A 95045.99074294 .00010337 00000-0 14365-3 0 977
2 23348 51.6471 50.0804 0004478 126.1189 233.8969 15.57625375 14937
Glonass 68
1 23396U 94076A 95054.18008788 .00000014 00000-0 00000+0 0 560
2 23396 64.9093 100.5603 0030182 193.1955 166.7933 2.13102610 2012
Glonass 69
1 23397U 94076B 95052.47843005 .00000014 00000-0 00000+0 0 627
2 23397 64.8922 100.6338 0014095 319.5410 40.4269 2.13102608 1975
Glonass 70
1 23398U 94076C 95054.23875105 .00000014 00000-0 00000+0 0 619
2 23398 64.8874 100.5601 0004451 284.4608 75.5587 2.13102136 2023
RS-15
1 23439U 94085A 95051.51508665 -.00000039 00000-0 10000-3 0 306
2 23439 64.8153 83.6768 0167949 282.2438 75.9724 11.27525985 6367
NOAA 14
1 23455U 94089A 95054.82620545 -.00000015 00000-0 15903-4 0 781
2 23455 98.8904 358.3020 0009666 149.1822 210.9932 14.11491282 7819
ASTRID
1 23464U 95002B 95054.87035730 .00000069 00000-0 59779-4 0 134
2 23464 82.9274 187.0636 0040961 205.6730 154.2394 13.71148125 4192
FAISAT
1 23465U 95002C 95052.38185747 .00000013 00000-0 -19545-5 0 131
2 23465 82.9245 188.8854 0036216 211.8914 148.0033 13.71506849 3846
1995002D
1 23466U 95002D 95051.90574918 -.00000365 00000-0 -40722-3 0 243
2 23466 82.9181 189.1637 0030795 203.5360 156.4386 13.73468881 3803
1995003A
1 23467U 95003A 95053.37759019 .00000084 00000-0 00000+0 0 231
2 23467 5.1221 322.5455 0032705 181.5329 333.2104 1.00276229 316
1995003B
1 23468U 95003B 95053.74081163 .00002766 00000-0 10772-2 0 128
2 23468 26.9145 308.9863 6706674 195.5403 124.3219 3.01469134 757
```

```
1995004C
1 23471U 95004C 95054.24658494 .00027357 00000-0 16442-3 0 153
2 23471 51.6495 6.2061 0016845 22.6038 337.5702 15.77338929 3159
1995004D
1 23472U 95004D 95055.04968342 .00045448 00000-0 24612-3 0 170
2 23472 51.6496 1.8169 0018273 41.8170 318.4224 15.79355551 3281
1995004F
1 23474U 95004F 95055.13840869 .00796365 33908-3 10178-2 0 184
2 23474 51.6449 0.0961 0009378 177.1593 201.2702 16.06638691 3482
1995004G
1 23475U 95004G 95055.24555329 .02573759 11435-4 15811-3 0 107
2 23475 51.8902 0.2327 0193484 309.5980 191.4200 16.02857175 3322
1995005A
1 23477U 95005A 95055.03674640 -.00014238 00000-0 -18199-3 0 189
2 23477 51.6486 4.7544 0004233 156.8666 203.3587 15.57707642 1338
1995005B
1 23478U 95005B 95048.64948989 .28376917 12633-4 19181-3 0 127
2 23478 51.6010 36.2624 0008310 159.3273 202.4262 16.52926236 329
1995006A
1 23497U 95006A 95053.87437092 .00075223 79977-5 11536-3 0 114
2 23497 62.8042 337.5678 0109247 107.5329 253.7763 15.93802583 982
1995006B
1 23498U 95006B 95055.24004254 .00447809 81002-5 53680-3 0 164
2 23498 62.7959 332.1353 0092856 110.7816 250.3320 15.99600466 1204
1995006C
1 23499U 95006C 95049.28824527 .06335403 81180-5 52566-2 0 42
2 23499 62.8030 355.3853 0080054 110.1799 251.5533 16.06530291 259
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

404. Subscription

Newsgroup: rec.radio.amateur.space
Date: 1995-02-28 23:36:44 UTC
From: DELOUARD.GUY@Mail.FTMD.FRance-Telecom.FR
Message-ID: <9501287940.AA794025469@Mail.FTMD.France-Telecom.fr>
Source record: 25804

```
SUBSCRIBE ham-space f5jta delouard.guy@ftmd.france.telecom.fr
```

405. Re: Sun flux figures from Boulder

Newsgroup: rec.radio.amateur.space
Date: 1995-02-28 23:42:09 UTC
From: wroth@netcom.com
Message-ID: <wrothD4qHu9.6wo@netcom.com>
Source record: 25807

KE4HW (ke4hw@aol.com) wrote:
: Does anyone have an address for Boulder sun spot info for radio
: propagation, same as being transmitted on HF 18 min. past the hour, or
: available as voice info on telephone. I'm looking for an internet source
: for this info.

: 73, George, KE4HW

If you want to listen to wwv via phone, dial 303-499-7111.

Wayne
WA2N/5
--
wroth@netcom.com

406. L band to 70 MHz up/downconverters

Newsgroup: rec.radio.amateur.space
Date: 1995-03-01 18:31:11 UTC
From: blair@mksol.dseg.ti.com
Message-ID: <3j2ehf$1us@mksrv1.dseg.ti.com>
Source record: 25803

Can anyone recomend a domestic high volume source of L band
to 70 MHz up and downconverters? The same sort used in
tvro receivers.
Thanx
Art.

--
"Television is chewing gum for the eyes" - Frank Lloyd Wright
Dont forget to vote in news.announce.newgroups !
My views dont express those of my employer, etc., etc.

407. Amsat National Symposium 95

Newsgroup: rec.radio.amateur.space
Date: 1995-03-01 20:47:52 UTC
From: AD4RR@drayegon.america.com
Message-ID: <NEWTNews.10202.794095522.drayegon@drayegon.america.com>
Source record: 25666

Hello to who ever may read this. As most of you know we are 58 weeks from the launch of the new
Phase 3-D Sat. That should make this October meeting in Orlando Fl. One of the best .

What I need from everyone is help finding prizes to give away. These are the door prizes and such for the national meeting. I would like names and addresses for people to contact.Preferably
someone that is some what familar with AMSAT. But this need not be the case.

I will then follow up with a mailing to them of our organization. This will be on Official staionary
also It will be better laid out and spelled properly as I will use a word proccessor to do this stuff.

I will not pass on the names of the people who send me this info. unless they give me spicific permission
to do so.

Yes I have a list of the suppliers and such from QST CQ 73 mag's also Ham radio Trader and several publications that are involved.

I want to know and work with the main person at these places and also be able to get the clubs
all over the net involved.

Last yr I was the talkin station as some of you may remember. I met many great people from all over the world
lots of XE calls some G's and some D's this sat is international and is being built for all just as the net is.

Trust me when I say I don't get paid for this. It probably cost me tons of money each yr. Why do any of us do this. It is just a small way to give back to everyone that has helped us over the years.

Please help me get in touch with many of the people who can help with the prizes. and any of the local clubs would be
appreciated too.

73 for Now and if any one needs help getting on the birds let me know I will try to find some one in your area to help
or a book of we willdo it on here.

email me drayegon@america.com AD4RR@amsat.org

AD4RR D.Ray East

408. TRACKING

Newsgroup: rec.radio.amateur.space
Date: 1995-03-01 22:48:37 UTC
From: Gary_Rogers@DGC.ceo.dg.COM
Message-ID: <9503012248.AG00029@rtp41.rtp.dg.com>
Source record: 25805

Message:
I'm looking for a tracking program for another ham who doesn't have
I'net access. He's running an old 8088 (remember those?) and I don't
know what his video adapter is. CGA or EGA output, or even text,
would work. Any ideas? Thanks es 73,
Gary

Gary WA4YMZ WA4YMZ@AMSAT.ORG or Gary Rogers@DGC.CEO.DG.COM

409. Re: data over MIR audio link

Newsgroup: rec.radio.amateur.space
Date: 1995-03-02 03:22:52 UTC
From: rweigand@montana.win.net
Message-ID: <117@montana.win.net>
Source record: 25810

In article <3i5ru5$7mc@desiree.teleport.com>, William Roth (n7ryw@teleport.com) writes:
>>In article <3i1rqn$akc@wgserv.wg.estec.esa.nl>
>mario@wguser.wg.estec.esa.nl (Mario Ug
>>giano) writes:
>
>>The voice link I can get is full duplex (2 separate simultaneous
>channels)
>>with no push-to-talk, 300Hz to 3.5 KHz bandwidth, 1200 ohms impedance
>>(both input and output) and (I think) FM modulated on UHF.
>
>At 3.5 kHz, it won't work for 9600 bps, which uses 4.8 kHz in its
>standard form. A normal modem can be used, however, with a modification
>to remove the telephone 2-wire interface. You will probably need
>matching transformers to get the impedances close. 9600 modems are
>getting rather cheap, and they can set their speed to whatever your link
>can handle. You can use standard software to transfer files, such as
>Z-Modem.
>
>One possible problem is Doppler Shift on the link. This can cause a
>little static for voice, but can completey destroy a data link that needs
>and uses the full bandwidth. You may need to set your bit rate in the
>modem down to 2400 or even 1200 bps. Experimentation will tell!
>
It sounds to me like the problem described is very similar
to the situation that exists when trying to send data over
celphones. You might consider using some of the newer
modems designed to provide *reliable* data comms over
cellular links. Contact the major cellular carriers for
details.

Rich/AH6MC

410. Static on 10m/RS-10 downlink

Newsgroup: rec.radio.amateur.space
Date: 1995-03-02 05:47:38 UTC
From: wk02593@WorldLink.com
Message-ID: <9503020047.AA38913@worldlink.com>
Source record: 25809

Has anybody else noticed the static on 10m that seems to occur in the upper portion of the RS-10 passband? It seems to be worst from about 29.390 MHz up to 29.410 MHz. Is this a local phenomenon or a widespread one?

73, Walt KE3HP

411. Re: L band to 70 MHz up/downconverters

Newsgroup: rec.radio.amateur.space
Date: 1995-03-02 07:12:19 UTC
From: n7ryw@teleport.com
Message-ID: <3j3r3l$ji3@desiree.teleport.com>
Source record: 25667

In article <3j2ehf$1us@mksrv1.dseg.ti.com>, blair@mksol.dseg.ti.com
said...
>
>Can anyone recomend a domestic high volume source of L band
>to 70 MHz up and downconverters? The same sort used in
>tvro receivers.
>Thanx
>Art.

Up *and* down? For what specific frequency range? For what purpose? L
band is pretty big, and there are a lot of ways to go, so we will need
more specific information.
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

412. STS-67 Orbital State Vector Rev #2

Newsgroup: rec.radio.amateur.space
Date: 1995-03-02 08:51:57 UTC
From: astroman@ccnet.com
Message-ID: <3j40vd$1qb@ccnet3.ccnet.com>
Source record: 25808
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space,rec.radio.info

```
Vector format = 117
Satellite Name: STS-67
Catalog Number: 25000 95007A
Epoch Date/Time: 95061.33823288194
03/02/1995 08:07:03.321 UTC
EFG E: -13620830.24 ft
F: -14668848.46 ft
G: 9325348.34 ft
Edot: 18646.5737 f/s
Fdot: -13767.6738 ft/s
Gdot: 5572.2829 ft/s
ndot/2 (drag): 0.00010049203 rev/day^2
nddt/6: 4.28594E-10 rev/day^3
Bstar: 7.22662E-05 1/Earth Radii
Elset #: 3
Rev @ Epoch: 2.17338399753

MSDOS/PC software is available for conversion of
OSV to 2 Line Keplerian Elements via ftp to:
oak.oakland.edu:/pub/msdos/hamradio/v2l9331.zip
and the SIMTEL archives.

State Vectors courtesy Ken Ernandes N2WWD

SM
```

413. DISPLAY4 FTp site??

Newsgroup: rec.radio.amateur.space
Date: 1995-03-02 14:02:12 UTC
From: rumbalj@govonca.gov.on.ca
Message-ID: <1995Mar2.140212.11562@govonca.gov.on.ca>
Source record: 25661

Hello and thank you for reading this. On behalf of a local ham friend of mine, I am looking for an FTP site for a program called Display4. I'm not exactly sure what it does, but I know it has something to do with the Oscar satellites.

If you can help me, please reply by posting here or by sending e-mail to rumbalj@gov.on.ca.

Thanks in avdvance.

73 de John

--
JOHN RUMBALL
rumbalj@gov.on.ca
va3bus@gw.ve3sen.ampr.org
va3bus@va3bus.#ne.on.can.noam

414. Re; NASA Select

Newsgroup: rec.radio.amateur.space
Date: 1995-03-02 20:44:12 UTC
From: snare@realjet.win-uk.net
Message-ID: <42@realjet.win-uk.net>
Source record: 25665

Question: Does anyone know if it is possible to receive NASA
Select transmissions from the Spacenet 2 satellite or a
relayed transmission here in the UK?

Peter Snare
snare@realjet.win-uk.net
compuserve 100421,641

415. Icom 281H Mods

Newsgroup: rec.radio.amateur.space
Date: 1995-03-02 23:19:24 UTC
From: bstaffor@dialin.INd.NET
Message-ID: <Pine.SUN.3.91.950302181559.16599A-100000@dialin.ind.net>
Source record: 25662

HELP! I am looking for the mods for Icom's 281H (2M Tx/Rx w 70cm Rx).
I need the mods that will extend the receive range, expecially on 70cm,
to be able to works the sats.

Thanks Bob N9USD


```
==========================================================================

|\ _,,,--,, Bob Stafford N9USD aka CircuitRider
/,`.-'`' ._ \-;;,_ 826 N Queen Rd, Walkerton, IN 46574
|,4- ) )_ .;.( `'-' (219) 784-3790
'---''(_/._)-'(_\_) bstaffor@dialin.ind.net
..........................................................................
```

416. Sunspots, anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-02 23:30:16 UTC
From: Robert D Houghton <rhought@cello.gina.calstate.edu>
Message-ID: <3j5ke8$eae@cello.gina.calstate.edu>
Source record: 25669

Hello!
We are a group of physics students at John A. Rowland High School in Rowland Heights, California, and are doing a project on sunspots. We are attempting to gather any data or information on sunspots, and are looking for help in this endeavor. If there is anyone out there who can help us in this task, please post another message on this bulletin board. Any help will be greatly appreciated.

Thank You Very Much.

Young Lee
Julie Lu
Joann Tchon
Robert D. Houghton
Science Department Chairman
John A. Rowland High School
Rowland Heights, CA 91748

417. .Z Compression

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 00:04:21 UTC
From: jimn2ete@aol.com
Message-ID: <3j5me5$3hl@newsbf02.news.aol.com>
Source record: 25671

On some of the FTP's I have logged on, I noticed most of them are .z
compressed
and I do not have those capabilities. On which FTP can I get that file to
be able
to de-compress the file??

Jim

418. Re: Re; NASA Select

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 02:25:03 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3j5ulv$bv4@news.cc.utah.edu>
Source record: 25680

Peter B. Snare (snare@realjet.win-uk.net) wrote:
: Question: Does anyone know if it is possible to receive NASA
: Select transmissions from the Spacenet 2 satellite or a
: relayed transmission here in the UK?

Spacenet 2's position is 69 degrees west. I would think you could ask at a local satellite tv retailer or possibly at a television station in your area if a bird at 69 W is visible from your area.

Good luck! Patrick Wiggins, Hansen Planetarium, SLC, UT USA

419. Re: .Z Compression

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 02:28:31 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3j5usf$bv4@news.cc.utah.edu>
Source record: 25681

JimN2ETE (jimn2ete@aol.com) wrote:
: On some of the FTP's I have logged on, I noticed most of them are .z
: compressed
: and I do not have those capabilities. On which FTP can I get that file to
: be able
: to de-compress the file??

As it happens I stumbled across a site last night with .z files. Reading through one of the README files it said that one has the option of downloading the file compressed by using the whole name including the .z or one can drop the .z and that gets the uncompressed version sent. You might want to try dropping the .z.

Good luck, Patrick Wiggins, Hansen Planetarium

420. Spy satellite TLEs found

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 03:07:50 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3j6166$eir@news.cc.utah.edu>
Source record: 25663

A few days ago someone posted a message asking about TLEs for the class of spy satellites which travel in threes (as a triangle).

I've found the requested info but now I can't find the original post.

Would the poster of the previous message please answer here or email to: patrick.wiggins@k12.uen.gen.ut.us.

Clear skies!

Patrick

421. Re: Question abt. Kepler elements

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 03:17:48 UTC
From: jkepler@pinn.net
Message-ID: <3j61os$3m0@everest.pinn.net>
Source record: 25682

In article <oz1knm.15.0122BFF5@vir.com>, oz1knm@vir.com (Henning Christensen) says:
>
>Hi there, can anyone help with the following question?
>When, or rather how often, do I have to update the keplerian elements in my
>satellite tracking program?
>I can do it more or less automatically by loading a text-file into the
>program, but nevertheless, i still have to download new elements.
>73 de Henning, Montreal

It depends on the satellite. For the Space Shuttle or the Russian
space station Mir, you want to update daily since they modify their
orbits often, especially the shuttle. For synchronous satellites I think
very seldom. I receive the NOAA low level picture transmitters for
weather pictures and I update about once per month. So it depends on
the satellite and how accurate you need to be. For the NOAA sats about
once per month seems adaquate. I think the lower the orbit the more
often you might want to update.

422. Re: NASA Select TV

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 05:33:42 UTC
From: manfred@isi5.ssl.berkeley.edu
Message-ID: <3j69nm$j0h@agate.berkeley.edu>
Source record: 25664

According to a quick calculation with SatTrack (V3.1),
SPACENET 2 is about 4.4 degrees above the horizon in London.
So, depending on where in the UK you are located you might just be
lucky from that point of view. However, remember that the antennas
on Spacenet 2 might not cover the entire footprint of the satellite.
You may need a rather large dish to get enough SNR on the downlink.

Good luck and 73,
Manfred --- W6/DL5KR

423. STS-67 keps

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 06:35:56 UTC
From: n7ryw@teleport.com
Message-ID: <3j6dbb$scr@desiree.teleport.com>
Source record: 25689

I haven't seen any here yet, so here is the set I received from NASA.

STS-67
1 23500U 95007A 95061.64457404 .00011689 00000-0 86071-4 0 66
2 23500 28.4639 87.0110 0008657 258.9312 101.0267 15.72268813 74

I have not yet run them to check the accuracy, so "Buyer Beware!"
Enjoy!
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

424. Turbo upgrade to TRAKBOX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 12:27:20 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1144621280A@128.220.101.100>
Source record: 25668

Was wondering if anyone could provide me with information on the
Turbo upgrade for TRAKBOX. I am currently up and running with
version 3.30i and would like to increase the update rate for
antenna pointing/and frequency corrections. Does the Turbo upgrade
do this? Also who sells the parts required to complete the upgrade..

Thanks

Art Jeyes
AA3GU -- on KO-23 & 25
Art.Jeyes@jhuapl.edu

425. Icom 281H mods

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 14:34:28 UTC
From: bstaffor@dialin.INd.NET
Message-ID: <Pine.SUN.3.91.950303093302.19543B-100000@dialin.ind.net>
Source record: 25670

I'm looking for the mods to extend the receive on my Icom 281H (2M Tx/Rx
and 70cm Rx). Does anyone know where I can get them?? Thanks Bob N9USD

==========

|\ _,,,--,, Bob Stafford N9USD aka CircuitRider
/,`.-'`' ._ \-;;,_ 826 N Queen Rd, Walkerton, IN 46574
|,4-))_ .;.(`'-' (219) 784-3790
'---''(_/._)-'(__) bstaffor@dialin.ind.net
.....

426. **test**

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 16:15:50 UTC
From: MUENZLERK@uthscsa.edu
Message-ID: <01HNP1VQ8JAA00602N@uthscsa.edu>
Source record: 25673
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.policy,rec.radio.amateur.space

testing UT gateway

427. CCIR vs Crane Rain Model

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 19:26:41 UTC
From: rcarvin@sunfish
Message-ID: <D4vq0J.L16@news.ess.harris.com>
Source record: 25672

Is there anyone out there that can tell whether the Crane and CCIR propagation in rain models are the same? This includes both a definition of climatic zones and attenuation calculations. If you reply via e-mail, please mail to rcarvin@harris.com. A direct mail response may bounce. Also, is there another news group that I should post to?

thanks

--
==========
Bob Carvin (rcarvin@harris.com) || M/S 102/4825 P.O. Box 94000
Government Aerospace Division || Melbourne, FL 32902
Harris Corporation || (407) 727-5574

428. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 20:32:38 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.794262758@eel>
Source record: 25674

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95062.25000000 .00001084 00000-0 50288-5 0 59
2 23500 28.4648 82.5976 0009786 265.6650 288.2467 15.72231340 152
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

429. Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 20:33:29 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.794262809@eel>
Source record: 25675

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated several times weekly. Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated weekly) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

430. Two-Line Orbital Element Sets (TLE558)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-03 20:35:36 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.794262936@eel>
Source record: 25676

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #558 -
Alouette 1
1 00424U 62049A 95059.43488033 .00000057 00000-0 57066-4 0 836
2 00424 80.4616 32.1766 0022797 172.3616 187.7880 13.67833748617435
ATS 1
1 02608U 66110A 95045.63291947 -.00000123 00000-0 10000-3 0 9221
2 02608 14.6246 357.9410 0008770 52.5523 307.5822 1.00313762 19969
ATS 3
1 03029U 67111A 95061.25612804 -.00000126 00000-0 10000-3 0 3368
2 03029 14.7875 4.8085 0009474 272.7896 228.8545 1.00272752100021
Cosmos 398
1 04966U 71016A 95062.15329624 .00170715 86494-5 23489-3 0 7606
2 04966 51.4171 342.6533 0742808 90.8023 277.7929 14.56213473809537
Starlette
1 07646U 75010A 95059.89309045 -.00000102 00000-0 33763-4 0 8676
2 07646 49.8287 220.3582 0205937 104.1388 258.2481 13.82188769 13362
LAGEOS
1 08820U 76039A 95059.60217239 .00000008 00000-0 10000-3 0 871
2 08820 109.8242 223.4027 0044164 230.0331 129.6326 6.38664327183520
ETS-2
1 09852U 77014A 95060.35369237 -.00000357 00000-0 10000-3 0 172
2 09852 12.5786 38.4493 0001723 46.8379 313.2283 1.00006207 12906
GOES 2
1 10061U 77048A 95058.51619894 .00000095 00000-0 10000-3 0 4942
2 10061 11.6274 42.6527 0012073 101.9328 43.5564 1.00147081 9675
IUE
1 10637U 78012A 95061.07746233 -.00000265 00000-0 10000-3 0 1112
2 10637 35.0242 90.7177 1320589 43.5356 2.6756 1.00257453 15199
GPS BI-01
1 10684U 78020A 95056.17793776 -.00000008 00000-0 10000-3 0 3412
2 10684 64.7787 38.0210 0060848 163.9687 196.2469 1.98069498109944
```

```
GPS BI-02
1 10893U 78047A 95055.20306568 .00000043 00000-0 10000-3 0 1488
2 10893 63.3886 276.3586 0219990 14.3177 346.3099 2.01627545123155
GOES 3
1 10953U 78062A 95061.23426394 .00000046 00000-0 10000-3 0 4602
2 10953 10.5985 45.4145 0002821 127.0924 255.5149 1.00276499 14317
SeaSat 1
1 10967U 78064A 95059.81507951 -.00000021 00000-0 37698-4 0 3784
2 10967 108.0037 273.2629 0002374 248.1513 111.9375 14.38015522873258
GPS BI-03
1 11054U 78093A 95054.91924529 .00000048 00000-0 10000-3 0 2698
2 11054 63.0801 274.3159 0044547 177.9274 182.1173 1.93505335119382
Nimbus 7
1 11080U 78098A 95060.65500644 -.00000090 00000-0 -43673-4 0 4827
2 11080 99.0176 299.1766 0009046 156.0814 204.0761 13.83714991825683
GPS BI-04
1 11141U 78112A 95051.16538012 .00000003 00000-0 10000-3 0 9620
2 11141 64.7800 39.8082 0048168 26.6589 333.5938 1.92894872 8561
GPS BI-05
1 11690U 80011A 95061.18996550 -.00000046 00000-0 10000-3 0 8894
2 11690 65.1271 39.5248 0147565 195.5430 164.0035 2.00561892124714
GPS BI-06
1 11783U 80032A 95058.57771326 .00000037 00000-0 10000-3 0 599
2 11783 62.5153 269.6501 0216432 29.3176 331.9252 2.03456318109152
GOES 5
1 12472U 81049A 95058.92686105 -.00000281 00000-0 10000-3 0 8391
2 12472 7.3188 55.2572 0005188 16.7893 343.3816 1.00314181 8338
Cosmos 1383
1 13301U 82066A 95059.66934202 .00000014 00000-0 -19871-5 0 3834
2 13301 82.9329 121.7288 0028917 105.8239 254.6104 13.68063008632498
LandSat 4
1 13367U 82072A 95062.21655666 .00000468 00000-0 11366-3 0 6218
2 13367 98.1419 120.5652 0007676 158.1658 201.9849 14.57151928671780
IRAS
1 13777U 83004A 95061.55907200 -.00000240 00000-0 -13529-3 0 8876
2 13777 98.9695 252.0977 0013117 323.6843 36.3426 13.99224212287272
Cosmos 1447
1 13916U 83021A 95058.81147360 .00000080 00000-0 67920-4 0 4824
2 13916 82.9447 182.6305 0039337 38.1098 322.2825 13.74322479598441
TDRS 1
1 13969U 83026B 95060.81971363 -.00000206 00000-0 10000-3 0 4005
2 13969 8.1795 48.4858 0000400 146.9739 343.3819 1.00263149 16633
GOES 6
1 14050U 83041A 95058.40934891 .00000038 00000-0 10000-3 0 3619
2 14050 6.1357 58.4122 0003265 323.7928 150.3160 1.00295405101426
OSCAR 10
1 14129U 83058B 95049.74423524 -.00000256 00000-0 10000-3 0 3407
2 14129 26.5642 282.2218 6017196 253.4768 35.4795 2.05881639 59890
LandSat 5
1 14780U 84021A 95060.67351981 .00000044 00000-0 19690-4 0 2063
```

```
2 14780 98.1251 119.7969 0004465 170.9661 189.1619 14.57153078584978
UoSat 2
1 14781U 84021B 95059.49927932 .00000175 00000-0 37484-4 0 7787
2 14781 97.7814 67.1495 0011661 164.1703 195.9861 14.69310036587943
GPS BI-09
1 15039U 84059A 95053.23737792 -.00000003 00000-0 10000-3 0 2740
2 15039 64.4492 34.1532 0081639 17.0068 343.2614 1.92302250 78187
Cosmos 1574
1 15055U 84062A 95059.54746299 .00000039 00000-0 25995-4 0 6836
2 15055 82.9523 235.9727 0026121 221.8705 138.0448 13.73618080535827
GPS BI-10
1 15271U 84097A 95058.39422714 .00000038 00000-0 10000-3 0 9202
2 15271 62.2194 269.8993 0154132 352.9559 6.8844 2.00593473 75726
Cosmos 1602
1 15331U 84105A 95060.39003720 .00000460 00000-0 51460-4 0 3719
2 15331 82.5330 196.8542 0022123 73.6051 286.7595 14.84570843562675
NOAA 9
1 15427U 84123A 95062.07705284 .00000084 00000-0 68558-4 0 1587
2 15427 99.0163 120.1053 0014396 206.3520 153.6921 14.13688070526831
GPS BI-11
1 16129U 85093A 95053.74476039 .00000003 00000-0 10000-3 0 6372
2 16129 65.1184 37.0852 0152914 87.7430 274.0077 1.89368084 12829
Mir
1 16609U 86017A 95062.22168686 .00008482 00000-0 11820-3 0 9565
2 16609 51.6490 328.7396 0004776 188.6018 171.4893 15.57830228516447
SPOT 1
1 16613U 86019A 95060.87201903 .00000090 00000-0 62356-4 0 7860
2 16613 98.6595 134.5657 0000963 60.6797 299.4459 14.20052408153136
Cosmos 1766
1 16881U 86055A 95060.54521536 .00000240 00000-0 26076-4 0 2869
2 16881 82.5167 254.6068 0020887 95.8920 264.4664 14.83586626463615
EGP
1 16908U 86061A 95059.19824794 -.00000083 00000-0 10000-3 0 9791
2 16908 50.0112 17.3173 0011386 243.4104 116.5564 12.44411637 57265
NOAA 10
1 16969U 86073A 95061.91742250 .00000074 00000-0 49733-4 0 684
2 16969 98.5089 68.0161 0012431 297.6445 62.3474 14.24923859439348
MOS-1
1 17527U 87018A 95060.70392601 .00000202 00000-0 18235-3 0 1813
2 17527 99.0032 128.5882 0000395 37.8955 322.2240 13.94920069408847
GOES 7
1 17561U 87022A 95058.62476949 .00000065 00000-0 10000-3 0 2700
2 17561 2.0997 73.5024 0002470 317.9799 214.1371 1.00260599 12530
Kvant-1
1 17845U 87030A 95062.02926941 -.00018427 00000-0 -23682-3 0 1684
2 17845 51.6480 329.7138 0004142 186.8205 173.4126 15.57797733516454
DMSP B5D2-3
1 18123U 87053A 95061.88570747 .00000024 00000-0 34871-4 0 8605
2 18123 98.7818 254.6875 0014057 158.3958 201.7814 14.15392104397687
RS-10/11
```

```
1 18129U 87054A 95058.25149792 .00000050 00000-0 37725-4 0 243
2 18129 82.9272 140.3341 0013088 40.9203 319.2930 13.72348915384899
Meteor 2-16
1 18312U 87068A 95059.87027331 .00000056 00000-0 37043-4 0 3775
2 18312 82.5537 8.2767 0013504 105.9780 254.2859 13.84050203380563
Meteor 2-17
1 18820U 88005A 95061.48619258 .00000049 00000-0 30193-4 0 5544
2 18820 82.5370 63.1269 0016540 169.4994 190.6516 13.84732801358103
DMSP B5D2-4
1 18822U 88006A 95060.53507645 .00000020 00000-0 27251-4 0 8844
2 18822 98.4140 269.4864 0005642 315.0195 45.0539 14.23143549367209
Glonass 34
1 19163U 88043A 95060.10493395 .00000039 00000-0 10000-3 0 9724
2 19163 65.0865 101.8071 0007373 145.8381 214.2972 2.13102613 52137
Glonass 36
1 19165U 88043C 95058.28401096 .00000040 00000-0 10000-3 0 3691
2 19165 65.0693 101.8395 0001411 205.6986 154.3829 2.13102076 52712
METEOSAT 3
1 19215U 88051A 95061.25387183 -.00000291 00000-0 10000-3 0 907
2 19215 2.2794 70.5815 0001046 117.3357 352.6372 1.00291185 12501
AO-13
1 19216U 88051B 95058.34859605 -.00000324 00000-0 10000-4 0 185
2 19216 57.6296 201.5042 7266743 3.1509 359.3994 2.09722635 19865
OKEAN 1
1 19274U 88056A 95061.21700040 .00000423 00000-0 49859-4 0 9869
2 19274 82.5130 354.2410 0017864 240.5266 119.4170 14.82300525359307
Meteor 3-2
1 19336U 88064A 95059.26445879 .00000051 00000-0 10000-3 0 3748
2 19336 82.5416 142.4936 0017597 347.2023 12.8650 13.16971651316966
Glonass 39
1 19503U 88085C 95059.71925955 -.00000073 00000-0 10000-3 0 2648
2 19503 65.7121 340.7008 0007277 175.2686 184.7597 2.13101928 50230
NOAA 11
1 19531U 88089A 95061.87941621 .00000053 00000-0 53310-4 0 9759
2 19531 99.1904 62.3870 0012340 123.2012 237.0346 14.13040504331677
TDRS 2
1 19548U 88091B 95058.58054497 .00000070 00000-0 10000-3 0 983
2 19548 1.5167 75.6446 0001005 274.3354 204.4827 1.00270844 10762
Glonass 40
1 19749U 89001A 95057.41175922 .00000036 00000-0 10000-3 0 4780
2 19749 65.0442 101.4767 0006958 222.1160 137.9458 2.13101387 47690
Glonass 41
1 19750U 89001B 95059.34463312 .00000041 00000-0 10000-3 0 3885
2 19750 65.0505 101.4411 0005704 223.6943 136.3230 2.13099858 47758
GPS BII-01
1 19802U 89013A 95060.49418873 .00000004 00000-0 10000-3 0 286
2 19802 55.1619 129.4937 0028350 182.6762 177.3886 2.00570512 44217
Akebono
1 19822U 89016A 95061.33510902 .00012334 00000-0 72310-3 0 4444
2 19822 75.0805 36.1929 3786839 100.5010 303.4828 7.83434668129436
```

```
Meteor 2-18
1 19851U 89018A 95060.08902891 .00000050 00000-0 31751-4 0 3751
2 19851 82.5220 299.0985 0012648 224.1624 135.8532 13.84385167303233
MOP-1
1 19876U 89020B 95053.41846442 -.00000080 00000-0 10000-3 0 1002
2 19876 0.9927 71.3726 0000737 248.3402 335.1068 1.00276061 1860
TDRS 3
1 19883U 89021B 95056.34378913 -.00000290 00000-0 10000-3 0 494
2 19883 0.0339 308.5306 0003642 19.8285 269.1588 1.00270625194320
GPS BII-02
1 20061U 89044A 95060.33616124 -.00000049 00000-0 10000-3 0 360
2 20061 54.5540 305.8718 0142128 214.4202 144.8064 2.00563454 41954
Nadezhda 1
1 20103U 89050A 95062.06289113 .00000041 00000-0 27822-4 0 3095
2 20103 82.9586 96.8681 0036495 290.2951 69.4283 13.73850472283857
GPS BII-03
1 20185U 89064A 95060.17717799 .00000002 00000-0 10000-3 0 628
2 20185 54.9983 130.1016 0062633 311.6367 47.8825 2.00552202 40528
GMS 4
1 20217U 89070A 95059.39750240 -.00000310 00000-0 10000-3 0 1603
2 20217 0.8090 75.6094 0000395 354.7671 10.5555 1.00265109 20661
INTERCOSMOS 24
1 20261U 89080A 95059.85795638 .00000197 00000-0 53217-4 0 3909
2 20261 82.5895 213.6538 1243178 40.1832 328.4770 12.47226784246772
GPS BII-04
1 20302U 89085A 95058.21119436 .00000018 00000-0 10000-3 0 377
2 20302 53.5275 246.0211 0010217 204.1709 155.8029 2.00553963 39281
Meteor 3-3
1 20305U 89086A 95060.56849686 .00000044 00000-0 10000-3 0 2639
2 20305 82.5533 92.0580 0007646 45.3606 314.8125 13.04426939256456
COBE
1 20322U 89089A 95061.56875536 -.00000261 00000-0 -13844-3 0 1007
2 20322 98.9637 79.1716 0008088 273.9121 86.1116 14.03443340270630
Kvant-2
1 20335U 89093A 95062.02926941 -.00018427 00000-0 -23682-3 0 1931
2 20335 51.6480 329.7138 0004142 186.8205 173.4126 15.57797733516373
GPS BII-05
1 20361U 89097A 95060.22111923 -.00000009 00000-0 10000-3 0 8999
2 20361 55.6939 72.0727 0075732 119.3141 241.4920 2.00561195 28809
SPOT 2
1 20436U 90005A 95060.71415873 -.00000044 00000-0 00000+0 0 9049
2 20436 98.7468 136.1274 0000591 126.7570 233.3661 14.20020397264640
UO-14
1 20437U 90005B 95060.24996566 -.00000006 00000-0 14722-4 0 782
2 20437 98.5709 146.3396 0010744 151.4885 208.6882 14.29876291266328
UO-15
1 20438U 90005C 95060.23707929 .00000008 00000-0 20344-4 0 8758
2 20438 98.5709 144.9898 0009839 155.5424 204.6226 14.29199221266225
PACSAT
1 20439U 90005D 95060.22584539 -.00000002 00000-0 16260-4 0 8766
```

```
2 20439 98.5846 147.8479 0011154 152.6624 207.5151 14.29930284266331
DO-17
1 20440U 90005E 95060.78470427 .00000009 00000-0 20526-4 0 8765
2 20440 98.5858 148.8166 0011288 150.0425 210.1405 14.30071384266431
WO-18
1 20441U 90005F 95059.78529482 .00000007 00000-0 19636-4 0 8803
2 20441 98.5857 147.8133 0011867 153.7492 206.4294 14.30043049266296
LO-19
1 20442U 90005G 95060.72533593 .00000011 00000-0 21091-4 0 8766
2 20442 98.5831 149.0623 0012024 150.5162 209.6707 14.30143889266446
GPS BII-06
1 20452U 90008A 95060.62046589 -.00000025 00000-0 10000-3 0 106
2 20452 54.0326 186.0507 0057332 79.8564 280.7468 2.00567259 37316
MOS-1B
1 20478U 90013A 95062.18433888 .00000091 00000-0 10000-3 0 7508
2 20478 99.0017 134.2777 0000588 332.6273 27.4857 13.94915435178752
DEBUT
1 20479U 90013B 95060.27330539 -.00000000 00000-0 63465-4 0 8759
2 20479 99.0666 169.0981 0540782 117.0512 248.6827 12.83329690237111
FO-20
1 20480U 90013C 95060.81704751 -.00000033 00000-0 -91605-5 0 7734
2 20480 99.0677 169.4017 0540957 116.2001 249.5737 12.83229606237179
MOS-1B R/B
1 20491U 90013D 95061.37346261 -.00000401 00000-0 -68719-3 0 1085
2 20491 99.0268 221.3195 0469568 322.0403 34.8542 13.02965727240281
LACE
1 20496U 90015A 95061.29340145 .00002827 00000-0 92027-4 0 5073
2 20496 43.1040 20.0099 0010521 240.2936 119.6882 15.34164686281156
Nadezhda 2
1 20508U 90017A 95061.85345747 .00000062 00000-0 50195-4 0 3105
2 20508 82.9495 231.5874 0043242 240.3456 119.3390 13.73490308251050
OKEAN 2
1 20510U 90018A 95061.18918959 .00000323 00000-0 41023-4 0 3869
2 20510 82.5250 305.2297 0021022 65.9291 294.4116 14.78456516269785
INTELSAT-6
1 20523U 90021A 95058.17750579 -.00000268 00000-0 10000-3 0 4932
2 20523 0.0165 267.7453 0000780 45.5505 232.6138 1.00270951 11124
GPS BII-07
1 20533U 90025A 95059.03317712 -.00000045 00000-0 10000-3 0 198
2 20533 54.8680 306.5485 0047706 78.1134 282.4833 2.00559165 36052
PegSat
1 20546U 90028A 95060.54691090 .00011413 00000-0 24423-3 0 7615
2 20546 94.1097 83.3876 0070265 32.4697 328.1005 15.42136795271883
HST
1 20580U 90037B 95062.18770484 .00000759 00000-0 60181-4 0 5981
2 20580 28.4683 12.0559 0005867 277.2716 82.7226 14.90815106 68071
MACSAT 2
1 20608U 90043B 95059.79708996 .00000238 00000-0 38853-4 0 765
2 20608 89.9299 177.4016 0103829 275.3284 83.6106 14.64802419256842
Glonass 44
```

```
1 20619U 90045A 95062.00379876 -.00000068 00000-0 10000-3 0 1685
2 20619 65.3375 340.0936 0028155 210.5988 149.2647 2.13102559 37245
Glonass 45
1 20620U 90045B 95058.83780549 -.00000075 00000-0 10000-3 0 1785
2 20620 65.3200 340.2134 0008289 31.5535 328.5017 2.13102494 37219
Glonass 46
1 20621U 90045C 95057.02677539 -.00000077 00000-0 10000-3 0 7777
2 20621 65.3222 340.3175 0012243 185.0573 174.9429 2.13101518 37173
Kristall
1 20635U 90048A 95062.02926941 -.00018427 00000-0 -23682-3 0 9866
2 20635 51.6480 329.7138 0004142 186.8205 173.4126 15.57797733516343
ROSAT
1 20638U 90049A 95058.81073405 .00000097 00000-0 25414-4 0 3941
2 20638 52.9925 279.4018 0014508 123.3062 236.9313 15.07094351260627
Meteor 2-19
1 20670U 90057A 95060.27967702 .00000015 00000-0 15883-6 0 8767
2 20670 82.5448 4.2665 0016396 139.5925 220.6464 13.84170394236184
CRRES
1 20712U 90065A 95062.02341547 .00000147 00000-0 28864-3 0 556
2 20712 17.9759 81.4633 7184371 25.2489 357.1944 2.35373494 31982
GPS BII-08
1 20724U 90068A 95057.35853445 -.00000018 00000-0 10000-3 0 8837
2 20724 54.8299 127.8417 0116247 170.4017 189.9453 2.00561351 31887
Feng Yun1-2
1 20788U 90081A 95062.22433082 -.00000027 00000-0 10000-4 0 2526
2 20788 98.8196 78.8627 0015466 11.1434 348.9902 14.01328451229997
Meteor 2-20
1 20826U 90086A 95061.18946437 -.00000023 00000-0 -34099-4 0 8865
2 20826 82.5212 300.7005 0015276 45.3884 314.8520 13.83602140223433
GPS BII-09
1 20830U 90088A 95058.40570855 .00000001 00000-0 10000-3 0 8926
2 20830 55.6315 70.1355 0064574 102.1508 258.6216 2.00568289 32548
GPS BIIA-10
1 20959U 90103A 95061.30100899 .00000004 00000-0 10000-3 0 8233
2 20959 55.0146 129.6300 0092433 243.3310 115.7975 2.00556862 31199
DMSP B5D2-5
1 20978U 90105A 95062.09615853 .00000157 00000-0 71388-4 0 1008
2 20978 98.6504 130.6395 0079980 121.7527 239.1482 14.32519675222126
Glonass 47
1 21006U 90110A 95060.33858657 .00000037 00000-0 10000-3 0 7425
2 21006 65.0183 100.7094 0059843 187.5074 172.5004 2.13102725 32913
Glonass 48
1 21007U 90110B 95058.18002550 .00000040 00000-0 10000-3 0 8705
2 21007 65.0236 100.8406 0033412 176.5193 183.6182 2.13103149 32859
Glonass 49
1 21008U 90110C 95058.53882248 .00000041 00000-0 00000+0 0 422
2 21008 65.0241 100.7863 0010995 274.2007 85.7537 2.13099223 32856
AO-21
1 21087U 91006A 95062.17410346 .00000094 00000-0 82657-4 0 5713
2 21087 82.9457 311.0448 0036878 81.3413 279.1917 13.74551616205167
```

```
RS-12/13
1 21089U 91007A 95058.83115707 .00000035 00000-0 21016-4 0 7794
2 21089 82.9224 181.8611 0030272 114.5496 245.8820 13.74054474203754
MOP-2
1 21140U 91015B 95061.04121528 -.00000037 00000-0 10000-3 0 9050
2 21140 0.1195 102.3565 0003191 282.0456 148.8124 1.00274009 16861
Nadezhda 3
1 21152U 91019A 95062.11703685 .00000049 00000-0 36921-4 0 27
2 21152 82.9267 135.4518 0040992 214.2399 145.6113 13.73515256198948
Glonass 50
1 21216U 91025A 95058.01039816 -.00000077 00000-0 10000-3 0 3863
2 21216 65.0611 339.9317 0008206 207.1519 152.8244 2.13102702 30376
Glonass 51
1 21217U 91025B 95058.07863721 -.00000077 00000-0 10000-3 0 7987
2 21217 65.0576 339.9284 0010116 236.7744 123.1665 2.13099903 30366
Glonass 52
1 21218U 91025C 95061.94532699 -.00000068 00000-0 10000-3 0 2755
2 21218 65.0475 339.7819 0009061 306.2756 53.6756 2.13102673 30457
GRO
1 21225U 91027B 95060.55102040 .00003405 00000-0 70962-4 0 1978
2 21225 28.4631 243.9555 0002986 247.5198 112.5118 15.42195379 96697
Meteor 3-4
1 21232U 91030A 95059.21771089 .00000050 00000-0 10000-3 0 7847
2 21232 82.5469 348.5876 0011731 268.6070 91.3721 13.16466526185040
NOAA 12
1 21263U 91032A 95061.97718518 .00000056 00000-0 44255-4 0 3951
2 21263 98.5930 88.7225 0012213 203.0938 156.9696 14.22495854197290
OKEAN 3
1 21397U 91039A 95061.39541147 .00000333 00000-0 44539-4 0 864
2 21397 82.5227 217.7602 0023082 133.1655 227.1511 14.76333656201606
GPS BIIA-11
1 21552U 91047A 95061.07489916 -.00000022 00000-0 10000-6 0 8307
2 21552 55.9227 67.6883 0062818 242.1742 117.2026 2.00572240 26786
ERS-1
1 21574U 91050A 95060.79577765 .00000075 00000-0 40883-4 0 874
2 21574 98.4953 136.6075 0001128 84.8041 275.3273 14.35949454189672
UO-22
1 21575U 91050B 95060.21922957 .00000023 00000-0 22199-4 0 5822
2 21575 98.4081 134.1607 0006758 245.8065 114.2411 14.36961586189999
ORBCOMM-X
1 21576U 91050C 95060.19266617 .00000018 00000-0 20881-4 0 6779
2 21576 98.4056 132.6808 0003025 259.6043 100.4809 14.36365587189909
TUBSAT-A
1 21577U 91050D 95060.19650956 .00000011 00000-0 18330-4 0 5760
2 21577 98.4059 133.1882 0005558 248.5227 111.5366 14.36473325189939
SARA
1 21578U 91050E 95060.74819564 .00000275 00000-0 10323-3 0 7761
2 21578 98.4230 138.4711 0004058 242.2773 117.8002 14.38952435190249
TDRS 4
1 21639U 91054B 95058.62299109 .00000056 00000-0 10000-3 0 8663
```

```
2 21639 0.0687 282.1786 0002905 49.9385 234.7590 1.00269557107139
Meteor 3-5
1 21655U 91056A 95059.18488836 .00000051 00000-0 10000-3 0 7824
2 21655 82.5543 295.9449 0012008 282.4367 77.5409 13.16837830170159
UARS
1 21701U 91063B 95059.24362241 .00000201 00000-0 38769-4 0 6539
2 21701 56.9832 213.1082 0005541 106.3423 253.8264 14.96342371189263
DMSP B5D2-6
1 21798U 91082A 95061.96245183 .00000055 00000-0 52647-4 0 7509
2 21798 98.9621 73.4611 0013377 122.2276 238.0197 14.13868154168195
Glonass 53
1 21853U 92005A 95051.36433161 .00000020 00000-0 10000-3 0 9819
2 21853 64.9617 100.6972 0008208 175.1596 184.9281 2.13102317 23830
Glonass 54
1 21854U 92005B 95061.04016891 .00000032 00000-0 00000+0 0 979
2 21854 64.9682 100.3694 0015651 10.5042 349.6071 2.13103545 24022
Glonass 55
1 21855U 92005C 95061.10324070 .00000032 00000-0 00000+0 0 923
2 21855 64.9700 100.3767 0008028 215.4139 144.6104 2.13102063 24011
JERS-1
1 21867U 92007A 95060.87981883 .00001691 00000-0 14576-3 0 5195
2 21867 97.7211 138.7823 0001777 75.1229 285.0151 14.98647621166972
GPS BIIA-12
1 21890U 92009A 95058.04538284 .00000022 00000-0 10000-3 0 6277
2 21890 54.0014 246.2673 0056481 175.8333 184.2195 2.00550317 22096
GPS BIIA-13
1 21930U 92019A 95060.24682004 -.00000098 00000-0 10000-3 0 6070
2 21930 55.6917 7.5630 0041570 174.8719 185.1591 2.00565369 21060
EUVE
1 21987U 92031A 95061.51974603 .00001838 00000-0 75671-4 0 3879
2 21987 28.4320 119.4825 0009699 280.6557 79.2940 15.19106344151714
SAMPEX
1 22012U 92038A 95062.03908257 .00000536 00000-0 45069-4 0 6107
2 22012 81.6693 257.7321 0117288 274.6955 84.0867 14.91297927144850
GPS BIIA-14
1 22014U 92039A 95061.28517462 -.00000017 00000-0 10000-3 0 5100
2 22014 54.8795 187.4655 0018305 63.9874 296.1313 2.00548786 12928
Glonass 56
1 22056U 92047A 95060.53386884 -.00000071 00000-0 00000+0 0 58
2 22056 64.9020 339.9831 0005737 290.2146 69.7486 2.13103468 20099
Glonass 57
1 22057U 92047B 95059.42100268 -.00000074 00000-0 00000+0 0 70
2 22057 64.9100 340.0480 0009160 323.4529 36.5083 2.13102582 20046
Glonass 58
1 22058U 92047C 95057.95358755 -.00000078 00000-0 10000-3 0 9970
2 22058 64.8996 340.1089 0009591 269.7553 90.1640 2.13102805 20067
TOPEX
1 22076U 92052A 95060.53384496 -.00000038 00000-0 10000-3 0 8565
2 22076 66.0364 116.4744 0007567 266.1368 93.8769 12.80930483119458
KO-23
```

```
1 22077U 92052B 95060.20641427 -.00000037 00000-0 10000-3 0 4745
2 22077 66.0842 101.8535 0012247 225.4528 134.5488 12.86290269119844
S80/T
1 22078U 92052C 95059.53606327 -.00000037 00000-0 10000-3 0 4717
2 22078 66.0856 102.2686 0013133 219.3700 140.6358 12.86574228119834
GPS BIIA-15
1 22108U 92058A 95060.74869393 -.00000004 00000-0 10000-3 0 5351
2 22108 54.2213 246.9035 0112464 145.0178 215.5962 2.00564262 18090
FREJA
1 22161U 92064A 95060.89840116 .00000044 00000-0 63952-4 0 4914
2 22161 62.9941 0.4414 0802203 337.6007 19.1739 13.21819829115864
LAGEOS II
1 22195U 92070B 95058.14910962 -.00000009 00000-0 10000-3 0 3826
2 22195 52.6690 292.5554 0138463 228.5599 130.2995 6.47293736 55451
GPS BIIA-16
1 22231U 92079A 95058.93720809 -.00000033 00000-0 10000-3 0 5089
2 22231 54.6815 188.7445 0033660 290.6387 68.9519 2.00570240 16635
GPS BIIA-17
1 22275U 92089A 95061.07816153 -.00000019 00000-0 10000-3 0 5360
2 22275 54.6382 186.1772 0051086 255.3056 104.1088 2.00553996 16082
TDRS 5
1 22314U 93003B 95061.60138310 -.00000301 00000-0 10000-3 0 4905
2 22314 1.6469 72.0866 0003187 277.4773 340.8043 1.00268665 7840
GPS BIIA-18
1 22446U 93007A 95059.65266846 -.00000048 00000-0 10000-3 0 5115
2 22446 54.5088 306.7876 0099368 354.0542 5.7245 2.00552242 15040
Glonass 59
1 22512U 93010A 95051.36562915 .00000020 00000-0 00000+0 0 6833
2 22512 64.9858 100.5553 0008760 185.2144 174.8465 2.13102005 15408
Glonass 60
1 22513U 93010B 95059.28262312 .00000041 00000-0 00000+0 0 7206
2 22513 64.9768 100.3056 0007429 208.4437 151.5937 2.13102552 15761
Glonass 61
1 22514U 93010C 95060.04552127 .00000039 00000-0 00000+0 0 7217
2 22514 65.0030 100.2585 0011124 196.4051 163.6407 2.13102912 15785
ASTRO-D
1 22521U 93011A 95061.40669419 .00002521 00000-0 17486-3 0 3876
2 22521 31.1078 197.7159 0057265 159.1367 201.1735 15.01993803111304
UFO F1
1 22563U 93015A 95056.05010729 .00000078 00000-0 10000-3 0 3932
2 22563 26.1907 296.0888 0004642 307.7785 344.0847 0.99248112 11344
GPS BIIA-19
1 22581U 93017A 95055.30802631 -.00000076 00000-0 10000-3 0 4066
2 22581 55.1761 7.3874 0054020 33.6773 326.6498 2.00553947 14013
ARSENE
1 22654U 93031B 95053.10965271 -.00000117 00000-0 10000-3 0 3064
2 22654 2.3584 88.2613 2904311 204.6294 138.9127 1.42203073 4757
GPS BIIA-20
1 22657U 93032A 95060.92840834 -.00000098 00000-0 10000-3 0 4433
2 22657 55.2301 6.9944 0070235 214.3916 145.1852 2.00571779 9457
```

```
RADCAL
1 22698U 93041A 95059.38859613 .00000069 00000-0 24246-4 0 3828
2 22698 89.5449 296.1905 0093634 72.4966 288.6431 14.21336649 86981
GPS BIIA-21
1 22700U 93042A 95058.40098877 .00000019 00000-0 10000-3 0 3908
2 22700 54.3536 247.7598 0034128 337.5351 22.3451 2.00561783 12200
NOAA-13
1 22739U 93050A 95060.85264689 -.00000024 00000-0 11639-4 0 7469
2 22739 98.9796 9.6369 0010523 112.9290 247.2988 14.10924370 80303
GPS BIIA-22
1 22779U 93054A 95058.48689246 -.00000045 00000-0 10000-3 0 4395
2 22779 54.6539 306.8108 0020963 247.3693 112.4553 2.00561281 10963
Meteor 2-21
1 22782U 93055A 95060.34189058 .00000062 00000-0 43629-4 0 3834
2 22782 82.5499 2.6545 0020747 224.0474 135.9034 13.83026565 75630
UFO F2
1 22787U 93056A 95061.84231622 -.00000081 00000-0 10000-3 0 3930
2 22787 4.6716 324.6741 0003196 345.1595 224.7538 1.00273559 5682
SPOT 3
1 22823U 93061A 95060.89578159 .00000020 00000-0 30158-4 0 4143
2 22823 98.7458 136.3223 0001195 59.2924 300.8365 14.20018483 74060
STELLA
1 22824U 93061B 95061.69358920 -.00000067 00000-0 -93983-5 0 3716
2 22824 98.6268 139.3117 0006249 167.6142 192.5210 14.27099693 74542
AO-27
1 22825U 93061C 95061.22115412 -.00000013 00000-0 12400-4 0 3739
2 22825 98.6292 139.1032 0007935 170.5007 189.6321 14.27652867 74504
IO-26
1 22826U 93061D 95058.73031761 .00000014 00000-0 23394-4 0 3718
2 22826 98.6288 136.7223 0008612 179.3319 180.7868 14.27759734 74151
HEATHSAT
1 22827U 93061E 95060.72256206 .00000030 00000-0 29978-4 0 4335
2 22827 98.6268 138.6354 0009109 159.2940 200.8607 14.27879501 74447
ITAMSAT
1 22828U 93061F 95061.69473254 .00000010 00000-0 21496-4 0 3500
2 22828 98.6245 139.6761 0010095 155.6651 204.5016 14.28088874 42672
PO-28
1 22829U 93061G 95060.72384729 .00000035 00000-0 31720-4 0 3656
2 22829 98.6257 138.7471 0009685 158.9932 201.1645 14.28066241 74451
KO-25
1 22830U 93061H 95060.71511572 -.00000031 00000-0 49138-5 0 3802
2 22830 98.5283 133.1490 0011763 137.5496 222.6594 14.28080845 74456
GPS BIIA-23
1 22877U 93068A 95062.02569788 -.00000030 00000-0 10000-3 0 2484
2 22877 55.2216 67.8965 0047195 298.7581 60.7945 2.00554197 9920
METEOSAT 6
1 22912U 93073B 95061.17170139 -.00000105 00000-0 10000-3 0 2543
2 22912 0.3343 266.8917 0000508 347.9909 316.6816 1.00271220 3115
HST Array
1 22920U 90037C 95061.13985722 .00010796 00000-0 83740-3 0 2881
```

```
2 22920 28.4634 350.0004 0004004 96.1356 263.9676 14.99851706 68210
Meteor 3-6
1 22969U 94003A 95058.01884864 .00000051 00000-0 10000-3 0 1497
2 22969 82.5550 236.4430 0016114 350.5921 9.4897 13.16727796 52389
TUBSAT-B
1 22970U 94003B 95060.49625322 .00000051 00000-0 10000-3 0 1395
2 22970 82.5573 234.6505 0016189 345.1353 14.9283 13.16824504 52712
ODERACS E
1 22994U 94006F 95061.81894114 .06241027 11780-4 10453-3 0 3399
2 22994 56.9620 210.9976 0005787 293.1349 67.3024 16.47718070 61334
ODERACS F
1 22995U 94006G 95055.74721848 .07840807 11908-4 80136-4 0 3792
2 22995 56.9641 238.6220 0008022 316.4992 43.6881 16.50358678 60374
BREMSAT
1 22998U 94006H 95043.56065712 .17295105 11911-4 80942-4 0 3585
2 22998 56.9722 297.2852 0005621 127.6632 233.8874 16.55784471 42255
GPS BIIA-24
1 23027U 94016A 95060.10745662 -.00000098 00000-0 10000-3 0 1720
2 23027 55.0524 9.0630 0063353 195.9790 163.8123 2.00549476 7193
Glonass 62
1 23043U 94021A 95062.00050098 -.00000069 00000-0 00000+0 0 1685
2 23043 64.7852 340.3613 0004521 196.8666 163.1492 2.13102923 6948
Glonass 63
1 23044U 94021B 95061.41398509 -.00000070 00000-0 00000+0 0 1549
2 23044 64.7741 340.3855 0028188 206.3478 153.5376 2.13102901 6936
Glonass 64
1 23045U 94021C 95058.77439393 -.00000077 00000-0 00000+0 0 1640
2 23045 64.7615 340.4941 0010818 30.0621 330.0174 2.13102003 6871
GOES 8
1 23051U 94022A 95058.18378105 -.00000283 00000-0 10000-3 0 2742
2 23051 0.2167 264.2952 0004062 216.5471 25.4768 1.00375226 2850
MSTI 2
1 23101U 94028A 95060.49528814 .00009886 00000-0 18249-3 0 1542
2 23101 97.1036 255.3022 0010228 279.3269 80.7208 15.49238006 45849
STRV-1A
1 23125U 94034B 95056.61338159 .00001754 00000-0 55960-3 0 1216
2 23125 7.3866 76.3979 7267113 29.7688 356.8092 2.29721141 5088
STRV-1B
1 23126U 94034C 95059.23048220 .00001780 00000-0 47568-3 0 1253
2 23126 7.4089 75.4106 7271621 31.6736 356.6029 2.29362112 5193
Nadezhda 4
1 23179U 94041A 95058.95062473 .00000033 00000-0 18348-4 0 819
2 23179 82.9445 228.8062 0037329 13.1785 347.0347 13.75663935 31452
Glonass 65
1 23203U 94050A 95058.91202018 .00000014 00000-0 00000+0 0 1130
2 23203 64.8094 220.0906 0007821 133.2983 226.7357 2.13101952 4278
Glonass 66
1 23204U 94050B 95058.67700205 .00000016 00000-0 00000+0 0 1227
2 23204 64.8037 220.1298 0015255 352.6359 7.3123 2.13101738 4260
Glonass 67
```

```
1 23205U 94050C 95058.55983921 .00000018 00000-0 00000+0 0 1102
2 23205 64.8053 220.1191 0001582 5.5144 354.4600 2.13101884 4263
DMSP B5D2-7
1 23233U 94057A 95062.07950583 .00000064 00000-0 58395-4 0 2488
2 23233 98.8944 121.0731 0013579 78.5131 281.7571 14.12581708 26176
Soyuz TM-20
1 23288U 94063A 95062.02926941 -.00018427 00000-0 -23682-3 0 1372
2 23288 51.6480 329.7138 0004142 186.8205 173.4126 15.57797733516362
OKEAN 1-7
1 23317U 94066A 95059.24309202 .00000246 00000-0 33914-4 0 460
2 23317 82.5464 135.9121 0025240 180.3302 179.7883 14.73904673 20570
ELEKTRO
1 23327U 94069A 95058.70059008 -.00000133 00000-0 10000-3 0 499
2 23327 1.0164 265.9426 0004090 255.4257 324.4999 1.00271125 1233
RESURS 1-3
1 23342U 94074A 95059.57292833 .00000130 00000-0 30013-4 0 610
2 23342 98.0306 121.1041 0001522 82.4300 277.7081 14.69705172 17089
Glonass 68
1 23396U 94076A 95059.34195713 .00000041 00000-0 00000+0 0 580
2 23396 64.9144 100.3872 0030350 193.4644 166.5351 2.13102376 2123
Glonass 69
1 23397U 94076B 95058.57880958 .00000041 00000-0 00000+0 0 644
2 23397 64.8989 100.4258 0014107 317.6793 42.2947 2.13102459 2107
Glonass 70
1 23398U 94076C 95059.86989486 .00000039 00000-0 00000+0 0 652
2 23398 64.8860 100.3677 0004764 291.5728 68.4468 2.13101632 2140
RS-15
1 23439U 94085A 95060.38445279 -.00000039 00000-0 10000-3 0 324
2 23439 64.8154 69.3345 0168035 280.6816 77.5228 11.27526333 7365
NOAA 14
1 23455U 94089A 95062.05661879 .00000064 00000-0 59779-4 0 872
2 23455 98.8914 5.4640 0009829 129.0442 231.1599 14.11493963 8839
1995004C
1 23471U 95004C 95062.10144780 .00037246 00000-0 21752-3 0 197
2 23471 51.6486 325.6644 0014968 54.8724 305.3676 15.77854553 4393
1995004D
1 23472U 95004D 95062.00824078 .00059789 00000-0 31070-3 0 248
2 23472 51.6484 325.7911 0018411 67.4388 292.8486 15.80137725 4380
1995004F
1 23474U 95004F 95055.25000000 .00820333 36251-3 10285-2 0 201
2 23474 51.6420 359.4890 0014037 167.3440 136.9170 16.06823723 3499
1995004G
1 23475U 95004G 95056.04967593 .00938013 11385-4 71397-3 0 152
2 23475 51.8625 355.8014 0107400 312.2362 149.5984 16.02836050 3450
Progress M-26
1 23477U 95005A 95062.02926941 -.00018427 00000-0 -23682-3 0 255
2 23477 51.6480 329.7138 0004142 186.8205 173.4126 15.57797733 2429
1995005B
1 23478U 95005B 95048.64948989 .28376917 12633-4 19181-3 0 127
2 23478 51.6010 36.2624 0008310 159.3273 202.4262 16.52926236 329
```

```
1995006A
1 23497U 95006A 95062.15247912 .00075240 80240-5 11042-3 0 199
2 23497 62.8046 305.2951 0104237 107.8939 253.3533 15.95268816 2302
1995006B
1 23498U 95006B 95061.91331453 .00730342 82502-5 59550-3 0 298
2 23498 62.7939 305.7794 0072627 111.8855 249.0039 16.07900834 2278
1995006C
1 23499U 95006C 95049.28824527 .06335403 81180-5 52566-2 0 42
2 23499 62.8030 355.3853 0080054 110.1799 251.5533 16.06530291 259
STS 67
1 23500U 95007A 95062.25000000 .00001084 00000-0 50288-5 0 59
2 23500 28.4648 82.5976 0009786 265.6650 288.2467 15.72231340 152
1995008A
1 23501U 95008A 95061.85874665 -.00032139 00000-0 -12832-2 0 26
2 23501 65.8480 335.3526 0034452 344.6352 15.3749 15.24316279 50
1995008B
1 23502U 95008B 95062.25165279 .00057032 00000-0 21455-2 0 35
2 23502 65.8546 334.1137 0040150 349.6196 10.4118 15.26044421 114
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

431. STS-67 Element_Set (95063.612)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-04 15:45:44 UTC
From: elements-request@alsys.com
Message-ID: <STS-67.95063.612@alsys.com>
Source record: 25679
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-67
1 23500U 95007A 95063.61214672 .00005375 00000-0 63250-4 0 73
2 23500 28.4643 72.6970 0009612 288.2400 71.7110 15.72310258 384

Satellite: STS-67
Catalog number: 23500
Epoch time: 95063.61214672 = (04-Mar-95 14:41:29.47 UTC)
Element set: 007
Inclination: 28.4643 deg
RA of node: 72.6970 deg Space Shuttle Flight STS-67
Eccentricity: .0009612 Keplerian element set JSC-007
Arg of perigee: 288.2400 deg from NASA flight Day 3 vector
Mean anomaly: 71.7110 deg
Mean motion: 15.72310258 rev/day Gil Carman
Decay rate: 5.3750e-05 rev/day^2 NASA Johnson Space Center
Epoch rev: 38

This data is also available on the Shuttle Elements Mailing List. For
information, send the command "info elements" to "listserv@alsys.com".

<ftp://seds.lpl.arizona.edu/pub/sat/STS-elements>

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

432. OSCAR Skeds!

Newsgroup: rec.radio.amateur.space
Date: 1995-03-04 16:53:19 UTC
From: bobr@on-ramp.ior.com
Message-ID: <3ja5tv$6cm@on-ramp.ior.com>
Source record: 25677

I am interested in setting up DX skeds with those stations that might be interested. I operate on OSCAR 13 and OSCAR 10 (when its available). Please leave me some email if interested. Thanks and 73, Bob, KG7WC, Spokane, WA DN17RA.

--

```
+--------------------+-----------------------+-------------------------+
| Robert J. Raymond | Spokane, Washington | bobr@on-ramp.ior.com |
| Patricia Raymond | Amateur Callsign KG7WC |//www.ior.com:80/~bobr |
+--------------------+-----------------------+-------------------------+
```

433. AO-13 Mode J?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-04 17:10:22 UTC
From: ky1tluck@aol.com
Message-ID: <3ja6tu$30o@newsbf02.news.aol.com>
Source record: 25678

As someone who has been off of AO-13 for well over a year, I was surprised to discover, upon my return, that Mode J seems to have gone away.

What was the main reason for that happening?

73

Luck Hurder, KY1T

434. Re: .Z Compression

Newsgroup: rec.radio.amateur.space
Date: 1995-03-04 17:23:24 UTC
From: mike@wue.rhein-main.de
Message-ID: <3ja7mc$qv3@odb.rhein-main.de>
Source record: 25685

In article <3j5usf$bv4@news.cc.utah.edu>, pwiggins@fcom.cc.utah.edu (Patrick Wiggins) writes:

>JimN2ETE (jimn2ete@aol.com) wrote:
>: On some of the FTP's I have logged on, I noticed most of them are .z
>: compressed
>: and I do not have those capabilities. On which FTP can I get that file to
>: be able
>: to de-compress the file??
>
>As it happens I stumbled across a site last night with .z files. Reading
>through one of the README files it said that one has the option of
>downloading the file compressed by using the whole name including the .z
>or one can drop the .z and that gets the uncompressed version sent. You
>might want to try dropping the .z.

You need 'gzip' to decompress, use archie to find!

Michael

-
mike@wue.rhein-main.de, miwuensc@aofkft.remnet.ab.com, dl8fbh.ampr.org
[44.130.24.127]

435. ARLK009 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-04 20:29:06 UTC
From: w1aw@arrl.org
Message-ID: <$arlk009.1995@ampr.org>
Source record: 25695
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK009
ARLK009 Keplerian data

ZCZC SK34
QST de W1AW
Keplerian Bulletin 9 ARLK009
From ARRL Headquarters
Newington, CT March 4, 1995
To all radio amateurs

SB KEP ARL ARLK009
ARLK009 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-67
1 23500U 95007A 95062.25000000 .00001084 00000-0 50288-5 0 59
2 23500 28.4648 82.5976 0009786 265.6650 288.2467 15.72231340 152
AO-10
1 14129U 83058B 95049.74423524 -.00000256 00000-0 10000-3 0 3407
2 14129 26.5642 282.2218 6017196 253.4768 35.4795 2.05881639 59890
RS-10/11
1 18129U 87054A 95058.25149792 .00000050 00000-0 37725-4 0 243
2 18129 82.9272 140.3341 0013088 40.9203 319.2930 13.72348915384899
UO-11
1 14781U 84021B 95059.49927932 .00000175 00000-0 37484-4 0 7787
2 14781 97.7814 67.1495 0011661 164.1703 195.9861 14.69310036587943
RS-12/13
1 21089U 91007A 95054.82614381 .00000028 00000-0 13642-4 0 7788
2 21089 82.9215 184.8298 0030075 125.4781 234.9187 13.74054216203206
AO-13
1 19216U 88051B 95058.34859605 -.00000324 00000-0 10000-4 0 185
2 19216 57.6296 201.5042 7266743 3.1509 359.3994 2.09722635 19865
UO-14
1 20437U 90005B 95060.24996566 -.00000006 00000-0 14722-4 0 782
2 20437 98.5709 146.3396 0010744 151.4885 208.6882 14.29876291266328
RS-15
1 23439U 94085A 95060.38445279 -.00000039 00000-0 10000-3 0 324
2 23439 64.8154 69.3345 0168035 280.6816 77.5228 11.27526333 7365
```

```
AO-16
1 20439U 90005D 95060.22584539 -.00000002 00000-0 16260-4 0 8766
2 20439 98.5846 147.8479 0011154 152.6624 207.5151 14.29930284266331
DO-17
1 20440U 90005E 95060.78470427 .00000009 00000-0 20526-4 0 8765
2 20440 98.5858 148.8166 0011288 150.0425 210.1405 14.30071384266431
WO-18
1 20441U 90005F 95059.78529482 .00000007 00000-0 19636-4 0 8803
2 20441 98.5857 147.8133 0011867 153.7492 206.4294 14.30043049266296
LO-19
1 20442U 90005G 95060.72533593 .00000011 00000-0 21091-4 0 8766
2 20442 98.5831 149.0623 0012024 150.5162 209.6707 14.30143889266446
FO-20
1 20480U 90013C 95060.81704751 -.00000033 00000-0 -91605-5 0 7734
2 20480 99.0677 169.4017 0540957 116.2001 249.5737 12.83229606237179
AO-21
1 21087U 91006A 95062.17410346 .00000094 00000-0 82657-4 0 5713
2 21087 82.9457 311.0448 0036878 81.3413 279.1917 13.74551616205167
UO-22
1 21575U 91050B 95060.21922957 .00000023 00000-0 22199-4 0 5822
2 21575 98.4081 134.1607 0006758 245.8065 114.2411 14.36961586189999
KO-23
1 22077U 92052B 95060.20641427 -.00000037 00000-0 10000-3 0 4745
2 22077 66.0842 101.8535 0012247 225.4528 134.5488 12.86290269119844
KO-25
1 22828U 93061F 95061.69473254 .00000010 00000-0 21496-4 0 3500
2 22828 98.6245 139.6761 0010095 155.6651 204.5016 14.28088874 42672
IO-26
1 22826U 93061D 95058.73031761 .00000014 00000-0 23394-4 0 3718
2 22826 98.6288 136.7223 0008612 179.3319 180.7868 14.27759734 74151
AO-27
1 22825U 93061C 95061.22115412 -.00000013 00000-0 12400-4 0 3739
2 22825 98.6292 139.1032 0007935 170.5007 189.6321 14.27652867 74504
PO-28
1 22829U 93061G 95060.72384729 .00000035 00000-0 31720-4 0 3656
2 22829 98.6257 138.7471 0009685 158.9932 201.1645 14.28066241 74451
Mir
1 16609U 86017A 95062.22168686 .00008482 00000-0 11820-3 0 9565
2 16609 51.6490 328.7396 0004776 188.6018 171.4893 15.57830228516447

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
March 7, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

436. Re: OSCAR Skeds! (Me Too!)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 00:22:41 UTC
From: KKEYSEEA@EUROPA.UMUC.EDU
Message-ID: <3jb08h$siq@nova.umuc.edu>
Source record: 25683

>
> I am interested in setting up DX skeds with those stations that might be
> interested. I operate on OSCAR 13 and OSCAR 10 (when its available).
> Please leave me some email if interested. Thanks and 73, Bob,
> KG7WC, Spokane, WA DN17RA.
>
> --

Well, I consider the great state of Washington to be excellent DX
from my QTH here in Maryland. I would be interested in a schedule with
KG7WC and other Western US hams active on RS-15. We need to use CW
because of my inability to get a decent SSB signal through the link.

If you haven't tried RS-15, you might want to. I have had good CW
success with 100 watts to a vertical (uplink) and a simple dipole
downlink antenna. I want to try portable operation this summer, and
can be available in DE/WV/VA/PA for those trying (like me) to get
satellite WAS.

73 de WB4U
Ken Keyseear Gaithersburg, MD
kkeyseea@europa.umuc.edu

437. Re: AO-13 Mode J?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 00:43:52 UTC
From: n2ogb@aol.com
Message-ID: <3jb1g8$8v5@newsbf02.news.aol.com>
Source record: 25694

The 70cm transmitter on AO-13 died a year or so ago.
Ron N2OGB

438. Shuttle frequ.

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 03:20:33 UTC
From: Sono1@ix.netcom.com
Message-ID: <3jbam1$frb@ixnews4.ix.netcom.com>
Source record: 25684

I was wondering if any shuttle communications could be heard using a standard portable shortwave radio. I have a Sony ICF-2010 with outside antanna. Any hope? I live in southern california.
Mike McCarthy

439. Re: Re; NASA Select

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 03:49:40 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3jbcck$ko9@paperboy.ids.net>
Source record: 25686

In article <42@realjet.win-uk.net> Peter B. Snare,
snare@realjet.win-uk.net writes:
>Question: Does anyone know if it is possible to receive NASA
>Select transmissions from the Spacenet 2 satellite or a
>relayed transmission here in the UK?

No it isn't available in UK, even though it's probably high enough to be above your horizon.

Having a geosynch satellite above your horizon is just one requrement for being able to receive the signal.

Most importantly the Spacenet 2 signal is concentrated towards the 48 contigious United States. It also spills over into lower Canada, much of Mexico and the Caribiean.

Even though Spacenet 2 is clearly above the horizon if you're located in Brazil you cannot receive its signal there because you're too far outside its footprint.

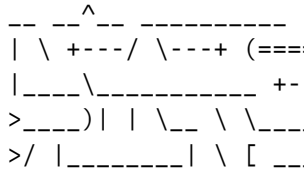
Other requirements include the correct band LNA, correct recevier, an NTSC TV set, etc.

As far as a relayed transmission is concerned - sure you can receive it! Provided that somebody is retransmitting it, and that it isn't encoded.

But why would it be transmitted to Europe? NASA's charter does not include informing Europeans about the status of its programs. Still, for some reasons some European party (e.g. ESA, ASI, the Russian Space Agency, etc.) could request that the signal be relayed to Europe for some particular reason (European astronaut or payload onboard, etc.) in which case you may be able to find the signal on any of the transatlantic satellites.

In the case of the STS-63 mission much of it was transmitted over Atlantic satellites to be eventually received by the Russian mission control center in Kaliningrad.

So call your Parliment representatives and demand that they carry a full time NASA Select channel in the United Kingdom!.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET


```
>|_____________________\ \_______/
Roger, go at throttle up CHR$(32) the final frontier
```

440. Re: .Z Compression

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 04:17:56 UTC
From: jimn2ete@aol.com
Message-ID: <3jbe1k$bre@newsbf02.news.aol.com>
Source record: 25688

I'll give it a blast thanks for the info!!!!!!!

JIm

441. Re: AO-13 Mode J?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 04:19:32 UTC
From: n7ryw@teleport.com
Message-ID: <3jbe3g$k65@desiree.teleport.com>
Source record: 25687

In article <3ja6tu$30o@newsbf02.news.aol.com>, ky1tluck@aol.com said...
>
>As someone who has been off of AO-13 for well over a year, I was
surprised
>to discover, upon my return, that Mode J seems to have gone away.
>
>What was the main reason for that happening?

The on board hardware suffered a failure, so only B and S are now
running. The satellites' orbit has changed some as well, and apogee is
near the Equator. This puts the sun behind the satellite for months at a
time, and the pointing angle is set way off to keep the batteries
charged. It is 230/0 right now and until May.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

442. HELP: STS-67 W5RR Packet

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 11:31:59 UTC
From: Doug Freeman <dougfree@onramp.net>
Message-ID: <3jc7ff$dui@news.onramp.net>
Source record: 25690

I am new to packet radio and for what ever reason my ability to figure
out the manual for the MFJ-1278B controller is getting me nowhere.
So far I have been doing ok on normal packet connections but I have
some questions about the Shuttle. I am using 145.55UP and 144.49dn
frequences.

My questions are

How do I setup for automatic operation?
Do I use beacon mode and what text?
Should I turn Digipeat Off?

In general besides the controller set up what are the proper
procedures? I did receive their packet dn information last night
so I would really like to see if my new antenna and only 50w can
make it up.

Thanks for you help,
Doug Freeman
KC5ION
dougfree@onramp.net
http://rampages.onramp.net/~dougfree/

443. STS-67 Element_Set (95064.627)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 15:45:26 UTC
From: elements-request@alsys.com
Message-ID: <STS-67.95064.627@alsys.com>
Source record: 25691
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-67
1 23500U 95007A 95064.62758723 .00010150 00000-0 68077-4 0 85
2 23500 28.4637 65.3009 0009534 307.2082 52.7605 15.72424881 544

Satellite: STS-67
Catalog number: 23500
Epoch time: 95064.62758723 = (05-Mar-95 15:03:43.53 UTC)
Element set: 008
Inclination: 28.4637 deg
RA of node: 65.3009 deg Space Shuttle Flight STS-67
Eccentricity: .0009534 Keplerian element set JSC-008
Arg of perigee: 307.2082 deg from NASA flight Day 4 vector
Mean anomaly: 52.7605 deg
Mean motion: 15.72424881 rev/day Gil Carman
Decay rate: 1.015e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 54

This data is also available on the Shuttle Elements Mailing List. For
information, send the command "info elements" to "listserv@alsys.com".

<ftp://seds.lpl.arizona.edu/pub/sat/STS-elements>

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

444. NASA Select audio re-broadcast in Chicago?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 20:56:45 UTC
From: edpi@interaccess.com
Message-ID: <edpi.1.0014D772@interaccess.com>
Source record: 25704

Howdy! Anyone have an idea if the NASA select audio for the
current shuttle mission is being re-broadcast in the Chicago area?

It used to be carried on a regular basis on 145.35, but seems like
it's no longer carried on that system.

Thanks and 73...

Ed Picha N9EP edpi@interaccess.com n9ep@amsat.org

445. MIR cosmonaut callsign?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-05 21:02:29 UTC
From: stevenh113@aol.com
Message-ID: <3jd8t5$leq@newsbf02.news.aol.com>
Source record: 25699

```
Please post the callsign of the current cosmonaut(s) on MIR.
Thanks, in advance!
```

446. Display4 location

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 01:44:27 UTC
From: danderson@burgoyne.COM
Message-ID: <199503060142.SAA15903@burgoyne.com>
Source record: 25702

John:
I found a Display4 file you were asking about in your 2 Mar 1995 posting.
The location that archie came up with (and only one, by the way), was
mrcnext.cso.uiuc.edu (128.174.201.12) under the full file name of
FontsDisplay4.cpt.Hqx dated 6 Jun 1991 and 290,168 bytes.
Hope this helps you. 73, Duane KJ7HO.

447. Re: Elements Question

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 01:46:40 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3jdpi0$ibq@news.cc.utah.edu>
Source record: 25703

Rafael Solis (rafaels@zimmer.CSUFresno.EDU) wrote:
: I'm following STS-67 with a tracking program and I got two element
: sets from this group, the two sets give different orbits, my question
: is how can I tell which of the two elements is the right one (i.e.

There is always the possibility that both orbits are correct.
That's to say that between the issuance of the two sets of TLEs the
actual orbits changed (that happened a bunch during the last flight).
Part of my job here at Hansen is keeping the local public and media
informed of when the shuttle might be visible. In order to make sure
I've got my data right I run each set of TLEs through two different
tracking programs.
Then, just to be sure, I then check the shuttle's position, as seen
on NASA Select, against what my read outs are showing.
So, while it may be difficult to get access to NASA TV, there are
gobs of shareware / freeware tracking programs out there so you might
want to get a second program and compare outputs.

Clear skies!
Patrick Wiggins, Hansen Planetarium, SLC, UT

448. STS-67 Checkpoint #5

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 02:52:24 UTC
From: tstader@aol.com
Message-ID: <3jdtd8$qtk@newsbf02.news.aol.com>
Source record: 25705

MacSPOC Users-

The enclosed checkpoint removes 11.0 miles of downtrack error accumulated since the last update. Observations from Jupiter's moon Io to distant quasars continue with ASTRO-2 instruments in Endeavour's payload bay.

-Dan Adamo
(please reply to: Adamod@aol.com)

File: STS67-5.cp (488 bytes)
---------cut here-----------
Orbit 60 OIG State
1995 61 (3- 2) 6 38 13.000
1995 65 (3- 6) 1 1 24.030
0.244978254333D+07 0.311806957242D+01
3 60
-0.568330960000D+07 -0.211829133000D+08 -0.261203410000D+07
0.219528919160D+05 -0.443991998000D+04 -0.116642322840D+05
138.0 5000.0 84.00 2.69

449. Novice and Technician Amateur Radio Licensing Course

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 05:19:04 UTC
From: wfspar@qnet.com
Message-ID: <3je608$5u5@cello.qnet.com>
Source record: 25707

A 10-week amateur radio licensing course will start April 25 in Lancaster, CA. The class will prepare students to pass Novice and Technician entry level FCC examinations. Applications and date sheet can be requested from Bill Welsh, 45527 Third St. East, Lancaster, CA 93535-1802.

450. Re: SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 07:32:33 UTC
From: quasar@cts.com
Message-ID: <quasar.8.2F5ABA91@cts.com>
Source record: 25692

In article <1995Mar4.061112.1044@rgfn.epcc.edu> ac579@rgfn.epcc.edu (Roland Cowan) writes:
>From: ac579@rgfn.epcc.edu (Roland Cowan)
>Subject: SAREX
>Date: Sat, 4 Mar 1995 06:11:12 GMT

>Hello net, would some kind soul please tell me the uplink
>freqs for the shuttle.
>Thanks
>73, Roland

>--
>Roland Cowan WF4P/AAT6MC
>ac579@rgfn.epcc.edu

I would be happy to inform you of the frequencies. They are as follows:

VOICE 144.910 144.930 144.950 144.970 144.990
PACKET 144.490

I case you need the downlink it is 145.550

As a matter of fact, at 0642 Z 06 MAR 95, I worked WA4SIR, Ron Parise who
is an astonaut aboard the shuttle Endeavour on phone. Good luck!!

451. Re: Shuttle frequ.

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 07:39:26 UTC
From: quasar@cts.com
Message-ID: <quasar.9.2F5ABC2E@cts.com>
Source record: 25693

In article <3jbam1$frb@ixnews4.ix.netcom.com> Sono1@ix.netcom.com (MICHAEL MCCARTHY) writes:
>From: Sono1@ix.netcom.com (MICHAEL MCCARTHY)
>Subject: Shuttle frequ.
>Date: 5 Mar 1995 03:20:33 GMT

>I was wondering if any shuttle communications could be heard using a
>standard portable shortwave radio. I have a Sony ICF-2010 with outside
>antanna. Any hope? I live in southern california.
>Mike McCarthy

Mostly the shuttle is using packet at a frequency of 145.550 as the downlink. The shuttle is on phone (voice), but it is rare. You can receive the packet bursts and send them to a TNC such as the PK232 and look at the data on a pc. At this time the shuttle's footprint is only over the southern parts of California and it flies by (when I get out to work it) from about 9 P.M. on until about 1 A.M. with about 1 1/2 to 1 3/4 hours between passes.

452. Offpointing

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 13:21:52 UTC
From: ky1tluck@aol.com
Message-ID: <3jf29g$32p@newsbf02.news.aol.com>
Source record: 25709

N7RYW de KY1T -- thanks very much for the info.

I had noticed the severe offpointing as well, and was HOPING thats why I wasn't hearing the bird so well. Even so, I still need to get my preamp up top, I guess. Sigh...

Thanks again 'n 73

Luck Hurder, KY1T ** KY1TLUCK@AOL.COM **
AX.25 - KY1T@N4GAA.CT TCP/IP - 44.88.2.59 (KY1T-2)
Supporter of AMSAT, TAPR, and NARA but **NOT** ARRL
---

453. Turbo upgrade to TRAKBOX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 16:04:19 UTC
From: "Art.Jeyes" <Art.Jeyes@jhuapl.edu>
Message-ID: <D510n7.9tF@aplcenmp.apl.jhu.edu>
Source record: 25696

```
can anyone provide me with information on the turbo
upgrade to TRAKBOX??? Thanks
Art
```

454. Turbo upgrade to TRAKBOX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 16:04:22 UTC
From: "Art.Jeyes" <Art.Jeyes@jhuapl.edu>
Message-ID: <D510nB.9u8@aplcenmp.apl.jhu.edu>
Source record: 25697

```
can anyone provide me with information on the turbo
upgrade to TRAKBOX??? Thanks
Art
```

455. Re: Sun flux figures from Boulder

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 18:15:43 UTC
From: Alf Green <alf@agreen.iac.honeywell.com>
Message-ID: <3jfjgf$i9t@adm09.iac.honeywell.com>
Source record: 25562

wroth@netcom.com (Wayne D Roth) wrote:
>
> KE4HW (ke4hw@aol.com) wrote:
> : Does anyone have an address for Boulder sun spot info for radio
> : propagation, same as being transmitted on HF 18 min. past the hour, or
> : available as voice info on telephone. I'm looking for an internet source
> : for this info.
>
> : 73, George, KE4HW
>
> If you want to listen to wwv via phone, dial 303-499-7111.
>
> Wayne
> WA2N/5
> --
> wroth@netcom.com

There is a 'phone Bulletin Board at 303-497-5042. The service is free,
but you do have to register when you first call.

I haven't found exatly the same info on Internet, but there is a
companion set of data, plus a lot of other neat stuff, available at

gopher.sel.noaa.gov

If you have a Web browser (eg. Mosaic or Netscape) you might want to try:

http://www.sel.bldrdoc.gov/

Good luck,

Alf NU8I/G4ABB

alf@agreen.iac.honeywell.com
Phoenix, AZ

456. Can Somebody Help Me?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 18:55:09 UTC
From: Fabrizio Gaucci <MC8431@mclink.it>
Message-ID: <794512509.MC8431@mclink.it>
Source record: 25698

Can somebody help me?
I'd like to try to receive the Space Shuttle but I don't know the
frequencies.
I thank you all in advance for the help.

mc8431@mclink.it

457. Re: TRACKING

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 23:03:09 UTC
From: bmm1@freenet3.scri.fsu.edu
Message-ID: <3jg4bd$8ah@freenet3.scri.fsu.edu>
Source record: 25700

InstantTrack, Version 1.00b, available from Amsat runs fine on an old
IBM XT (8088). It is a little slow but very usable.

Bruce
--
Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

458. Re: Spy satellite TLEs found

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 23:15:01 UTC
From: bmm1@freenet3.scri.fsu.edu
Message-ID: <3jg51l$96m@freenet3.scri.fsu.edu>
Source record: 25701

Go ahead and post it. I didn't ask for it but I would like to see it.
--
Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

459. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-06 23:41:04 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.794533264@eel>
Source record: 25601

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95065.25000000 .00001111 00000-0 51933-5 0 129
2 23500 28.4663 60.7704 0009976 316.0294 334.6039 15.72351268 627
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

460. Tracking on old computers

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 00:03:29 UTC
From: Gary_Rogers@DGC.ceo.dg.COM
Message-ID: <9503070003.BN00037@rtp41.rtp.dg.com>
Source record: 25584

Message:
About a week ago I posted a request for suggestions of tracking
software to use on an old 8088 PC. The response was great! Thanks to
all who took the time to offer their help. By far the winner was
InstantTrack, available from AMSAT. Coming in at second place was
Traksat, versions 2.7 and 2.8. These are older versions that will
support reduced graphics. Also mentioned were: Orbits II for CGA
and Orbits III for EGA/VGA. I also received one vote for QuickTrak.
It turns out I had an older copy of Traksat 2.7 laying around and
it does the job fine. One again, thanks to all.

Gary WA4YMZ WA4YMZ@AMSAT.ORG -or- Gary Rogers@DGC.CEO.DG.COM
Trying REALLY hard for WAS on the birds. 27 states in 1 month on
RS-12 from sunny Apex, NC.

461. Spy satellite TLEs

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 01:42:19 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3jgdlr$n2@news.cc.utah.edu>
Source record: 25573

Howdy!
So as to keep anyone else from sending me email about my last
post, perhaps I'll just say that I'm still waiting (hoping) to hear from
the original poster. :-)
What I have is an FTP address which *may* have the TLEs but until
I hear back from the poster who started me on this quest, I don't know
which of the TLEs are for the satellites in question.
Taking a slightly different tact on this, if there is anyone out
there who knows the catalogue number for the "flight(s)" of three
satellites which travel in the shape of a triangle you might want to post
that here and maybe then someone will be able to finally figure out what
so many of us seem to want to know.

Clear skies!

462. Re: NASA Select audio re-broadcast in Chicago?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 02:04:25 UTC
From: Steven Meier <smeier@delphi.com>
Message-ID: <pc861tZ.smeier@delphi.com>
Source record: 25570

Hi Ed. Yes it used to be on there and as far as I know it isn't on yet this mission. That happens sometimes. I don't know why but it seems to happen more often on the real long missions. Perhaps they don't wnat to tie up the the repeater for 16 days. Better luck next mission. It's on the hf bands. Try 3860 kHz in the evenings. I'm getting it direct from NASA select on a three foot dish (c band tvro) but it's very poor quality.. 73s Steve N9JGQ

463. Re: WD_1_GIG_DRIVE

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 02:31:38 UTC
From: pete@freenet.grfn.org
Message-ID: <3jggia$coa@locutus.Bethany.ORG>
Source record: 25567

flame on:

Please don't buy equipment from anyone that would wrongly crosspost
to inappropiate newsgroups, like this person.

flame off:

464. Re: Can Somebody Help Me?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 02:34:19 UTC
From: Bill@halcyon.com
Message-ID: <3jgjvh$nf8@news.halcyon.com>
Source record: 25577

In article <794512509.MC8431@mclink.it>, <MC8431@mclink.it> writes:
> Path: news.halcyon.com!nwnexus!news.sprintlink.net!EU.net!i2unix!news
> From: Fabrizio Gaucci <MC8431@mclink.it>
> Newsgroups: rec.radio.amateur.space
> Subject: Can Somebody Help Me?
> Date: Mon, 06 Mar 95 18:55:09 CET
> Organization: MC-link - Italian Dial-Up Online Service
> Lines: 7
> Message-ID: <794512509.MC8431@mclink.it>
> NNTP-Posting-Host: ax433.mclink.it
>
>
> Can somebody help me?
> I'd like to try to receive the Space Shuttle but I don't know the
> frequencies.
> I thank you all in advance for the help.
>
> mc8431@mclink.it

145.55 FM

465. Re: Sunspots, anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 02:36:40 UTC
From: pete@freenet.grfn.org
Message-ID: <3jggro$coa@locutus.Bethany.ORG>
Source record: 25568

Robert D Houghton (rhought@cello.gina.calstate.edu) wrote:
: Hello!
: We are a group of physics students at John A. Rowland High School in
: Rowland Heights, California, and are doing a project on sunspots. We are

Sunspots have interesting effects on amateur radio. One of the most
famous concepts is that of the MUF, or Maximum Usable Frequency, that
is varied based on solar activity. You can find out about this, and other
effects of the sun on atmosphere and radio waves in the many publised
amateur radio books. The ARRL (Amateur Radio Relay League) publishes
a yearly book called the Handbook, that has very good explinations of
this stuff. Look for a copy in your library!

Good luck.

PS -
Just this weekend, my cable company started getting bad picures from
their satellite feed. This is a fimilar problem aound here, linked with
the sunspots. (or so they tell me!)

466. OSCAR 10 is alive!

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 03:15:32 UTC
From: bobr@on-ramp.ior.com
Message-ID: <3jgj4k$9t5@on-ramp.ior.com>
Source record: 25706

QST! Oscar 10 is alive and working well. Very good signals, lots of North American activity but very few asians or europeans. More activity needed. Please join in. 73, Bob, KG7WC

--


```
+--------------------+-----------------------+-------------------------+
| Robert J. Raymond | Spokane, Washington | bobr@on-ramp.ior.com |
| Patricia Raymond | Amateur Callsign KG7WC |//www.ior.com:80/~bobr |
+--------------------+-----------------------+-------------------------+
```

467. STS-67 Checkpoint #6

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 03:18:09 UTC
From: tstader@aol.com
Message-ID: <3jgj9h$do5@newsbf02.news.aol.com>
Source record: 25574

MacSPOC Users-

The enclosed checkpoint reflects STS-67 tracking into early Monday evening CST and removes 26.0 miles of downtrack error accumulated since the last update.

-Dan Adamo

(please reply to Adamod@aol.com)

File: STS67-6.cp (488 bytes)
-----cut here----
Orbit 76 OIG State
1995 61 (3- 2) 6 38 13.000
1995 66 (3- 7) 1 1 5.372
0.244978354311D+07 0.313391155804D+01
3 76
-0.187590665000D+08 0.576143990000D+07 0.101152067000D+08
-0.897627355000D+04 -0.233780846650D+05 -0.328580708700D+04
70.7 5000.0 84.00 2.69

468. STS-67 FD6 ATL

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 03:22:49 UTC
From: tstader@aol.com
Message-ID: <3jgji9$dql@newsbf02.news.aol.com>
Source record: 25575

MacSPOC Users-

The enclosed attitude timeline (ATL) reflects STS-67 planning from about
4/12:00 to 5/12:00 MET. Prior to 4/12:00, ATL entries are "as flown".
This text file is only processed by MacSPOC releases later than v1.1.

-Dan Adamo

(please reply to Adamod@aol.com)

File: ATL (10575 bytes)

---------cut here-----------
0/01:24:23.000 BIAS -ZLV-YVV LVLH 0.000 180.000 282.000
0/04:41:58.000 IPS-PINT INTL 187.000 144.000 39.000
0/05:47:05.000 IPS-OSPC INTL 120.000 230.000 310.000
0/06:48:12.000 IPT/IDRT INTL 113.000 225.000 348.000
0/08:27:04.000 IDPT/SSUB INTL 64.000 77.000 357.000
0/09:18:36.000 J3_F_&_A_1 INTL 179.000 32.000 21.000
0/13:22:03.000 J3_F_&_A_2 INTL 126.000 85.000 74.000
0/17:06:14.000 HUT-CAM INTL 248.000 335.000 63.000
0/17:38:50.000 HUT-SF INTL 59.000 146.000 37.000
0/20:18:11.000 WUP-F&A INTL 22.000 353.000 14.000
0/21:17:03.000 HUT-CAL INTL 319.000 167.000 46.000
0/22:08:04.000 BR-EARTH LVLH 180.000 0.000 340.000
0/22:47:30.000 6353-31H INTL 198.000 300.000 292.000
0/23:43:17.000 2530-11H INTL 121.000 70.000 346.000
1/00:37:05.000 2567-11H INTL 330.000 229.000 33.000
1/01:15:14.000 3230-20H INTL 129.000 98.000 75.000
1/02:02:59.000 4469-11H INTL 318.000 247.000 23.000
1/03:18:41.000 6308-20U INTL 353.000 99.000 9.000
1/04:09:27.000 6103-10U INTL 171.000 53.000 35.000
1/05:06:16.000 6594-11U INTL 9.000 159.000 8.000
1/05:36:29.000 2203-10W INTL 163.000 45.000 26.000
1/06:46:58.000 2133-10W INTL 236.000 78.000 322.000
1/07:46:10.000 2271-10W INTL 60.000 188.000 287.000
1/08:41:31.000 4453-10H INTL 156.000 37.000 344.000
1/10:58:58.000 0001-10H INTL 333.000 99.000 307.000
1/11:50:30.000 4804-10U INTL 48.000 15.000 22.000
1/12:57:58.000 5201-11U INTL 4.000 347.000 292.000
1/13:46:02.000 5101-10U INTL 99.000 286.000 77.000
1/15:02:39.000 4508-10W INTL 68.000 304.000 335.000
1/15:54:41.000 0656-10W INTL 271.000 120.000 8.000
1/16:41:31.000 9421-10U INTL 143.000 325.000 67.000
1/17:42:30.000 0003-10H INTL 64.000 248.000 311.000
1/18:53:13.000 8116-11H INTL 182.000 310.000 346.000

```
1/19:25:43.000 3402-10H INTL 13.000 213.000 3.000
1/20:10:02.000 1204-10H INTL 248.000 183.000 17.000
1/21:14:45.000 0608-10W INTL 165.000 340.000 55.000
1/22:18:16.000 5109-12U INTL 331.000 348.000 355.000
1/23:02:46.000 6235-11U INTL 219.000 293.000 62.000
2/00:03:29.000 2302-10W INTL 113.000 238.000 14.000
2/01:01:40.000 0502-12W INTL 158.000 187.000 22.000
2/02:29:11.000 4543-10W INTL 303.000 34.000 353.000
2/03:29:53.000 2916-10H INTL 143.000 333.000 14.000
2/03:57:08.000 4469-10H INTL 230.000 83.000 323.000
2/04:57:04.000 8415-21H INTL 268.000 80.000 295.000
2/05:56:17.000 3206-20H INTL 104.000 247.000 73.000
2/07:00:43.000 1204-20H INTL 251.000 263.000 339.000
2/08:01:56.000 3266-11H INTL 58.000 170.000 333.000
2/08:53:43.000 2979-10H INTL 295.000 135.000 353.000
2/09:25:06.000 8106-10U INTL 138.000 194.000 41.000
2/10:01:07.000 5196-10U INTL 258.000 150.000 34.000
2/10:48:09.000 6248-11U INTL 282.000 135.000 69.000
2/12:21:32.000 4211-11W INTL 345.000 194.000 352.000
2/13:26:06.000 3270-11W INTL 275.000 205.000 345.000
2/14:03:03.000 4211-12W INTL 344.000 193.000 348.000
2/15:14:21.000 2907-11H INTL 56.000 288.000 321.000
2/15:57:38.000 0001-12H INTL 200.000 289.000 36.000
2/16:31:09.000 2567-10H INTL 316.000 224.000 42.000
2/18:06:43.000 2707-11H INTL 1.000 218.000 4.000
2/18:49:48.000 8415-11H INTL 232.000 41.000 301.000
2/19:50:51.000 8202-11H INTL 46.000 295.000 333.000
2/20:46:43.000 4469-20H INTL 237.000 78.000 328.000
2/21:58:53.000 9425-10U INTL 192.000 274.000 30.000
2/22:37:24.000 5312-10U INTL 240.000 343.000 30.000
2/23:24:39.000 8210-10U INTL 27.000 99.000 28.000
3/00:15:14.000 2302-20W INTL 113.000 177.000 346.000
3/01:34:52.000 3327-10W INTL 293.000 333.000 0.000
3/02:22:34.000 3807-19W INTL 147.000 221.000 2.000
3/03:13:10.000 8415-11H INTL 77.000 74.000 294.000
3/04:01:29.000 8116-21H INTL 183.000 308.000 52.000
3/04:49:35.000 2564-11H INTL 259.000 127.000 317.000
3/05:22:30.000 8121-13H INTL 225.000 26.000 283.000
3/06:18:16.000 8102-11H INTL 11.000 334.000 345.000
3/07:05:21.000 8535-21H INTL 251.000 46.000 301.000
3/08:06:03.000 2248-10H INTL 126.000 18.000 0.000
3/09:10:28.000 2953-10H INTL 267.000 76.000 310.000
3/09:39:39.000 6141-11U INTL 171.000 44.000 329.000
3/10:28:30.000 5108-11U INTL 287.000 103.000 318.000
3/11:28:26.000 5311-11U INTL 95.000 10.000 43.000
3/12:26:17.000 5201-13U INTL 177.000 160.000 309.000
3/12:47:58.000 3114-10W INTL 76.000 51.000 2.000
3/13:49:33.000 2203-11W INTL 16.000 220.000 350.000
3/14:45:26.000 4557-10W INTL 305.000 254.000 59.000
3/16:01:17.000 H20 DUMP LVLH 0.000 180.000 90.000
```

```
3/17:26:13.000 8535-22H INTL 315.000 195.000 48.000
3/18:23:44.000 3413-10H INTL 355.000 222.000 10.000
3/19:15:41.000 8535-11H INTL 329.000 148.000 343.000
3/19:59:55.000 2567-12H INTL 309.000 257.000 56.000
3/20:47:10.000 3217-10H INTL 191.000 240.000 1.000
3/21:52:59.000 6207-10U INTL 39.000 288.000 27.000
3/22:30:08.000 8310-11U INTL 344.000 41.000 343.000
3/23:24:37.000 6197-10U INTL 176.000 164.000 16.000
3/23:56:21.000 6248-12U INTL 290.950 125.780 68.170
4/00:52:01.000 2302-30W INTL 115.000 226.000 9.000
4/01:56:38.000 3270-12W INTL 278.000 219.000 347.000
4/02:39:38.000 4211-13W INTL 339.000 210.000 43.000
4/03:37:39.000 3407-12H INTL 252.000 4.000 24.000
4/04:18:02.000 7342-13H INTL 24.000 150.000 34.000
4/05:11:40.000 2253-10H INTL 39.000 31.000 306.000
4/05:55:46.000 6306-20H INTL 34.000 132.000 304.000
4/06:38:54.000 3206-21H INTL 59.000 49.000 289.000
4/07:26:47.000 6306-31H INTL 22.000 117.000 325.000
4/08:09:03.000 2822-10H INTL 13.000 33.000 352.000
4/09:14:42.000 2506-10H INTL 310.000 79.000 47.000
4/10:13:09.000 9405-12U INTL 205.000 280.000 53.000
4/11:15:00.000 5109-13U INTL 231.000 215.000 308.000
4/11:58:34.000 6272-10U INTL 159.000 273.000 335.000
4/12:52:58.000 2252-10H INTL 58.000 302.000 64.000
4/13:30:01.000 3266-21H INTL 87.000 49.000 42.000
4/14:19:30.000 3405-11H INTL 269.000 284.000 353.000
4/14:47:21.000 8208-11H INTL 28.000 158.000 47.000
4/15:46:59.000 4413-10H INTL 322.000 228.000 358.000
4/16:29:35.000 2534-11H INTL 76.000 221.000 351.000
4/17:09:58.000 3409-11H INTL 317.000 216.000 7.000
4/17:42:38.000 0003-11H INTL 106.000 81.000 52.000
4/18:34:11.000 4469-21H INTL 314.000 255.000 31.000
4/19:38:15.000 7316-10U INTL 201.000 233.000 9.000
4/20:32:54.000 5101-12U INTL 133.000 154.000 293.000
4/21:03:42.000 6604-10U INTL 149.000 271.000 17.000
4/21:58:34.000 7401-10U INTL 47.000 305.000 47.000
4/22:42:23.000 6223-10U INTL 0.000 71.000 32.000
4/23:40:20.000 8211-10U INTL 90.000 259.000 61.000
5/00:20:10.000 6134-10U INTL 150.000 253.000 338.000
5/01:01:33.000 2205-10W INTL 32.000 210.000 357.000
5/02:11:13.000 2306-10W INTL 238.000 80.000 324.000
5/03:00:53.000 4595-10W INTL 25.000 189.000 11.000
5/03:43:23.000 2306-20W INTL 257.000 108.000 315.000
5/04:33:16.000 4586-10W INTL 26.000 183.000 24.000
5/05:16:20.000 2306-30W INTL 228.000 12.000 23.000
5/05:59:08.000 4596-10W INTL 154.000 4.000 337.000
5/06:42:18.000 2306-40W INTL 224.000 29.000 7.000
5/07:31:33.000 2586-10H INTL 100.000 60.000 353.000
5/08:15:29.000 8116-12H INTL 358.000 129.000 328.000
5/08:57:00.000 8202-21H INTL 66.000 328.000 315.000
```

```
5/09:46:07.000 4445-11H INTL 220.000 37.000 16.000
5/10:54:38.000 7305-10H INTL 143.000 310.000 18.000
14/22:39:24.000 -ZLV +YVV LVLH 0.000 180.000 90.000
15/08:32:26.000 RAD COLDSOAK INTL 309.750 206.100 52.210
15/09:43:11.000 D/O ALIGN INTL 297.000 182.000 35.000
15/09:50:14.000 ALIGN VERF INTL 287.000 132.000 353.000
15/10:01:22.000 BIAS -XSI INTL 310.000 206.000 52.000
15/12:19:41.000 D/O BURN INTL 229.000 45.000 40.000
```

469. Freeware DOVE telemetry deocder windows program

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 04:27:01 UTC
From: forsberg@crash.cts.com
Message-ID: <D51z12.Cp2@crash.cts.com>
Source record: 25708

I have uploaded a program I wrote that will decode the telemetry that comes from the DOVE (DO-17) satellite. It runs with windows 3.1. It is freeware and can be downloaded via ftp at ftp.amsat.org in the directory amsat/software/windows/telemetry. All you need to receive telemetry data is a 2M radio and a normal packet TNC. If you don't have access to Internet then you can sent me $1 and I will provide postage, mailer and disk (please specify) to anywhere in USA or Canada. The file name is dovedv12.zip.

73 Bruce Forsberg (WB6IZG)
11178 Batavia Circle
San Diego, CA. 92126

470. Re: Can Somebody Help Me?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 07:52:14 UTC
From: quasar@cts.com
Message-ID: <quasar.13.2F5C10AE@cts.com>
Source record: 25710

In article <794512509.MC8431@mclink.it> Fabrizio Gaucci <MC8431@mclink.it> writes:
>From: Fabrizio Gaucci <MC8431@mclink.it>
>Subject: Can Somebody Help Me?
>Date: Mon, 06 Mar 95 18:55:09 CET

>Can somebody help me?
>I'd like to try to receive the Space Shuttle but I don't know the
>frequencies.
>I thank you all in advance for the help.

>mc8431@mclink.it

If you would like to work the shuttle on packet or phone (voice) the
frequencies are as follows:

PACKET UPLINK 144.490
DOWN 145.550

PHONE UPLINK 144.491 144.493 144.495 144.497 144.499
DOWN 145.550

Good luck! I worked Ron, WA4SIR Sunday night March 5th.

471. Re: Can Somebody Help Me?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 08:27:44 UTC
From: n7ryw@teleport.com
Message-ID: <3jh5cl$2ob@desiree.teleport.com>
Source record: 25582

In article <794512509.MC8431@mclink.it>, MC8431@mclink.it said...

>I'd like to try to receive the Space Shuttle but I don't know the
>frequencies.

145.550 mHz
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

472. Re: Spy satellite TLEs

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 11:30:25 UTC
From: thomsona@netcom.com
Message-ID: <thomsonaD52IMq.GKv@netcom.com>
Source record: 25561

In article <3jgdlr$n2@news.cc.utah.edu> pwiggins@fcom.cc.utah.edu (Patrick Wiggins) writes:
>Howdy!
> So as to keep anyone else from sending me email about my last
>post, perhaps I'll just say that I'm still waiting (hoping) to hear from
>the original poster. :-)
> What I have is an FTP address which *may* have the TLEs but until
>I hear back from the poster who started me on this quest, I don't know
>which of the TLEs are for the satellites in question.
> Taking a slightly different tact on this, if there is anyone out
>there who knows the catalogue number for the "flight(s)" of three
>satellites which travel in the shape of a triangle you might want to post
>that here and maybe then someone will be able to finally figure out what
>so many of us seem to want to know.
>

The TLEs for the NOSS (Naval Ocean Surveillance System), aka "White Cloud" satellites are in kilroy.jpl.nasa.gov/pub/space/elements/molczan and mirror sites. The two clusters of the second generation NOSS 2 system are brighter, and are what people usually see by accident.

473. Re: Space shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 13:51:21 UTC
From: mbarney5@aol.com
Message-ID: <3jhocp$v1@newsbf02.news.aol.com>
Source record: 25583

The freq to listen to was posted as 145.55 FM. What type antenna is necessary for this reception.

Thanks for the help.

Mike

474. Re: MIR cosmonaut callsign?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 15:44:54 UTC
From: Samuel Guccione <sguccion@outland.dtcc.edu>
Message-ID: <Pine.SV4.3.91.950307104440.15973A-100000@outland.dtcc.edu>
Source record: 25585

On 5 Mar 1995, StevenH113 wrote:

> Please post the callsign of the current cosmonaut(s) on MIR.
> Thanks, in advance!
>
Call sign is R0MIR>

475. Need QSL info for STS67

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 16:06:00 UTC
From: TomWr@ix.netcom.com
Message-ID: <3ji098$4n3@ixnews2.ix.netcom.com>
Source record: 25563

Does anyone have QSL infofor STS67? I haven't been able to find the
press kit or info on QSL and have looked in the usual places.
Thanx!

476. Re: TRACKING

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 16:11:41 UTC
From: srwilson@lexmark.com
Message-ID: <D52vnH.4zr@lexmark.com>
Source record: 25564

In article <3jg4bd$8ah@freenet3.scri.fsu.edu>, bmm1@freenet3.scri.fsu.edu (Bruce M. Marshall) says:
>
>InstantTrack, Version 1.00b, available from Amsat runs fine on an old
>IBM XT (8088). It is a little slow but very usable.
>
>Bruce
>--
>Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

Bruce I too was looking for the Instant Track program. I looked on ftp.amsat.com in the Instant Track dir but did not find the program. Could you tell me the location and the file name. Just a question, Is there an update to the ver 1.00, and if so is it Shareware or freeware.

477. BEST ALL MODE 2 MTR. RIG?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 16:33:32 UTC
From: dir00@amail.amdahl.com
Message-ID: <dir00.22.055F4F8C@amail.amdahl.com>
Source record: 25569

I thought I would ask here which all-mode rig, in your opinion, would be "the one to buy" as you use SSB/CW for the sats. I am looking at the new Kenwood TM-255A, and also looked at the ICOM 275H.

I know the Icom is 100 Watts, but it is also twice the price, being that you can buy the Kenwood for about $869 now and they give you a $70 rebate from Kenwood. I wanted to stay away from the dual band sat. rigs like the 790/820H/970/736 because I am not sure I want to spend $2000+ yet. I have a TS-700 SP, and can listen to AO-13, etc. (and work RS-10/15), but thought I would wait for phase 3D to see what the final uplink/downlink phases will be.

Anyway, the TM-255A is supposed to have very good inter-mod supression as it is 144-148 ONLY. I guess I am looking for people who have experiance with equipment I should/should not be buying. I think it should be posted here, rather than direct to me, as I think a lot of people are in the same position I am in...and it is a topic other than "where are the latest elements"!!

Thanks, and 73, Dave

P.S. HURRY, rebate ENDS 3/20/95!!! :-) :-)

Dave Roznar W6TGE "Amateur Radio is a Contact Sport"
e-mail: dir00@amail.amdahl.com

Message sent by Trumpet WT-WSK v 10B

478. SAREX FAQ

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 16:36:13 UTC
From: rinderbitzen@arrl.org
Message-ID: <1995Mar7.163613.18678@arrl.org>
Source record: 25565
Cross-posted to: rec.radio.amateur.misc,sci.space.shuttle,local.amsat,rec.radio.amateur.space

Posted by:
Bob Inderbitzen, NQ1R
Assistant to the Manager
ARRL Educational Activities Department
rinderbi@arrl.org

SHUTTLE AMATEUR RADIO EXPERIMENT (SAREX) BULLETIN
JANUARY/FEBRUARY 1995

For More Information Contact:
American Radio Relay League (ARRL)
Educational Activities Department (EAD)
225 Main Street
Newington CT 06111-1494 USA
Telephone (203) 666-1541

FREQUENTLY ASKED QUESTIONS ABOUT SAREX-

WHAT IS SAREX?

With the help of Amateur Radio clubs and ham radio operators, astronauts have been speaking over the ham airwaves while in orbit. They are talking directly with large groups of the general public, showing teachers, students, parents and communities how Amateur Radio energizes youngsters about science, technology, and learning. The program is called SAREX, the Shuttle Amateur Radio EXperiment.

NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly youngsters, in technology and the US space program with the help of Amateur Radio.

During a SAREX mission, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

WHO SPONSORS SAREX?

The American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and NASA sponsor these exciting experiments. AMSAT volunteers support all technical operations for SAREX, and mentor participating school groups. The ARRL provides the Amateur Radio community with SAREX information and educational support. The ARRL Educational Activities Department (EAD) and NASA Headquarters create and distribute SAREX lesson materials and resources for teachers. SAREX is supported by the Federal Communications Commission (FCC).

Hundreds of Amateur Radio operators work behind the scenes, including those from NASA's Amateur Radio clubs at the Johnson Space Center, Marshall Space Flight Center and Goddard Space Flight Center.

A SAREX Working Group was created to administer the program. The working group is comprised of Roy Neal, K6DUE -Chairman; Rosalie White, WA1STO -ARRL; Frank Bauer, KA3HDO -AMSAT; and Lou McFadin, W5DID -NASA Johnson Space Center.

I AM A SCHOOL TEACHER--HOW CAN I GET STARTED?

Schools wanting to make a scheduled SAREX contact with the astronauts are required to submit proposals and a SAREX school application to ARRL.

While only a handful of schools get chosen for scheduled contacts, all schools can participate by eavesdropping, or by trying to make a random contact with the shuttle astronauts. SAREX lesson materials are available from ARRL for all schools who participate. Imagine listening in on the astronauts from your classroom! If you are a school teacher, but you are unfamiliar with ham radio, you can still become a part of SAREX in your school. Contact the ARRL EAD to get a list of your local Amateur Radio clubs to assist you.

If you are a parent, grandparent and/or a ham radio operator, contact ARRL EAD and a local school. EAD will send you materials, including ways to convince teachers and school administrators that Amateur Radio is an important discipline the school should take advantage of on a full-time basis. This is a tremendous opportunity for you to showcase SAREX and Amateur Radio to kids of all ages in a big way.

HOW DO I SUBMIT A SAREX SCHOOL APPLICATION FOR A SCHEDULED CONTACT?

If your school is interested in a radio contact for a future SAREX mission, you must complete a SAREX school application and write an educational proposal. ARRL collects applications and proposals, and then forward them to the SAREX Working Group who makes the final selection in collaboration with the astronauts. All grade levels and type of schools (rural, suburban and particularly urban) are encouraged to apply.

SAREX school applications are available by sending a business-sized self-addressed stamped envelope to ARRL, or email your request for an electronic version of the application to ead@arrl.org. Applications may be returned to ARRL by mail or email.

A proposal must accompany all completed applications. The SAREX Working Group and NASA want to know-
1) How will you:
a) integrate this activity into the school curriculum and

b) involve as many students as you can, participating through essay contests, poster drawing, letter writing, etc.
2) What are your capabilities for setting up all necessary Amateur Radio equipment and antennas? Do you have the resources of an experienced group of hams to assist you?
3) How will you get as much media coverage as possible?

HOW WILL I KNOW IF MY SCHOOL HAS BEEN SELECTED TO PARTICIPATE?

Schools that have been selected for scheduled SAREX contacts are contacted by a SAREX coordinator. NASA requires school selections to be made approximately seven months prior to launch. If a school is not chosen for the next SAREX mission, its application is recycled for future opportunities. Schools typically wait one year or longer to be selected.

I AM A HAM. HOW CAN I INTRODUCE SAREX TO MY SON OR DAUGHTER'S SCHOOL?

Establish a SAREX station at the school. Bring in a shortwave receiver and let students eavesdrop on amateur retransmissions of the NASA shuttle-to-mission control audio--from launch to landing. Then, set up a 2-meter satellite ground station and attempt a random SAREX contact from the classroom. The teacher may even apply for a school contact, almost guaranteeing that the students will have an opportunity to communicate with the shuttle crew during a future SAREX mission.

ARE THERE VIDEOS AVAILABLE ON SAREX?

The ARRL Educational Activities Department has videos available for school teachers to borrow. Use of the Audiovisual Library is free, the only cost being return shipping.

"Ham Radio In Space" is a 30-minute color video chronicling the participation of schools and hams in SAREX. You and your class will enjoy watching students talk to the astronauts via ham radio as they participate in this unique educational program. To borrow a copy of this video, mail a postcard with your request to ARRL EAD. Borrowers, please indicate the date you will need the video. Requests should be made at least one month in advance.

CAN A HAM MAKE AN UNSCHEDULED SAREX CONTACT?

Yes. The astronauts have not lost sight of why SAREX has been so successful. It is the Amateur Radio community that has brought the astronaut's voices into classrooms all around the world. During most SAREX missions, many of the crewmembers will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world. On many missions, they have even carried a 2-meter packet radio station. Innovative computer software allows the crew to operate the packet gear in an "unattended" mode, allowing amateurs to make contacts with the ROBOT station when the astronauts are working or sleeping.

WHAT TYPE OF EQUIPMENT DO I NEED?

A typical SAREX ground station includes a 2-meter FM transceiver and 25-100 watts of output power. A circularly polarized crossed-Yagi antenna capable of being pointed in both azimuth (N-S-E-W) and elevation (degrees above the horizon) is desirable, but successful contacts have even been made with verticals and groundplane antennas. Commercial and public domain computer tracking software is available to assist you in determining when the shuttle will be within range of your station and where to point your antenna. For more information on assembling your own satellite/SAREX station, obtain a copy of the "Satellite Experimenter's Handbook" from ARRL.

HOW DO I "TALK" TO THE ASTRONAUTS?

You may communicate with the shuttle astronauts using a variety of modes: voice, packet (computer) radio or television. It all depends on which equipment configuration the astronauts take into space. For example, astronauts Jay Apt and Mamoru Mohri made hundreds of random voice contacts with Amateur Radio operators during STS-47 in September 1992. When the astronauts were sleeping, however, a robot computer ham station aboard the orbiting Shuttle automatically made contact with hundreds more amateurs around the world. The robot computer transmitted an acknowledgment to each ham whose computer successfully made contact with it.

On other missions, the SAREX configuration has even included Amateur Radio Slow Scan Television (SSTV) and Fast Scan Television (FSTV) allowing amateurs a firsthand glimpse at life in space.

WHAT ARE THE SAREX RADIO FREQUENCIES?

The following VHF frequencies are used for SAREX missions. These frequencies were chosen after much deliberation to minimize contention between SAREX operations and other 2-meter users. If you have any comments, please direct them to AMSAT via Frank Bauer, KA3HDO (at his address in the "Radio Amateur Callbook") or the ARRL EAD. We appreciate the cooperation of all amateurs in making the SAREX operations successful.

Most SAREX operations are split-frequency (the crew uses separate receive and transmit frequencies). PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency. For all operations, Earth stations should listen to the downlink frequency and transmit on the uplink frequency only when the shuttle is in range and the astronauts are on the air.

FM Voice Downlink: (Worldwide) 145.55 MHz
FM Voice Uplink: 144.91, 144.93, 144.95, 144.97, and 144.99 MHz
FM Voice Uplink: (Europe only) 144.70, 144.75, and 144.80 MHz
FM Packet Downlink: 145.55 MHz
FM Packet Uplink: 144.49 MHz

ARE ALL OF THE CONTACTS MADE BY THE ASTRONAUTS RANDOM?

During each SAREX mission, the astronauts' primary work schedules dictate when they can and cannot operate the radio equipment. As a result, most of the general contacts they make are random. If the astronauts are operating their radio, however, you can be certain that many hams will be attempting to contact

them.

WHAT ARE MY CHANCES OF MAKING A RANDOM SAREX CONTACT WITH THE CREW?

The extremely busy work schedules of the astronauts may sometimes reduce your chance for an unscheduled, random contact with the Shuttle. The SAREX Working Group recognizes the long-standing commitment of the Amateur Radio community in supporting SAREX activities and attempts to schedule as many opportunities as possible for general ham contacts during flights. Keep posted to Amateur Radio news sources during a SAREX mission for possible announcements of scheduled general QSO opportunities.

WHEN ARE THE NEXT SAREX SHUTTLE MISSIONS?

The next flights for SAREX are listed below. School applications are no longer being accepted for these missions. Schools who have been selected will be contacted by a SAREX coordinator. If your school was not chosen this time, applications are recycled and you may be chosen for a future flight. Contact ARRL EAD if your application information should change.

Upcoming SAREX Missions (updated 2/1/95):

The following dates are tentative. Please understand that delays in spacecraft launches are somewhat common particularly because there are people on-board!

Mission Date Inclination Crew/Title/Amateur Call Sign
Vehicle Time Altitude
*Notes Mission length Configuration
------- -------------- ------------- ----------------------------

STS-63 February 2, 1995 51.6 degrees James D. Wetherbee, CDR
Discovery 0550:44 UTC 195 miles Eileen M. Collins, PLT
8 days Config. M Bernard A. Harris, Jr., PL-CDR
C. Michael Foale, MS, KB5UAC
TENTATIVE Vladimir G. Titov, MS
RANDOM CONTACTS ONLY Janice Voss Ford, MS, KC5BTK

STS-67 March 2, 1995 28.45 degrees Stephen S. Oswald, CDR, KB5YSR
Endeavour 0637 UTC 218 miles William G. Gregory, PLT, KC5MGA
16 days Config. C Tamara E. Jernigan, PL-CDR, KC5MGF
John M. Grunsfeld, MS
Wendy B. Lawrence, MS, KC5KII
Ronald A. Parise, PS, WA4SIR
Samuel T. Durrance, PS, N3TQA

STS-71 May 24, 1995 51.6 degrees Robert L. Gibson, CDR
Atlantis 195 miles Charles J. Precourt, PLT, KB5YSQ
10 days Config. B Ellen S. Baker, MS, KB5SIX
Gregory J. Harbaugh, MS
Bonnie J. Dunbar, MS
Anatoly Yakovlevich Solovyev, MS
Nikolai Mikhailovich Budarin, MS

STS-70 June 22, 1995 28.45 degrees Terrence T. "Tom" Henricks, CDR
Discovery 184 miles Kevin R. Kregel, PLT
8 days Config. C Nancy Jane Sherlock, MS
Donald A. Thomas, MS, KC5FVF
Mary Ellen Weber, MS

STS-74 October 26, 1995 51.6 degrees Kenneth D. Cameron, CDR, KB5AWP
Atlantis 195 miles James Donald Halsell, Jr., PLT
6 days Jerry L. Ross, MS, N5SCW
William S. McArthur, Jr., MS, KC5ACR
Chris A. Hadfield, MS

Abbreviations: Commander=CDR
Pilot=PLT
Payload Commander=PL-CDR
Mission Specialist=MS
Payload Specialist=PS

Configuration A: FM Voice (attended)
Packet (attended/unattended)
SSTV (attended/unattended)
Configuration B: FM Voice
Configuration C: FM Voice, Packet
Configuration D: FM Voice, Packet, SSTV, FSTV
Configuration E: FM Voice, Packet, SSTV, FSTV (different hardware)
Configuration M: FM Voice, using shuttle/MIR radio

HOW CAN I USE MY SHORTWAVE RADIO TO EAVESDROP ON THE ASTRONAUTS?

When a shuttle mission carries the SAREX payload, SAREX news and astronaut retransmissions are carried by the Goddard Amateur Radio Club's station, WA3NAN, (Greenbelt, MD). This station, and several VHF and UHF repeater groups, will retransmit the audio signals from the shuttle on most amateur bands so that you and the students can hear the communications. You will hear NASA mission commentary, frequent bulletins to advise listeners of astronaut-planned transmissions, and amateur two-way voice and amateur television transmissions with the shuttle. WA3NAN operates on the high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 MHz and on VHF at 147.45 MHz (FM).

CAN I RETRANSMIT COMMUNICATIONS BETWEEN THE SPACE SHUTTLE AND MISSION CONTROL ON AMATEUR FREQUENCIES?

The FCC rules indicate that amateur stations are permitted to retransmit Space Shuttle air-to-ground communications, provided that approval has been obtained from NASA (FCC Rules, Part 97.113 (e)).

In 1990, ARRL sought permission from NASA, on behalf of radio amateurs, to retransmit shuttle communications. The response from NASA's Office of Public Affairs encouraged such retransmissions, and indicated that the audio is public domain.

If you plan to rebroadcast NASA Shuttle audio, please follow these guidelines:

1) In keeping with good amateur practice and the FCC rules, shuttle audio retransmissions should be limited to missions of a specific educational purpose (non-commercial), such as those carrying the SAREX payload.

2) Retransmissions should be done manually (with a control operator present).

3) Occasionally, NASA audio may contain music. Amateurs should avoid, if at all possible, retransmitting music or any other prohibited transmissions not permitted by the FCC rules (FCC Rules, Part 97.113).

HOW MAY I TRACK THE SHUTTLE WITH A COMPUTER?

A number of software packages are available for tracking the Shuttle on a personal computer. Here are just a few options (ARRL in no way warrants these products):

AMSAT Tracking Programs.
These easy to use programs are perfect for the serious Amateur Radio space enthusiast or beginner. Call AMSAT (The Radio Amateur Satellite Corporation) for current prices and details (301) 589-6062 or write to AMSAT, PO Box 27, Washington DC 20044.

STSPLUS (Shareware for IBM).
This software was designed by David Ransom Jr. The program allows the user to track an orbiting space shuttle or satellite. Excellent graphics and maps help to create a mock Mission Control Center. Look for STSPLUS and other tracking software posted on NASA Spacelink, bulletin board system (205) 895-0028.

OrbiTrack (MacIntosh).
Available from BEK Developers, PO Box 47114, St. Petersburg, FL 33743-7114. Includes a user's manual.

SatTrack (MacIntosh).
Available from Mike Pflueger, WD8KPZ, 6207 W. Beverly Lane, Glendale, AZ 85306.

OrbiTrack and SatTrack are also available via FTP from sumex.stanford.edu. Look in info-mac/app for the programs sat-trak-102.hqx and orbitrack-214.hqx.

WHAT ARE KEPLERIAN ELEMENTS?

Satellite-tracking computer software use Keplerian elements (also known as "orbital" or "tracking" elements or "Keps") to pinpoint the location of a satellite (or shuttle) at any given time. The Keplerian elements provide the software with a snapshot of a satellite's orbital track, which the computer uses to calculate the future whereabouts of the satellite. Using such a computer tracking program allows an observer to determine when a satellite is to appear above his or her horizon.

Finding Keplerian Elements for the Space Shuttle:

During shuttle missions carrying SAREX, Keplerian elements for tracking the shuttles are available from numerous sources:

AMSAT SAREX bulletins, which include daily Keplerian element postings, are forwarded by W1AW (frequencies listed on the last page) on packet radio, Keplerian teleprinter bulletin schedules, and posted to the ARRL telephone

Bulletin Board System, (203) 666-0578.

The Goddard Amateur Radio Club, WA3NAN, maintains a Bulletin Board System (BBS) which is accessible via the Internet, modem and packet radio. The BBS carries Keplerian orbital elements updated daily, and daily SAREX bulletins and Space Shuttle mission information.
via Internet: wa3nan.gsfc.nasa.gov or 128.183.105.17
via telephone modem: (301) 286-4137
via packet radio: WA3NAN on 145.090 MHz in the DC area.

NASA maintains an electronic information system for educators called Spacelink. Spacelink carries SAREX information, current shuttle mission status reports and Keplerian elements.
via telephone modem: (205) 895-0028
via Internet: spacelink.msfc.nasa.gov or 128.158.13.250
Current shuttle mission tracking elements may be found in the following directory:
Spacelink.Hot.Topics/Current.Shuttle.Mission/Keplerian.Elements.

The Johnson Space Center Amateur Radio Club maintains a BBS with the latest element sets available during a shuttle flight.
via telephone modem: (713) 244-5625.

The most current orbital elements for SAREX and other Amateur Radio satellites are carried on the Celestial BBS.
via telephone modem: (205) 409-9280
Keplerian elements are updated daily, when possible. Documentation and tracking software are also available on this system.

The following are prelaunch Keplerian elements for STS-63:

STS-63
1 00063U 95033.30285722 .00033600 00000-0 25200-3 0 27
2 00063 51.6484 115.2937 0066401 4.0320 356.1183 16.01425383 25

Satellite: STS-63
Catalog number: 00063
Epoch time: 95033.30285722 = (02 FEB 95 07:16:06.86 UTC)
Element set: 002
Inclination: 51.6484 deg
RA of node: 115.2937 deg Space Shuttle Flight STS-63
Eccentricity: .0066401 Prelaunch element set JSC-002
Arg of perigee: 4.0320 deg Launch: 02 FEB 95 05:50:44 UTC
Mean anomaly: 356.1183 deg
Mean motion: 16.01425383 rev/day G. L. Carman
Decay rate: 3.3600e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 2
Checksum: 233

The following are prelaunch Keplerian elements for STS-67

STS-67
1 00067U 95061.32643015 .00011689 00000-0 86071-4 0 46

2 00067 28.4675 88.9985 0004519 287.7960 72.2100 15.71297841 21

Satellite: STS-67
Catalog number: 00067
Epoch time: 95061.32643015 = (02 MAR 95 07:50:03.56 UTC)
Element set: 004
Inclination: 28.4675 deg
RA of node: 88.9985 deg Space Shuttle Flight STS-67
Eccentricity: .0004519 Prelaunch element set JSC-004
Arg of perigee: 287.7960 deg Launch: 02 MAR 95 06:37 UTC
Mean anomaly: 72.2100 deg
Mean motion: 15.71297841 rev/day Gil Carman
Decay rate: 1.1689e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 2
Checksum: 304

NASA EDUCATIONAL RESOURCES

How do you find information on Shuttle schedules, payloads, space science and mission lesson plans? To make the most of your SAREX experience, NASA has a number of materials and resources available to educators:

Teacher Resource Center Network
Teacher Resource Centers (TRC) contain a wealth of information for educators: publications, reference books, slides, audio cassettes, videocassettes, telelecture programs, computer programs, lesson plans and activities. For more information, contact the TRC nearest you.

Teacher Resource Centers

NASA Ames Research Center, Moffett Field CA
Phone: (415) 604-3574

NASA Goddard Space Flight Center, Greenbelt MD
Phone: (301) 286-8570

NASA Johnson Space Center, Houston TX
Phone: (713) 483-8696

NASA Kennedy Space Center, Kennedy Space Center FL
Phone: (407) 867-4090

NASA Langley Research Center, Hampton VA
Phone: (804) 727-0900 x757

NASA Lewis Research Center, Cleveland OH
Phone: (216) 433-2017

Alabama Space and Rocket Center, Huntsville AL
Phone: (205) 544-5812

NASA John C. Stennis Space Center, Stennis Space Center MS
Phone:(601) 688-3338

Jet Propulsion Laboratory, Pasadena CA
Phone: (818) 354-6916

NASA Dryden Flight Research Facility, Edwards CA
Phone: (805) 258-3456

Wallops Flight Facility, Wallops Island VA
Phone: (804) 824-2297/2298

NASA Spacelink

NASA Spacelink is a computer information service that allows individuals to receive news about current NASA programs, activities, and other space-related information, including historical and astronaut data, lesson plans, classroom activities, and even entire publications. Although primarily intended as a resource for teachers, anyone with a personal computer and a modem can access the network.

Spacelink's telephone modem line is (205) 895-0028. Users need a computer, modem, communications software, and a long-distance telephone line to access Spacelink (the data word format is 8 bits, no parity, and 1 stop bit). Your software must emulate a VT-100 terminal.

The TCP/IP address is 192.149.89.61. The new system fully supports the following Internet services:
World Wide Web http://spacelink.msfc.nasa.gov
Gopher spacelink.msfc.nasa.gov
Anonymous FTP spacelink.msfc.nasa.gov
Telnet spacelink.msfc.nasa.gov

For more information, contact the Spacelink Administrator, NASA Marshall Space Flight Center, Mail Code CA21, Marshall Space Flight Center, AL 35812. For help with technical problems call the Spacelink Hot Line (205)961-1225.

NASA Television

NASA Television offers the general public a front-row seat at mission launches and activities taking place in space during a mission, as well as informational and educational programming, historical documentaries, and updates on the latest developments in aeronautics and space science. NASA TV occasionally airs live coverage of SAREX activities. Programming is received by satellite dish or may be available through your local cable television network:

TUNING-IN NASA TV
Satellite--Spacenet 2
Transponder--5
Channel--9
C Band
69 degrees west longitude
Frequency 3880.0 MHz
Horizontal polarization
Audio on 6.8 MHz

For more information, contact: Technology and Evaluation Branch, Education Division, Code FET, NASA Headquarters, Washington D.C. 20546, or call (202) 358-

1540.

HOW DO I OBTAIN A SAREX QSL CARD?

QSL cards are similar to postcards. Hams exchange QSL cards to confirm their radio contacts with other stations.

Participating in the Shuttle Amateur Radio EXperiment can be an exhilarating experience. But, as many hams know, waiting for that coveted QSL card requires a lot of patience. Designing a card for the ultimate DXpedition can be a lengthy process. Here's a behind-the- scenes glance at producing a SAREX QSL, and some tips to help you get your card.

After a SAREX mission, ARRL and the SAREX Working Group work with the crew members to select photos from that mission, and design and layout the QSL card. This may take a few months because of the busy schedule of the astronauts, among other things. Once the card is designed and printed, ARRL forwards the QSL cards to whichever Amateur Radio club is involved with the awesome task of managing the cards.

In the past, amateurs sent their contact and listener reports directly to the managing club. Now, all reports should be sent to ARRL Headquarters.

In order for the managing process to run smoothly, please include the following information in your QSL or report: Shuttle flight number (STS-XX), date, time in UTC, frequency and mode (FM voice, packet, sstv or fstv). This documents the contact or listener report. In addition, you must also include an SASE using a large, business-sized envelope if you wish to receive a card. No cards are distributed without the proper postage affixed or sufficient IRCs included.

The following clubs have graciously volunteered their service for handling QSL cards for the following missions:
STS-67 Edison Radio Amateurs Association, Michigan
STS-64 Nashua Area Radio Club, New Hampshire
STS-65 Lake County Amateur Radio Club, Indiana
STS-59 Orange Park Amateur Radio Club, Florida
STS-60 Cowley County Amateur Radio Club, Kansas
STS-58 Connecticut DX Association, Connecticut
STS-57 Miami County Amateur Radio Club, Ohio
STS-55 IBM Amateur Radio Club/1993, Florida
STS-56 Vienna Wireless Society, Virginia

SAREX RESOURCE LIST

SAREX Educational Support and Information:

American Radio Relay League (ARRL)
Educational Activities Department (EAD)
225 Main Street
Newington CT 06111-1494 USA
Telephone (203) 666-1541
FAX (203) 665-7531
MCI Mail ID: 215-5052

CompuServe ID: 70007,3373
Prodigy: PTYS2A
America Online: HQARRL1
Internet (USENET): ead@arrl.org
Internet e-mail server: info@arrl.org (valid commands include INDEX and HELP)
ARRL BBS: (203) 666-0578 open to the public (14,000/9600/2400/1200/300 N-8-1)
Anonymous FTP: oak.oakland.edu in the /pub3/hamradio/arrl directory

SAREX News and Bulletins:

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

The AMSAT International Satellite Net on Tuesdays, 3.840 MHz, 0130Z to 0300Z, and on Sundays, 14.282 MHz, 1800Z to 2100Z, +/- QRM.

NASA Spacelink
BBS phone (205) 895-0028; Internet spacelink.msfc.nasa.gov

Goddard Amateur Radio Club
BBS phone (301) 286-4137; Internet wa3nan.gsfc.nasa.gov

Getting Started In Amateur Radio:

"You're Invited...Getting Started in Amateur Radio"--free information booklet. Provided as a service of the ARRL, this booklet includes information on your local Amateur Radio clubs, instructors and examination sites and popular study guides. Call our toll-free hotline for new hams: 1-800-32-NEW HAM (800-326-3942). Why not get started, today!

"Now You're Talking!" book (second edition) contains everything you need to know to pass your first Amateur Radio written exams. (ARRL order #3525 $19)

ARRL Technician Class Video Course. Learn the "ropes" with the "pros." You won't find a better course or a better deal anywhere. 5 hours of excitement. Call 1-800-326-3942 for details.

ARRL Books:

"The Satellite Experimenter's Handbook" has the information you need to communicate through, or receive signals from, a growing "fleet" of orbiting satellites and spacecraft--including the Shuttle! Whether your interest is in Amateur Radio, weather, TV-broadcast or other spacecraft, you'll find an immense store of valuable data--everything from setting up ground station equipment to antennas. (ARRL order #3185 $20)

"Your Packet Companion" is perfect for the packet (computer) radio newcomer, covers everything--from assembling a station to sending mail, from packet satellites and spacecraft to the latest networking systems. Its straightforward writing style and clear drawings will get you on the cutting edge of digital ham radio in no time. (ARRL order #3959 $8)

The American Radio Relay League, Newington Conn. USA

SAREXFAQ.TXT
RJI 2/1/95
eof

479. SAREX STS-67 Fact Sheet

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 16:43:59 UTC
From: rinderbitzen@arrl.org
Message-ID: <1995Mar7.164359.18947@arrl.org>
Source record: 25566
Cross-posted to: local.amsat,rec.radio.amateur.space,rec.radio.amateur.misc,sci.space.shuttle

Posted by:
Bob Inderbitzen, NQ1R
Assistant to the Manager
ARRL Educational Activities Department
rinderbi@arrl.org

SAREX FACT SHEET -- STS-67

Media Contact:
Jennifer Hagy
Media Relations Assistant
American Radio Relay League
(203) 666-1541, Ext. 328

SHUTTLE ENDEAVOUR ASTRONAUTS TO SPEAK WITH STUDENTS VIA AMATEUR RADIO.

With the help of Amateur Radio clubs and ham radio operators, astronauts have been speaking over the ham airwaves while in orbit, as part of the Shuttle Amateur Radio EXperiment (SAREX). During mission STS-67, the crew will be talking directly with large groups of the general public, showing teachers, students, parents and communities how Amateur Radio energizes youngsters about science, technology, and learning. Amateur Radio has been flying aboard the shuttles since 1983.

WHEN: Launch is scheduled for March 2, 1995 at 1:37 AM EST (0637 UTC) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for March 18, 1995 at 3:09 PM EST (2009 UTC) at the Kennedy Space Center, Florida. 15 day mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 218 miles and an inclination of 28.45 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly youngsters, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

AMATEUR RADIO-LICENSED CREW MEMBERS:
Stephen S. Oswald, Commander, call sign KB5YSR
William G. Gregory, Pilot, call sign KC5MGA
Tamara E. Jernigan, Payload Commander, call sign KC5MGF

Wendy B. Lawrence, Mission Specialist, call sign KC5KII
Ronald A. Parise, Payload Specialist, call sign WA4SIR
Samuel T. Durrance, Payload Specialist, call sign N3TQA

PAYLOAD: Primary Payload--ASTRO-2. ASTRO-2 is the second in a series of ASTRO missions that will make precise measurements of astronomical objects such as planets, stars, and galaxies, in relatively small fields of view. Consisting of a variety of instruments, the payload will provide stability for extended periods and highly accurate instrument pointing of 1.2 arc seconds. The ASTRO observatory is a key element in the Spacelab program. (Information provided by the NASA Public Affairs Library Staff.)

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

Brewton Elementary School, et al.
Brewton AL

Watson Elementary School
Huntsville AR

Fullbright Avenue Elementary
Canoga Park CA

Tri City Christian Schools
Vista CA

Plymouth Center School
Plymouth CT

Bishop Planetarium & South Florida Museum
Bradenton FL

Renfroe Middle School
Decatur GA

Pearl City High School
Pearl City HI

Waihe'e Elementary School
Wailuku HI

Highland Park High School
Highland Park IL

Kentucky Tech, Montgomery County Area Vocational Education Center
Mt. Sterling KY

US Naval Academy
Annapolis MD

Ridgely Middle School/Lutherville Elementary
Lutherville MD

Silver Spring/Burtonsville Schools
Silver Spring MD

William Bryant Elementary
Blue Springs MO

Plank Road South School
Webster NY

Lockport High School
Lockport NY

Saint Peters School
Greenville NC

Washington Senior High School
Washington C.H. OH

Bethany Middle School
Bethany OK

Tarkington Middle School
Cleveland TX

Chisum Jr/Sr High School
Paris TX

J. J. Fray Elementary School
Rustburg VA

Group of Scholars from South Africa
South Africa

Little Lillys English School
Bangalore India

Cobram Secondary College
Cobram Australia

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crewmembers will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world. On many missions, they have even carried a 2-meter packet radio station. Innovative computer software allows the crew to operate the packet gear in an "unattended" mode, allowing amateurs to make contacts with the

ROBOT station when the astronauts are working or sleeping.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: (Worldwide) 145.55 MHz
FM Voice Uplink: 144.91, 144.93, 144.95, 144.97, and 144.99 MHz
FM Voice Uplink: (Europe only) 144.70, 144.75, and 144.80 MHz
FM Packet Downlink: 145.55 MHz
FM Packet Uplink: 144.49 MHz

CALL SIGNS:
FM voice call signs KB5YSR, KC5MGA, KC5MGF, KC5KII, WA4SIR, and N3TQA
FM packet call sign W5RRR-1

QSL VIA: Send reports and QSLs to ARRL EAD, STS-67 QSL, 225 Main Street, Newington, CT 06111, USA. Include the following information in your QSL or report: STS-67, date, time in UTC, frequency and mode (FM voice or packet). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Edison Radio Amateurs Association in Detroit/Edison MI has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the NASA Spacelink computer information system, BBS (205) 895-0028 or via Internet spacelink.msfc.nasa.gov, and the ARRL BBS (203) 666-0578. Also, the JSC ARC BBS will have the latest element sets available during the STS-67 flight. The number is (713) 244-5625, 9600 baud or less.

The following are prelaunch Keplerian elements for STS-67:

STS-67
1 00067U 95061.32643015 .00011689 00000-0 86071-4 0 46
2 00067 28.4675 88.9985 0004519 287.7960 72.2100 15.71297841 21

Satellite: STS-67
Catalog number: 00067
Epoch time: 95061.32643015 = (02 MAR 95 07:50:03.56 UTC)
Element set: 004
Inclination: 28.4675 deg
RA of node: 88.9985 deg Space Shuttle Flight STS-67
Eccentricity: .0004519 Prelaunch element set JSC-004
Arg of perigee: 287.7960 deg Launch: 02 MAR 95 06:37 UTC
Mean anomaly: 72.2100 deg
Mean motion: 15.71297841 rev/day Gil Carman
Decay rate: 1.1689e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 2
Checksum: 304

CONFIGURATION: During STS-67, the SAREX hardware will be carried in configuration C. SAREX configuration C consists of the handheld transceiver, I/F module, PGSC, spare battery set, window antenna, packet module, SAREX headset

assembly, personal recorder, and the required cable assemblies. The packet module contains a power supply and packet TNC. The power supply provides power for the TNC and the handheld transceiver. The TNC interconnects with a radio transceiver so that data to and from the computer is transmitted to and received from other amateur radio stations. Configuration C is capable of operating in either the voice or data mode in communications with amateur stations within LOS of the Orbiter. This configuration can be operated in the attended mode for voice communication and either the attended or automatic mode for data communications. The payload control weights is 45 lb (20.41 kg).

FOR FURTHER INFORMATION: Contact the American Radio Relay League, Educational Activities Department, 225 Main Street, Newington CT 06111 USA
Telephone (203) 666-1541, FAX (203) 665-7531, ARRL BBS (203) 666-0578
Internet ead@arrl.org
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Goddard Amateur Radio Club's (Greenbelt, MD) Amateur Radio station (call sign WA3NAN) transmits SAREX news and shuttle-to-mission control retransmissions during SAREX missions. Tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and on very high frequency (VHF) bands at 147.45 MHz. GARC also maintains a Bulletin Board System (BBS) which is accessible via the Internet, modem and packet radio. The BBS contains Keplerian orbital elements updated daily, AMSAT and SAREX bulletins and Space Shuttle mission information. Via Internet: wa3nan.gsfc.nasa.gov or 128.183.105.17, via telephone: (301) 286-4137, via packet: WA3NAN on 145.090 MHz in DC area.

The "SAREX Bulletin" contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League, Newington Conn. USA

STS67FCT.TXT
RJI 2/1/95
eof

480. Space shuttle antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 17:50:57 UTC
From: mbarney5@aol.com
Message-ID: <3ji6e1$39q@newsbf02.news.aol.com>
Source record: 25586

I got the shuttle freq (145.55 FM) from a posting on this service. What type of antenna is necessary for reception of the signal?

I appreciate any help. Thanks.

Mike

481. STS-67 Element_Set (95066.785)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 18:15:57 UTC
From: elements-request@alsys.com
Message-ID: <STS-67.95066.785@alsys.com>
Source record: 25571
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-67
1 23500U 95007A 95066.78527830 .00020013 00000-0 14115-3 0 90
2 23500 28.4660 49.5934 0010551 339.6681 20.3464 15.72594581 882

Satellite: STS-67
Catalog number: 23500
Epoch time: 95066.78527830 = (07-Mar-95 18:50:48.04 UTC)
Element set: 009
Inclination: 28.4660 deg
RA of node: 49.5934 deg Space Shuttle Flight STS-67
Eccentricity: .0010551 Keplerian element set JSC-009
Arg of perigee: 339.6681 deg from NASA flight Day 6 vector
Mean anomaly: 20.3464 deg
Mean motion: 15.72594581 rev/day Gil Carman
Decay rate: 2.0013e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 88

This data is also available on the Shuttle Elements Mailing List. For
information, send the command "info elements" to "listserv@alsys.com".

<ftp://seds.lpl.arizona.edu/pub/sat/STS-elements>

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

482. Re: BEST ALL MODE 2 MTR. RIG?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 19:40:13 UTC
From: ftronel@ens-lyon.fr
Message-ID: <3jicqt$oni@cri.ens-lyon.fr>
Source record: 25588

I've just bought the new TM255E (European Version) because I live in France.
I had it since Christmas.
It's a very good trx, a very good sensibility would be the most evident quality.
Unfortunately I'm not a specialist in sat., I've just begun but the result are very good for the moment.
That's it for the moment, but if you have precise question please mail me :
ftronel@ens-lyon.fr

Frederic TRONEL (F1SDZ)

483. Re: Sunspots, anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-07 21:42:28 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <3jik04$m5e@kocrsv08.delcoelect.com>
Source record: 25595

In <3jggro$coa@locutus.Bethany.ORG>,
pete@freenet.grfn.org (Pete Hoffswell) writes:
>[discussion of MUF deleted]
>PS -
>Just this weekend, my cable company started getting bad picures from
>their satellite feed. This is a fimilar problem aound here, linked with
>the sunspots. (or so they tell me!)

No. The fuzzy satellite downlink problem has nothing to do with
sunspots. What's causing the bad pictures is the alignment of the
satellite receiving antenna with the sun. A couple of times a year,
the sun's position in the sky coincides with the satellites' position.
The sun is a *very* big source of radio noise, and it drowns out the
satellite's transmission for a while until it is no longer directly
behind the satellite.

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson | Ignorance can be fixed,
(I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.

484. Re: BEST ALL MODE 2 MTR. RIG?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 01:08:59 UTC
From: AC4OP@ix.netcom.com
Message-ID: <3jj03b$cmu@ixnews2.ix.netcom.com>
Source record: 25572

In <dir00.22.055F4F8C@amail.amdahl.com> dir00@amail.amdahl.com (Dave Roznar) writes:

>
>I thought I would ask here which all-mode rig, in your opinion, would be "the
>one to buy" as you use SSB/CW for the sats. I am looking at the new Kenwood
>TM-255A, and also looked at the ICOM 275H.
>
>I know the Icom is 100 Watts, but it is also twice the price, being that you
>can buy the Kenwood for about $869 now and they give you a $70 rebate from
>Kenwood. I wanted to stay away from the dual band sat. rigs like the
>790/820H/970/736 because I am not sure I want to spend $2000+ yet. I have a
>TS-700 SP, and can listen to AO-13, etc. (and work RS-10/15), but thought I
>would wait for phase 3D to see what the final uplink/downlink phases will be.
>
>Anyway, the TM-255A is supposed to have very good inter-mod supression as it
>is 144-148 ONLY. I guess I am looking for people who have experiance with
>equipment I should/should not be buying. I think it should be posted here,
>rather than direct to me, as I think a lot of people are in the same position
>I am in...and it is a topic other than "where are the latest elements"!!
>
>Thanks, and 73, Dave
>
>P.S. HURRY, rebate ENDS 3/20/95!!! :-) :-)
>----------------------------
>Dave Roznar W6TGE "Amateur Radio is a Contact Sport"
>e-mail: dir00@amail.amdahl.com
>
>Message sent by Trumpet WT-WSK v 10B
>

In my oppinion the Icom IC-275 is a better receiver. I currently own a 255 and a ic275a. The receiver on the 255 is great but it lacks the

notch and pbt filters that work great to remove qrn. Both radios are great, but the icom has more features.

485. Re: Freeware DOVE telemetry deocder windows program

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 01:59:26 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <Rw0ZNVu.sak1@delphi.com>
Source record: 25576

I have tried to log-on to FTP.amsat.org , but not beeing a member, I don't
get any access. Any ideas other than becomming a member?

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " sak1@delphi.com " \ / *
* \ __\/__ / OPEN YOUR MIND \/ *
**********************************************************************
```

486. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 03:57:23 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.794635043@eel>
Source record: 25599

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95066.25000000 .00001095 00000-0 50406-5 0 158
2 23500 28.4652 53.4876 0010108 334.1769 229.2105 15.72498037 787
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

487. Re: Need QSL info for STS67

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 04:37:39 UTC
From: quasar@cts.com
Message-ID: <quasar.15.2F5D3493@cts.com>
Source record: 25578

In article <3ji098$4n3@ixnews2.ix.netcom.com> TomWr@ix.netcom.com (Tom Walker) writes:
>From: TomWr@ix.netcom.com (Tom Walker)
>Subject: Need QSL info for STS67
>Date: 7 Mar 1995 16:06:00 GMT

>Does anyone have QSL infofor STS67? I haven't been able to find the
>press kit or info on QSL and have looked in the usual places.
>Thanx!

QSL information is as follows:

ARRL EAD
STS 67 QSL
225 Main Street
Newington, CT 06111

Include the following information:
STS 67 DATE TIME in UTC FREQ and MODE in addition you must include a SASE
using a large business sized envelope if you would like a QSL.

Good luck!

488. Re: TRACKING

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 04:40:11 UTC
From: quasar@cts.com
Message-ID: <quasar.16.2F5D352A@cts.com>
Source record: 25579

In article <3jg4bd$8ah@freenet3.scri.fsu.edu> bmm1@freenet3.scri.fsu.edu (Bruce M. Marshall) writes:
>From: bmm1@freenet3.scri.fsu.edu (Bruce M. Marshall)
>Subject: Re: TRACKING
>Date: 6 Mar 1995 18:03:09 -0500

>InstantTrack, Version 1.00b, available from Amsat runs fine on an old
>IBM XT (8088). It is a little slow but very usable.

>Bruce
>--
>Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

I use InstantTrack on my IBM XT. A perfect job for the XT. It runs quite fast for all the work the 8088 must perform. I also have the 8087 co-processor which I am sure helps to speed things up as the 8088 doesn't have to do the math too!

489. Re: TRACKING

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 04:43:09 UTC
From: quasar@cts.com
Message-ID: <quasar.17.2F5D35DC@cts.com>
Source record: 25580

In article <D52vnH.4zr@lexmark.com> srwilson@lexmark.com (Steve Wilson) writes:
>From: srwilson@lexmark.com (Steve Wilson)
>Subject: Re: TRACKING
>Date: Tue, 7 Mar 1995 16:11:41 GMT

>In article <3jg4bd$8ah@freenet3.scri.fsu.edu>, bmm1@freenet3.scri.fsu.edu (Bruce M. Marshall) says:
>>
>>InstantTrack, Version 1.00b, available from Amsat runs fine on an old
>>IBM XT (8088). It is a little slow but very usable.
>>
>>Bruce
>>--
>>Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

>Bruce I too was looking for the Instant Track program. I looked on ftp.amsat.com
>in the Instant Track dir but did not find the program. Could you tell me the
>location and the file name. Just a question, Is there an update to the ver 1.00,
>and if so is it Shareware or freeware.

InstantTrack version 1.00b is available from AMSAT. It is not freeware or
shareware. It runs great on an XT.

490. Re: Space shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 04:46:00 UTC
From: quasar@cts.com
Message-ID: <quasar.18.2F5D3688@cts.com>
Source record: 25581

In article <3jhocp$v1@newsbf02.news.aol.com> mbarney5@aol.com (MBarney5) writes:
>From: mbarney5@aol.com (MBarney5)
>Subject: Re: Space shuttle
>Date: 7 Mar 1995 08:51:21 -0500

>The freq to listen to was posted as 145.55 FM. What type antenna is
>necessary for this reception.

>Thanks for the help.

>Mike

A beam works best. I listened with a vertical, but a beam really pulled in
the signal. The shuttle's orbit is taking it over the lower southern portions
of the U.S.. You might naot be able to hear it depending where you are in USA.

491. STS-67 Keps wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 12:47:19 UTC
From: bjp@cle.ab.com
Message-ID: <3jk90n$8nr@news1.cle.ab.com>
Source record: 25587

my email address.

bjp@cle.ab.com

Thank you in advance!

73,

Brian Pennebaker

492. Re: Sunspots, anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 19:57:41 UTC
From: dtiller@rmc.edu
Message-ID: <3jl27l$sho@gnd0.rmc.edu>
Source record: 25596

Pete Hoffswell (pete@freenet.grfn.org) wrote:
: Robert D Houghton (rhought@cello.gina.calstate.edu) wrote:
: : Hello!
: : We are a group of physics students at John A. Rowland High School in
: : Rowland Heights, California, and are doing a project on sunspots. We are

: Sunspots have interesting effects on amateur radio. One of the most
: famous concepts is that of the MUF, or Maximum Usable Frequency, that
: is varied based on solar activity. You can find out about this, and other
: effects of the sun on atmosphere and radio waves in the many publised
: amateur radio books. The ARRL (Amateur Radio Relay League) publishes
: a yearly book called the Handbook, that has very good explinations of
: this stuff. Look for a copy in your library!

: Good luck.

: PS -
: Just this weekend, my cable company started getting bad picures from
: their satellite feed. This is a fimilar problem aound here, linked with
: the sunspots. (or so they tell me!)

Actually it has nothing at all to do with sunSPOTS, just the sun. A few
times a year for a couple of minutes the sun happens to be directly behind
the satellite of interest. The sun itself is a prodigious source of RF on
many freq bands, including C and Ku. The sun temporarily becomes the
dominant source of RF in your dish's beamwidth, causing SNR to fall and
possibly drop below the threshold of detection. It happened to the Winston
Cup Race at Richmond last sunday - I was there, but I wanted to record it,
too :-(
--
David Tiller | Network Administrator | ICBM: 33d 42' 43.75" N |
dtiller@rmc.edu | n2kau/4 | Randolph-Macon College| 77d 31' 32.19" W |
Remember: someday, somewhere, when you least expect it a man with a microphone|
may step up to you and say, "What's the frequency, Kenneth???!!!" |

493. DSP-12 & address for VK2JJM

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 20:57:57 UTC
From: bmm1@freenet3.scri.fsu.edu
Message-ID: <3jl5ol$rl6@freenet3.scri.fsu.edu>
Source record: 25591

I am interested in doing some development on the DSP-12 data
controller. I would appreciate it if anyone who has done any programming on
this device would contact me.

Also the Nov/Dec Amsat journal stated that VK2JJM in Australia has
done some work with the DSP-12. Does anyone know how to get in touch
with him.

Thanks,
Bruce N4USH
--
Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

494. Re: BEST ALL MODE 2 MTR. RIG?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 21:00:32 UTC
From: dir00@amail.amdahl.com
Message-ID: <dir00.23.05428DAA@amail.amdahl.com>
Source record: 25589

In article <3jj03b$cmu@ixnews2.ix.netcom.com> AC4OP@ix.netcom.com (Pieter Ibelings) writes:
>From: AC4OP@ix.netcom.com (Pieter Ibelings)
>Subject: Re: BEST ALL MODE 2 MTR. RIG?
>Date: 8 Mar 1995 01:08:59 GMT

>>>>>>>>>>>>>>> S N I P <<<<<<<<<<<<<<<<<<<<<<<<

>In my oppinion the Icom IC-275 is a better receiver. I currently own a
>255 and a ic275a. The receiver on the 255 is great but it lacks the
>notch and pbt filters that work great to remove qrn. Both radios are
>great, but the icom has more features.

Thanks for the reply, and I will save them all and post a summary of what you all have said.

I have no doubt that the Icom has a better receiver...and some features I would like. I would like a real S meter, and computer control. However, the A model of the 275 is not available any more and the H model is $1550-$1600. The TM-255A can be had (after the rebates, etc) for about $780.

Dave Roznar W6TGE "Amateur Radio is a Contact Sport"
e-mail: dir00@amail.amdahl.com

Message sent by Trumpet WT-WSK v 10B

495. AMSAT.ORG & AMSAT FTP

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 21:17:12 UTC
From: bmm1@freenet3.scri.fsu.edu
Message-ID: <3jl6so$t03@freenet3.scri.fsu.edu>
Source record: 25592

What is the primary use of AMSAT.ORG. Are there files stored there
general use. Is it the same host as FTP.AMSAT.ORG? Is there a gopher
somewhere that points to these so those of us who don,t have
uncontrolled TELNET and FTP may be able to search them out and use
them? I have had no luch with VERONICA searches.

Thanks
Bruce N4USH, AMSAT MEMBER
--
Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

496. Re: NASA Select audio re-broadcast in Chica

Newsgroup: rec.radio.amateur.space
Date: 1995-03-08 22:20:56 UTC
From: sufana@ceco.ceco.com
Message-ID: <D557Ew.2I6@ceco.ceco.com>
Source record: 25593

The Commonwealth Edison Employee Amateur Radio Society (CEEARS) repeater on 145.35 Mhz here in Chicago area has been taking a real beating because of the shuttle communications. During a mission, the repeater is in a 100% duty cycle and is putting out somewhere around 250 watts. I have been told that the club has been going through
final amp tubes (at a cost of $500 per set) at a fairly high rate and that the tech committee has decided to cut back temporarily. I have been told that a new transmitter is in the works. I have no idea when it will be on and where exactly.

I'll keep everyone posted when I find out more details. Please bear with our club.

73s,

Charlie Sufana AJ9N Internet sufana@ceco.ceco.com
ComEd - A Div. of Unicom (formerly Commonwealth Edison Co.)
Work address: ComEd, System Protection Dept. 1039E, 125 S. Clark St.,
P.O. Box 767, Chicago, Il. 60690
Work phone: (312) 394-2815, work fax: (312) 394-4583

Who are you going to call? Fault busters!

497. Re: .Z Compression

Newsgroup: rec.radio.amateur.space
Date: 1995-03-09 00:32:10 UTC
From: jimn2ete@aol.com
Message-ID: <3jliaa$p48@newsbf02.news.aol.com>
Source record: 25590

Just picked it up!!! Thanks

Jim

498. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-09 01:34:22 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.794712862@eel>
Source record: 25602

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95066.91666667 .00001113 00000-0 51447-5 0 177
2 23500 28.4653 48.6370 0010936 340.1569 45.2817 15.72567014 897
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

499. Re: Turbo upgrade to TRAKBOX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-09 02:06:26 UTC
From: BIDDLEAP@ctrvax.Vanderbilt.Edu
Message-ID: <1995Mar9.020626.16649@news.vanderbilt.edu>
Source record: 25600

In <D510nB.9u8@aplcenmp.apl.jhu.edu> "Art.Jeyes" writes:

> can anyone provide me with information on the turbo
> upgrade to TRAKBOX??? Thanks
> Art

TrakBox_Turbo version installation info.
==

Dallas semiconductor released 80C32 code compatible high speed CPU
DS80C320. This chip has upper compatible with Intel 8032/8052 series
CPU and three times faster with the same crystal. There are many other
additional functoins (two serial ports, watchdog timer, many interrupt
sources, high X-tal clock etc..), and now, TrakBox can work with this
CPU. The calclation speedup is 4 times faster than ordinary T_B.

You need (1) DS80C320 CPU, (2) 22.118400MHz X-tal (3) 320TRK EPROM

[Install]

1.At first, you must certificate your TrakBox is working with original
EPROM and CPU. (8031,32,51,52 CMOS or NMOS).

2.Off the battery back up jumper (JP13)

3.Replace the original CPU with DS80C320.
Check the T_B is running with new CPU. The speed up 1.5 or 2 times
faster than the original.

4.Replace the EPROM with Turbo EPROM (320_xxx.ROM).
Check the T_B can run with COM port baud rate 4800.

5.replace the original X-tal(11.0592MHz) with 22.1184MHz.

6.Now, Your TrakBox_Turbo is completed.

[Notice]

1) New CPU with 22Mhz clock rate needs high access time EPROM
and RAM. In my case, I used 120ns EPROM (Mitsubishi M5M27C512K-12)
and 80ns RAM (62256LP-8). If your T_B doesn't run, you may replace
with high speed EPROM(-12 means 120nSec access time).

Many beta tester reported that turbo code run with fast EPROM
and RAM from many supplyer.

2) Dallas Semiconductor released preliminaly DS80C320 chip and
the early lot has bugs in micro code. The present version
has xxxxA6-yyy on the lavel. If you have xxxxA3-yyy version, this

chip is not usable for TrakBox Turbo.

[Dallas Semiconductor info.]

DS80C320 $12.00

DALLAS SEMICONDUCTOR
4401 South Beltwood Parkway
Dallas, Texas 75244-3292

tel: (214)450-0448
Fax: (214)450-3715
overseas call: (214)450-5351
Credit card sales service: 1-800-336-6933

[Parts source information by VE2ALQ]

For those people out here looking for components
to upgrade TrakBox to turbo following was (is) my source for every
component needed:

JDR Electronics
Phone 408-494-1400
FAX 408-494-1420

North America Toll Free Phone 1-800-538-5000
Fax 1-800-538-5005

Good luck folks this is where I got all of mine, no problem with
single GTY orders. Have a Good One -.- -.

Darrell, VE1ALQ

If you have any other sorce information, PSE let me know. I'll include it
for those who has difficulty in their local parts shop.

de Sueo, JA6FTL

Recommended
four
line
signature.

500. Re: Freeware DOVE telemetry deocder windows program

Newsgroup: rec.radio.amateur.space
Date: 1995-03-09 05:22:22 UTC
From: forsberg@crash.cts.com
Message-ID: <D55qxB.B8q@crash.cts.com>
Source record: 25598

You will need to use the ftp at the address ftp.amsat.org. When it asks you for a login type anonymous and use your email address for a password. This should get you in with no problems.

501. Re: DSP-12 & address for VK2JJM

Newsgroup: rec.radio.amateur.space
Date: 1995-03-09 10:05:52 UTC
From: andrewd@ozemail.com.au
Message-ID: <3jmju0$g2l@oznet03.ozemail.com.au>
Source record: 25594

In article <3jl5ol$rl6@freenet3.scri.fsu.edu>, bmm1@freenet3.scri.fsu.edu (Bruce M. Marshall) says:
>
>... the Nov/Dec Amsat journal stated that VK2JJM in Australia has
>done some work with the DSP-12. Does anyone know how to get in touch
>with him.

His 1993 VK callbook address is "Rivermead", Bostobrick, NSW 2453 Australia.
This indicates he is at a property named Rivermead, near a town called
Bostobrick in the state of New South Wales, post code 2453.
He "might" be accessible via packet radio, but unless you find someone
else in that area and can ask for a suitable BBS address, the snail
mail address might well be the best.

I'm not on the packet racket so I can't offer direct help, but e-mail
me if you think I could help find him. Willing to make enquiries.

Cheers.

* Andrew Davis ------Canberra, Australia-------Amateur Radio: VK1DA (1965)
*Information Technology Consultant *Documentation *Testing *Reviews
WWW page under development: http://www.ozemail.com.au/~andrewd

502. Any mods for Icom IC-275H/IC-475H

Newsgroup: rec.radio.amateur.space
Date: 1995-03-09 20:21:10 UTC
From: jcw@kd4dts.radio.org
Message-ID: <1995Mar9.202110.2577@kd4dts.radio.org>
Source record: 25603

I've just purchased a Icom IC-475H and IC-275H. I've looked at the local mods BBS and databases, and can't find anything for these radios. Are they *that* perfect, or am I just missing them?

- John

503. M2 or KLM 440/2m antennas?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-09 20:23:20 UTC
From: jcw@kd4dts.radio.org
Message-ID: <1995Mar9.202320.2666@kd4dts.radio.org>
Source record: 25604

I'm looking at putting up a set of satellite antennas, and am trying to decide between the M2 and the KLMs. I've touched and looked at the KLMs, but not the M2. The KLM seem to be susceptible to crapping up in the switching box arrangement. I know a great many people think highly of the KLMs, think that the Crushcraft are junk, and have no opinion about the M2s. Anyone out here have any thoughts on the matter?

- John, KD4DTS

504. Re: Space shuttle antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 01:58:31 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3jobo7$9rg@paperboy.ids.net>
Source record: 25597

In article <3ji6e1$39q@newsbf02.news.aol.com> MBarney5, mbarney5@aol.com writes:
>I got the shuttle freq (145.55 FM) from a posting on this service. What
>type of antenna is necessary for reception of the signal?

Would you believe a handheld with a rubber-duckie?

HONEST!

(of course I didn't say that it would be a good signal).

The quality of the signal you receive from the shuttle depends on many factors, including the shuttle's attitude, which window the antenna is in (it can either be in the commander or pilot's window - the ones furthest to the sides for the front windows).

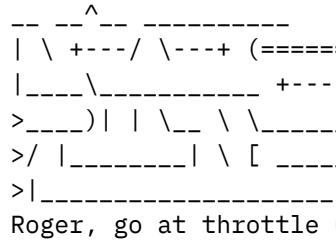
On your side it depends on what's in the way between you and the shuttle, how directional your antenna is, your antenna's gain, whether or not you have a pre-amp, etc.

Under the *best* of circumstances the shuttle can be *clearly* heard on a handheld. During the STS-58 mission I heard Bill McArthur KC5ACR many times on my handheld inside a brick building in a high QRM room (computers and other electronic equipment all generating RFI).

On the current shuttle mission though the shuttle's attitude is changing quite often to support the astronomical observations, so some of the time the antenna will be facing towards deep space - with the entire body of the shuttle blocking its signal. Not even a moonbounce antenna can get though then!

Good luck though, and give it a try - no matter what equipment you're using.

73s
KC4YER

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

505. How do I handle Doppler shift?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 15:54:49 UTC
From: jwittich@b4pph107.bnr.ca
Message-ID: <3jpso9$s28@crchh327.bnr.ca>
Source record: 25609

Hi all. I am about ready to try a QSO through RS-10/11. When working CW, do you adjust the XIT to account for shift, keeping the receive constant, or do you change the RIT and keep your transmit frequency constant? Or am I completely wrong and should do it some other way?

Thanks, The birds are new to me. I wanna do things as properly as possible.

73, Jeff.

--
****
jwittich@b4pph107.bnr.ca *** CW ops let their fingers do the talking.
AC4ZO *** BNR claims they know nothing of my employment here.
****

506. Re: Freeware DOVE telemetry deocder windows program

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 17:11:14 UTC
From: little@iamu.chi.dec.com
Message-ID: <3jq17i$nj4@jac.zko.dec.com>
Source record: 25605

In article <quasar.22.2F5FEDAB@cts.com>, quasar@cts.com (SteveF) writes:
|>In article <Rw0ZNVu.sak1@delphi.com> Steve Kittelsen <sak1@delphi.com> writes:
|>>From: Steve Kittelsen <sak1@delphi.com>
|>>Subject: Re: Freeware DOVE telemetry deocder windows program
|>>Date: Tue, 7 Mar 95 20:59:26 -0500
|>
|>>I have tried to log-on to FTP.amsat.org , but not beeing a member, I don't
|>>get any access. Any ideas other than becomming a member?
|>>
|>You do not need to be a member to log on to AMSAT. Try
|>http:\\www.qualcomm.com. And go to guests of Qualcomm and there you will find
|>AMSAT.

You don't need to be a member to FTP. You log on as anonymous and use
your email address as your password. That site supports normal anonymous
FTP.

--
73, Member of RACES, ARRL, Arlington Communications League.
Todd Trained weather spotter and sponsor of the Hunting Ridge
N9MWB Elementary School Radio Club. See you on 160-1296 and OSCAR.

507. Callsigns for WiSP

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 17:25:20 UTC
From: little@pecan.enet.dec.com
Message-ID: <3jq220$pb9@jac.zko.dec.com>
Source record: 25606

I'm sure this information is lurking somewhere just waiting for me to find it, but I cannot seem to determine what the callsigns are that WiSP wants for each satellite. It wants a Broadcast Callsign and a BBS Callsign, yet I haven't hit the combination that allows me to download any messages or get a directory fill.

Could someone post the two callsigns for each of the digital satellites?

--
73, Member of RACES, ARRL, Arlington Communications League.
Todd Trained weather spotter and sponsor of the Hunting Ridge
N9MWB Elementary School Radio Club. See you on 160-1296 and OSCAR.

508. Re: BEST ALL MODE 2 MTR. RIG?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 18:31:17 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Mar10.183117.3580@ke4zv.atl.ga.us>
Source record: 25610

In article <dir00.22.055F4F8C@amail.amdahl.com> dir00@amail.amdahl.com (Dave Roznar) writes:
>I thought I would ask here which all-mode rig, in your opinion, would be "the
>one to buy" as you use SSB/CW for the sats. I am looking at the new Kenwood
>TM-255A, and also looked at the ICOM 275H.
>
>I know the Icom is 100 Watts, but it is also twice the price, being that you
>can buy the Kenwood for about $869 now and they give you a $70 rebate from
>Kenwood. I wanted to stay away from the dual band sat. rigs like the
>790/820H/970/736 because I am not sure I want to spend $2000+ yet. I have a
>TS-700 SP, and can listen to AO-13, etc. (and work RS-10/15), but thought I
>would wait for phase 3D to see what the final uplink/downlink phases will be.
>
>Anyway, the TM-255A is supposed to have very good inter-mod supression as it
>is 144-148 ONLY. I guess I am looking for people who have experiance with
>equipment I should/should not be buying. I think it should be posted here,
>rather than direct to me, as I think a lot of people are in the same position
>I am in...and it is a topic other than "where are the latest elements"!!

The IC-275A/H is a shockingly better radio than any of it's competitors.
Paired with a IC-475A/H, I think they're the hottest setup currently
available. However, they are a lot of money. IMHO, the TS-790A is death
on toast for satellite work, and the IC820H isn't much better. The IC970
is pretty nice, but oh so expensive. The FT736R is a solid workhorse,
but the design is getting a little long in the tooth. If you can live
without a bunch of bells and whistles, it'll still get the job done
in a cost effective manner. (I'm expecting an updated radio from Yaesu
in the near future. The 736 really looks dated compared to some of the
whiz bang offerings. But with the dollar/yen ratio being what it is,
I'm not sure any of us will be able to afford it.)

The sad truth is that the TS-700SP is about the best Kenwood has
ever done in a VHF all mode. Put a good mast mount preamp in front
of it, and it'll still serve about as well as Kenwood's newer offerings,
better than some. Kenwood has never really figured out how to make
a good VHF/UHF radio.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

509. Re: Space shuttle antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 18:35:55 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Mar10.183555.3666@ke4zv.atl.ga.us>
Source record: 25511

In article <3ji6e1$39q@newsbf02.news.aol.com> mbarney5@aol.com (MBarney5) writes:
>I got the shuttle freq (145.55 FM) from a posting on this service. What
>type of antenna is necessary for reception of the signal?

A vertical will do for all except direct overhead passes. A turnstile
will work for that, but won't work as well when the Shuttle is near
the horizon. A Lindenblad will work better over the entire pass, and
an eggbeater style may do Ok too. Of course auto-tracking beams work
best, but aren't really necessary for the Shuttle or MIR. If you've
already got a gain vertical, just try that. Whatever you use, minimize
feedline loss and mount a mast mount preamp at the antenna if you can.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

510. Re: M2 or KLM 440/2m antennas?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 19:44:18 UTC
From: dtiller@rmc.edu
Message-ID: <3jqa6i$7si@gnd0.rmc.edu>
Source record: 25607

John C. Wren (jcw@kd4dts.radio.org) wrote:
: I'm looking at putting up a set of satellite antennas, and am trying to decide
: between the M2 and the KLMs. I've touched and looked at the KLMs, but not
: the M2. The KLM seem to be susceptible to crapping up in the switching box
: arrangement. I know a great many people think highly of the KLMs, think that
: the Crushcraft are junk, and have no opinion about the M2s. Anyone out here
: have any thoughts on the matter?

As it was told to me by a FOAF (friend-of-a-friend), the guy who started
M2 was an employee of KLM that left because KLM wasn't designing antennas
as strong and rugged as he felt they should...
--
David Tiller | Network Administrator | ICBM: 33d 42' 43.75" N |
dtiller@rmc.edu | n2kau/4 | Randolph-Macon College| 77d 31' 32.19" W |
Remember: someday, somewhere, when you least expect it a man with a microphone|
may step up to you and say, "What's the frequency, Kenneth???!!!" |

511. Two-Line Orbital Element Sets (TLE563)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 19:55:44 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.794865344@eel>
Source record: 25513

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #563 -
Alouette 1
1 00424U 62049A 95067.99303979 .00000034 00000-0 29878-4 0 858
2 00424 80.4619 23.7313 0023372 150.2953 209.9519 13.67834179618606
ATS 1
1 02608U 66110A 95045.63291947 -.00000123 00000-0 10000-3 0 9221
2 02608 14.6246 357.9410 0008770 52.5523 307.5822 1.00313762 19969
ATS 3
1 03029U 67111A 95066.35489626 -.00000117 00000-0 10000-3 0 3379
2 03029 14.7902 4.7497 0009531 273.6730 268.5985 1.00272571100072
Cosmos 398
1 04966U 71016A 95069.07912438 .00170136 86460-5 22712-3 0 7692
2 04966 51.4144 312.4604 0733894 113.8125 254.1732 14.58538173810548
Starlette
1 07646U 75010A 95068.27991291 -.00000180 00000-0 -27913-4 0 8697
2 07646 49.8285 187.2596 0206330 131.8679 230.0028 13.82187917 14522
LAGEOS
1 08820U 76039A 95068.37129394 .00000026 00000-0 10000-3 0 891
2 08820 109.8272 226.4060 0044242 228.5132 131.1622 6.38664311184083
ETS-2
1 09852U 77014A 95060.35369237 -.00000357 00000-0 10000-3 0 172
2 09852 12.5786 38.4493 0001723 46.8379 313.2283 1.00006207 12906
GOES 2
1 10061U 77048A 95068.33932922 .00000105 00000-0 10000-3 0 4978
2 10061 11.6441 42.5410 0011951 101.9660 345.2702 1.00151146 9778
IUE
1 10637U 78012A 95069.10453012 -.00000241 00000-0 10000-3 0 1129
2 10637 35.0370 90.5888 1321112 43.7653 19.7313 1.00254884 15275
GPS BI-01
1 10684U 78020A 95056.17793776 -.00000008 00000-0 10000-3 0 3412
2 10684 64.7787 38.0210 0060848 163.9687 196.2469 1.98069498109944
```

```
GPS BI-02
1 10893U 78047A 95057.18697993 .00000042 00000-0 10000-3 0 1492
2 10893 63.3868 276.2966 0220137 14.3406 346.3276 2.01627399123194
GOES 3
1 10953U 78062A 95066.25653662 .00000056 00000-0 10000-3 0 4611
2 10953 10.6126 45.3548 0002837 126.1565 269.5618 1.00278060 14366
SeaSat 1
1 10967U 78064A 95068.16273379 -.00000001 00000-0 44377-4 0 3809
2 10967 108.0037 290.5374 0002242 257.8361 102.2529 14.38017983874459
GPS BI-03
1 11054U 78093A 95066.28841502 .00000019 00000-0 10000-3 0 2700
2 11054 63.0720 273.9787 0044488 177.9621 182.0594 1.93505270119603
Nimbus 7
1 11080U 78098A 95069.18738098 -.00000038 00000-0 33697-5 0 4849
2 11080 99.0138 307.3573 0009329 134.0173 226.1748 13.83715319826863
GPS BI-04
1 11141U 78112A 95064.12582048 -.00000039 00000-0 10000-3 0 9639
2 11141 64.7866 39.4454 0048300 26.5776 333.6322 1.92894829 8815
GPS BI-05
1 11690U 80011A 95061.18996550 -.00000046 00000-0 10000-3 0 8894
2 11690 65.1271 39.5248 0147565 195.5430 164.0035 2.00561892124714
GPS BI-06
1 11783U 80032A 95067.42474384 .00000035 00000-0 10000-3 0 618
2 11783 62.5092 269.3520 0216562 29.3157 331.9015 2.03456316109330
GOES 5
1 12472U 81049A 95063.91092341 -.00000274 00000-0 10000-3 0 8403
2 12472 7.3305 55.0125 0006228 12.9013 347.3787 1.00311990 8380
Cosmos 1383
1 13301U 82066A 95068.59205355 .00000014 00000-0 -19871-5 0 3858
2 13301 82.9325 115.1870 0029264 82.7108 277.7371 13.68063156633714
LandSat 4
1 13367U 82072A 95068.19066498 .00000000 00000-0 10000-4 0 6251
2 13367 98.1412 126.4045 0007910 142.9053 217.2694 14.57149685672657
IRAS
1 13777U 83004A 95068.56679543 -.00000255 00000-0 -14569-3 0 8949
2 13777 98.9701 258.9607 0012933 303.8834 56.1096 13.99221173288255
Cosmos 1447
1 13916U 83021A 95066.81989755 .00000038 00000-0 24236-4 0 4843
2 13916 82.9452 176.7095 0038972 16.4832 343.7581 13.74322588599546
TDRS 1
1 13969U 83026B 95060.81971363 -.00000206 00000-0 10000-3 0 4005
2 13969 8.1795 48.4858 0000400 146.9739 343.3819 1.00263149 16633
GOES 6
1 14050U 83041A 95066.31690917 .00000048 00000-0 10000-3 0 3640
2 14050 6.1502 58.3391 0003414 324.3664 125.0174 1.00297750101503
OSCAR 10
1 14129U 83058B 95049.74423524 -.00000256 00000-0 10000-3 0 3407
2 14129 26.5642 282.2218 6017196 253.4768 35.4795 2.05881639 59890
LandSat 5
1 14780U 84021A 95068.63896822 .00000080 00000-0 27687-4 0 2093
```

```
2 14780 98.1258 127.5692 0005001 144.2811 215.8722 14.57155112586136
UoSat 2
1 14781U 84021B 95067.53511811 .00000193 00000-0 40423-4 0 7806
2 14781 97.7814 74.8058 0012419 139.4582 220.7549 14.69314150589128
GPS BI-09
1 15039U 84059A 95066.23778029 -.00000032 00000-0 10000-3 0 2766
2 15039 64.4557 33.7866 0081627 16.9942 343.2790 1.92302267 78431
Cosmos 1574
1 15055U 84062A 95067.85140835 .00000035 00000-0 20915-4 0 6858
2 15055 82.9525 229.8465 0026464 197.4875 162.5375 13.73618354536967
GPS BI-10
1 15271U 84097A 95068.36453043 .00000043 00000-0 10000-3 0 9249
2 15271 62.2106 269.5738 0154778 353.0402 6.7830 2.00594037 75921
Cosmos 1602
1 15331U 84105A 95064.83850219 .00000520 00000-0 58446-4 0 3724
2 15331 82.5331 192.6879 0022117 60.1843 300.1565 14.84575841563331
NOAA 9
1 15427U 84123A 95068.87158005 .00000045 00000-0 47673-4 0 1676
2 15427 99.0138 126.9489 0014568 186.3131 173.7856 14.13689337527799
GPS BI-11
1 16129U 85093A 95062.72199844 -.00000051 00000-0 10000-3 0 6381
2 16129 65.1185 36.8447 0153093 87.7038 274.0171 1.89367962 12997
Mir
1 16609U 86017A 95067.86666546 .00005643 00000-0 80665-4 0 9625
2 16609 51.6474 300.4481 0004353 212.3501 147.7219 15.57908368517321
SPOT 1
1 16613U 86019A 95068.69304713 .00000090 00000-0 62356-4 0 7894
2 16613 98.6582 142.2233 0001016 110.8113 249.2715 14.20046544154243
Cosmos 1766
1 16881U 86055A 95064.99663661 .00000291 00000-0 32196-4 0 2875
2 16881 82.5164 250.4340 0021054 82.4468 277.9133 14.83589426464279
EGP
1 16908U 86061A 95067.55086793 -.00000083 00000-0 10000-3 0 9812
2 16908 50.0123 351.6394 0011316 265.1572 94.7967 12.44411688 58305
NOAA 10
1 16969U 86073A 95068.86911425 .00000046 00000-0 37953-4 0 777
2 16969 98.5094 74.7563 0012215 276.3782 83.6010 14.24925123440331
MOS-1
1 17527U 87018A 95068.16361989 -.00000173 00000-0 -96545-4 0 1849
2 17527 98.9992 135.8638 0000170 21.1430 338.9736 13.94918446409880
GOES 7
1 17561U 87022A 95067.30326495 .00000081 00000-0 10000-3 0 2815
2 17561 2.1203 73.3507 0003199 328.0404 96.7183 1.00263598 12627
Kvant-1
1 17845U 87030A 95067.09693990 -.00009947 00000-0 -12426-3 0 1749
2 17845 51.6478 304.3143 0004264 214.2265 145.9950 15.57876286451563
DMSP B5D2-3
1 18123U 87053A 95068.74277697 .00000016 00000-0 30349-4 0 8680
2 18123 98.7821 261.4403 0014416 139.0932 221.1326 14.15393099398657
RS-10/11
```

```
1 18129U 87054A 95068.67743401 .00000048 00000-0 36178-4 0 278
2 18129 82.9257 132.6300 0012318 15.7922 344.3615 13.72349300386322
Meteor 2-16
1 18312U 87068A 95068.25619658 .00000045 00000-0 26897-4 0 3791
2 18312 82.5554 1.6288 0014031 85.7638 274.5130 13.84050643381724
Meteor 2-17
1 18820U 88005A 95069.00091406 .00000024 00000-0 75914-5 0 5600
2 18820 82.5370 57.1460 0017154 148.4800 211.7392 13.84732902359148
DMSP B5D2-4
1 18822U 88006A 95067.56577600 .00000023 00000-0 28652-4 0 8885
2 18822 98.4153 276.2088 0005631 294.1649 65.8941 14.23144503368205
Glonass 34
1 19163U 88043A 95066.20525782 .00000008 00000-0 10000-3 0 9734
2 19163 65.0899 101.6023 0007517 145.8876 214.2227 2.13102668 52265
Glonass 36
1 19165U 88043C 95068.13844071 .00000024 00000-0 10000-3 0 3715
2 19165 65.0838 101.5102 0000369 269.5611 90.4962 2.13102197 52926
METEOSAT 3
1 19215U 88051A 95068.39680913 -.00000280 00000-0 10000-3 0 937
2 19215 2.2957 70.4829 0000782 67.1585 101.8481 1.00288447 12576
AO-13
1 19216U 88051B 95068.36191901 -.00000463 00000-0 10000-4 0 214
2 19216 57.6029 199.6642 7272215 3.7010 359.4224 2.09725757 20076
OKEAN 1
1 19274U 88056A 95065.26725950 .00000448 00000-0 53071-4 0 9874
2 19274 82.5135 350.4525 0018078 225.5943 134.3787 14.82304153359907
Meteor 3-2
1 19336U 88064A 95067.69732290 .00000051 00000-0 10000-3 0 3762
2 19336 82.5414 136.5304 0016707 326.9126 33.0951 13.16971493318074
Glonass 39
1 19503U 88085C 95063.94264269 -.00000067 00000-0 10000-3 0 2656
2 19503 65.7118 340.5589 0007235 175.2816 184.7613 2.13101934 50323
NOAA 11
1 19531U 88089A 95068.74783801 .00000026 00000-0 38976-4 0 9836
2 19531 99.1906 69.4383 0012667 105.1935 255.0638 14.13041361332645
TDRS 2
1 19548U 88091B 95066.34690336 .00000085 00000-0 10000-3 0 991
2 19548 1.5319 75.4835 0001049 295.0995 107.4143 1.00273507 10841
Glonass 40
1 19749U 89001A 95066.32769233 .00000008 00000-0 10000-3 0 4806
2 19749 65.0293 101.1600 0009916 189.9887 169.9638 2.13099375 47889
Glonass 41
1 19750U 89001B 95067.32205751 .00000016 00000-0 10000-3 0 3908
2 19750 65.0605 101.1896 0007849 194.2773 165.7979 2.13101942 47922
GPS BII-01
1 19802U 89013A 95068.47114051 -.00000017 00000-0 10000-3 0 301
2 19802 55.1641 129.1775 0028438 182.0325 178.0446 2.00570975 44375
Akebono
1 19822U 89016A 95068.99470943 .00009283 00000-0 54657-3 0 4514
2 19822 75.0836 31.8312 3785743 94.7870 308.4869 7.83588268130033
```

```
Meteor 2-18
1 19851U 89018A 95068.68975264 .00000063 00000-0 43158-4 0 3779
2 19851 82.5194 292.2387 0013150 198.1276 161.9407 13.84386002304428
MOP-1
1 19876U 89020B 95053.41846442 -.00000080 00000-0 10000-3 0 1002
2 19876 0.9927 71.3726 0000737 248.3402 335.1068 1.00276061 1860
TDRS 3
1 19883U 89021B 95067.57751736 -.00000277 00000-0 10000-3 0 539
2 19883 0.0227 297.5447 0003417 33.5953 1.4662 1.00266880194434
GPS BII-02
1 20061U 89044A 95068.81192271 -.00000040 00000-0 10000-3 0 397
2 20061 54.5436 305.5342 0141293 213.9862 145.1282 2.00562809 42125
Nadezhda 1
1 20103U 89050A 95068.76316059 .00000044 00000-0 31474-4 0 3190
2 20103 82.9592 91.9271 0038003 271.8475 87.8303 13.73851204 99618
GPS BII-03
1 20185U 89064A 95067.15777040 -.00000023 00000-0 10000-3 0 666
2 20185 55.0157 129.8413 0053307 310.0085 49.6190 2.00549402 40665
GMS 4
1 20217U 89070A 95068.46424519 -.00000297 00000-0 10000-3 0 1646
2 20217 0.8306 75.6591 0000627 347.9470 49.9881 1.00261242 20754
INTERCOSMOS 24
1 20261U 89080A 95068.36023941 .00000132 00000-0 34441-4 0 3925
2 20261 82.5914 208.2262 1242895 20.8700 343.8828 12.47228543247830
GPS BII-04
1 20302U 89085A 95067.68471511 .00000032 00000-0 10000-3 0 414
2 20302 53.4385 245.6924 0008533 187.7768 172.2024 2.00554058 39472
Meteor 3-3
1 20305U 89086A 95068.54554004 .00000044 00000-0 10000-3 0 2676
2 20305 82.5474 86.5314 0007356 14.0464 346.0814 13.04419891257492
COBE
1 20322U 89089A 95066.06018956 -.00000235 00000-0 -12210-3 0 1010
2 20322 98.9640 83.5983 0008120 261.9161 98.1085 14.03441706271269
Kvant-2
1 20335U 89093A 95067.09693990 -.00009947 00000-0 -12426-3 0 1984
2 20335 51.6478 304.3143 0004264 214.2265 145.9950 15.57876286300328
GPS BII-05
1 20361U 89097A 95066.20412018 -.00000018 00000-0 10000-3 0 9005
2 20361 55.6974 71.8355 0075833 119.3969 241.3911 2.00561394 28925
SPOT 2
1 20436U 90005A 95069.23998364 -.00000044 00000-0 00000+0 0 9080
2 20436 98.7422 144.5550 0000771 111.6895 248.4365 14.20016670265854
UO-14
1 20437U 90005B 95069.20690562 .00000065 00000-0 42254-4 0 802
2 20437 98.5711 155.1571 0011267 125.4027 234.8205 14.29878129267608
UO-15
1 20438U 90005C 95068.77820774 .00000006 00000-0 19299-4 0 8776
2 20438 98.5703 153.3862 0010417 130.5986 229.6104 14.29199969267440
PACSAT
1 20439U 90005D 95064.77412045 .00000029 00000-0 28033-4 0 8772
```

```
2 20439 98.5840 152.3303 0011341 139.3643 220.8387 14.29931171266989
DO-17
1 20440U 90005E 95065.19259825 .00000030 00000-0 28547-4 0 8778
2 20440 98.5854 153.1629 0011481 137.2069 223.0014 14.30072143267069
WO-18
1 20441U 90005F 95068.25141602 .00000019 00000-0 24265-4 0 8828
2 20441 98.5849 156.1602 0012365 129.3595 230.8678 14.30044299267508
LO-19
1 20442U 90005G 95064.78319139 .00000035 00000-0 30516-4 0 8773
2 20442 98.5831 153.0639 0012217 138.4667 221.7447 14.30144689267027
GPS BII-06
1 20452U 90008A 95068.59757424 -.00000014 00000-0 10000-3 0 127
2 20452 54.0264 185.7326 0057325 80.5861 280.0570 2.00567728 37478
MOS-1B
1 20478U 90013A 95068.71159491 .00000091 00000-0 10000-3 0 7531
2 20478 98.9984 140.6367 0000218 300.6056 59.5084 13.94916264179663
DEBUT
1 20479U 90013B 95068.84908302 -.00000049 00000-0 -46173-4 0 8772
2 20479 99.0672 176.0760 0540847 97.6726 268.6113 12.83328948238210
FO-20
1 20480U 90013C 95065.26122027 -.00000022 00000-0 14478-4 0 7748
2 20480 99.0677 173.0175 0541064 106.1540 259.9792 12.83229532237748
MOS-1B R/B
1 20491U 90013D 95068.82147056 .00000097 00000-0 25293-3 0 1116
2 20491 99.0234 227.5593 0469184 304.5657 51.2027 13.02970766241252
LACE
1 20496U 90015A 95068.84550508 .00002420 00000-0 79877-4 0 5108
2 20496 43.1035 336.9968 0011451 282.5787 77.3765 15.34213218282315
Nadezhda 2
1 20508U 90017A 95068.84690928 .00000012 00000-0 -29451-5 0 3170
2 20508 82.9493 226.4251 0043462 220.1890 139.6047 13.73490131252017
OKEAN 2
1 20510U 90018A 95065.65603982 .00000322 00000-0 40823-4 0 3879
2 20510 82.5247 301.0806 0021002 52.4644 307.8451 14.78459235270449
INTELSAT-6
1 20523U 90021A 95060.95601273 -.00000265 00000-0 10000-3 0 4945
2 20523 0.0579 53.6936 0000438 308.0999 107.0568 1.00267254 11152
GPS BII-07
1 20533U 90025A 95067.50922120 -.00000050 00000-0 10000-3 0 224
2 20533 54.8752 306.2109 0048647 79.0702 281.5265 2.00559460 36224
PegSat
1 20546U 90028A 95068.07372547 .00008107 00000-0 17372-3 0 7637
2 20546 94.1114 87.6382 0068475 4.2784 355.9047 15.42272773273047
HST
1 20580U 90037B 95068.88238609 .00000685 00000-0 52885-4 0 6006
2 20580 28.4683 329.0368 0006370 349.0938 10.9530 14.90822442 69077
MACSAT 2
1 20608U 90043B 95068.26801861 .00000282 00000-0 46314-4 0 784
2 20608 89.9304 177.3320 0103431 244.9082 114.1385 14.64806779258083
Glonass 44
```

```
1 20619U 90045A 95067.63502087 -.00000070 00000-0 10000-3 0 1718
2 20619 65.3319 339.9112 0025147 209.8368 150.0441 2.13102433 37363
Glonass 45
1 20620U 90045B 95063.99971512 -.00000068 00000-0 10000-3 0 1793
2 20620 65.3005 340.0287 0008130 60.9568 299.1337 2.13102775 37328
Glonass 46
1 20621U 90045C 95066.88130923 -.00000071 00000-0 10000-3 0 7798
2 20621 65.3221 339.9764 0012664 189.1426 170.8749 2.13101551 37389
Kristall
1 20635U 90048A 95067.09693990 -.00009947 00000-0 -12426-3 0 9910
2 20635 51.6478 304.3143 0004264 214.2265 145.9950 15.57876286271340
ROSAT
1 20638U 90049A 95066.83491235 .00000165 00000-0 29850-4 0 3963
2 20638 52.9893 243.2829 0014052 143.1426 217.0531 15.07104166261830
Meteor 2-19
1 20670U 90057A 95068.80946180 -.00000076 00000-0 -81992-4 0 8784
2 20670 82.5491 357.4958 0017074 117.1947 243.0951 13.84168374237366
CRRES
1 20712U 90065A 95069.24510153 .00000240 00000-0 40316-3 0 581
2 20712 17.9915 78.6047 7182678 30.6070 356.4805 2.35378412 32150
GPS BII-08
1 20724U 90068A 95066.33295215 -.00000022 00000-0 10000-3 0 8857
2 20724 54.8063 127.4606 0116525 169.8830 190.2802 2.00560187 32066
Feng Yun1-2
1 20788U 90081A 95068.93580788 -.00000027 00000-0 10000-4 0 2661
2 20788 98.8170 85.3471 0015050 354.9841 5.0998 14.01291143230937
Meteor 2-20
1 20826U 90086A 95065.67303340 .00000059 00000-0 39941-4 0 8872
2 20826 82.5268 297.1349 0014893 35.7184 324.4968 13.83603572224056
GPS BII-09
1 20830U 90088A 95067.87847106 -.00000004 00000-0 10000-3 0 8949
2 20830 55.6387 69.7601 0064561 101.8863 258.8664 2.00568607 32735
GPS BIIA-10
1 20959U 90103A 95068.28136958 -.00000019 00000-0 10000-3 0 8295
2 20959 55.0157 129.3517 0092455 243.8606 115.2523 2.00556196 31335
DMSP B5D2-5
1 20978U 90105A 95068.73163657 .00000147 00000-0 67794-4 0 1088
2 20978 98.6503 137.2611 0080190 102.3925 258.6243 14.32522199223072
Glonass 47
1 21006U 90110A 95067.37741746 .00000017 00000-0 10000-3 0 7435
2 21006 65.0206 100.4701 0059650 187.5979 172.3675 2.13102721 33066
Glonass 48
1 21007U 90110B 95065.21892420 .00000005 00000-0 10000-3 0 8734
2 21007 65.0484 100.5989 0034303 177.1471 182.9366 2.13101192 33003
Glonass 49
1 21008U 90110C 95066.51634375 .00000010 00000-0 00000+0 0 443
2 21008 65.0327 100.5213 0010989 275.6964 84.2406 2.13099042 33026
AO-21
1 21087U 91006A 95068.72538268 .00000094 00000-0 82657-4 0 5736
2 21087 82.9445 306.1977 0037194 63.5194 296.9769 13.74551458206062
```

```
RS-12/13
1 21089U 91007A 95067.27808607 .00000027 00000-0 12600-4 0 7813
2 21089 82.9244 175.6015 0030780 92.4240 268.0443 13.74054698204915
MOP-2
1 21140U 91015B 95068.12558655 -.00000023 00000-0 10000-3 0 9102
2 21140 0.1246 111.3443 0002416 277.4255 181.8836 1.00275640 16934
Nadezhda 3
1 21152U 91019A 95068.67328316 .00000054 00000-0 41245-4 0 96
2 21152 82.9265 130.5977 0041348 195.4957 164.4935 13.73515571199848
Glonass 50
1 21216U 91025A 95066.92636420 -.00000071 00000-0 10000-3 0 3882
2 21216 65.0626 339.6206 0008681 209.0107 150.9978 2.13102804 30564
Glonass 51
1 21217U 91025B 95064.64836358 -.00000069 00000-0 10000-3 0 7995
2 21217 65.0553 339.6905 0010778 242.9234 117.0928 2.13101469 30506
Glonass 52
1 21218U 91025C 95061.94532699 -.00000068 00000-0 10000-3 0 2755
2 21218 65.0475 339.7819 0009061 306.2756 53.6756 2.13102673 30457
GRO
1 21225U 91027B 95068.63970649 .00002942 00000-0 60424-4 0 1992
2 21225 28.4602 187.6630 0002856 348.1672 11.8877 15.42245028 97943
Meteor 3-4
1 21232U 91030A 95067.27381988 .00000050 00000-0 10000-3 0 7869
2 21232 82.5464 342.8926 0011649 248.4799 111.5081 13.16466430186106
NOAA 12
1 21263U 91032A 95068.80005374 .00000102 00000-0 64815-4 0 4046
2 21263 98.5926 95.3769 0012527 182.3232 177.7889 14.22498308198266
OKEAN 3
1 21397U 91039A 95065.46203033 .00000379 00000-0 51060-4 0 873
2 21397 82.5227 213.9953 0023839 121.1290 239.2262 14.76336521202203
GPS BIIA-11
1 21552U 91047A 95068.05476216 -.00000003 00000-0 10000-6 0 8322
2 21552 55.9165 67.4084 0063451 242.4143 116.9664 2.00571790 26929
ERS-1
1 21574U 91050A 95069.15744531 .00063788 00000-0 21775-1 0 988
2 21574 98.4929 144.8444 0000999 94.9615 265.1685 14.35976335190876
UO-22
1 21575U 91050B 95069.20168817 .00000070 00000-0 38101-4 0 5841
2 21575 98.4064 142.9296 0006839 212.0732 148.0029 14.36963943191282
ORBCOMM-X
1 21576U 91050C 95068.69122305 .00000080 00000-0 41995-4 0 6797
2 21576 98.4039 140.9670 0003063 219.5934 140.5015 14.36368103191123
TUBSAT-A
1 21577U 91050D 95068.69443552 .00000043 00000-0 29345-4 0 5780
2 21577 98.4042 141.4752 0005749 215.8869 144.1915 14.36474905191154
SARA
1 21578U 91050E 95065.19844282 .00000347 00000-0 12667-3 0 7774
2 21578 98.4225 142.8392 0004164 225.8465 134.2394 14.38956388190888
TDRS 4
1 21639U 91054B 95066.23906931 .00000071 00000-0 10000-3 0 8686
```

```
2 21639 0.0542 283.0516 0002895 53.2917 99.8037 1.00272353107210
Meteor 3-5
1 21655U 91056A 95068.07449239 .00000051 00000-0 10000-3 0 7848
2 21655 82.5537 289.6647 0012259 260.2070 99.7660 13.16838504171329
UARS
1 21701U 91063B 95067.46093728 .00000225 00000-0 40821-4 0 6553
2 21701 56.9860 180.1835 0005605 102.2870 257.8783 14.96351003190494
DMSP B5D2-6
1 21798U 91082A 95068.68534583 .00000046 00000-0 47905-4 0 7589
2 21798 98.9607 80.1999 0013647 104.4329 255.8354 14.13869534169145
Glonass 53
1 21853U 92005A 95067.31913431 .00000016 00000-0 10000-3 0 9831
2 21853 64.9661 100.1573 0008149 175.5003 184.5672 2.13102305 24177
Glonass 54
1 21854U 92005B 95068.54825865 .00000030 00000-0 00000+0 0 990
2 21854 64.9721 100.1181 0015862 9.4314 350.6633 2.13103526 24180
Glonass 55
1 21855U 92005C 95068.14211544 .00000025 00000-0 00000+0 0 949
2 21855 64.9743 100.1361 0008058 215.9676 144.0411 2.13102098 24169
JERS-1
1 21867U 92007A 95067.55671008 .00001101 00000-0 96686-4 0 5258
2 21867 97.7223 145.3909 0002279 109.3704 250.7766 14.98624460167978
GPS BIIA-12
1 21890U 92009A 95068.01758132 .00000035 00000-0 10000-3 0 6309
2 21890 53.9839 245.8521 0057012 175.7128 184.3132 2.00549645 22294
GPS BIIA-13
1 21930U 92019A 95064.73403356 -.00000086 00000-0 10000-3 0 6087
2 21930 55.6945 7.3816 0041321 174.5559 185.4939 2.00565785 21159
EUVE
1 21987U 92031A 95066.24989637 .00001673 00000-0 68007-4 0 3880
2 21987 28.4322 87.7196 0009835 331.6647 28.3392 15.19120990152432
SAMPEX
1 22012U 92038A 95066.06486884 .00000481 00000-0 40284-4 0 6115
2 22012 81.6675 253.4801 0117237 261.3461 97.4436 14.91301447145455
GPS BIIA-14
1 22014U 92039A 95068.26615936 -.00000010 00000-0 10000-3 0 5136
2 22014 54.8676 187.1747 0076431 315.6626 43.7178 2.00550480 13066
Glonass 56
1 22056U 92047A 95067.10351638 -.00000071 00000-0 00000+0 0 79
2 22056 64.8975 339.7565 0005578 291.2375 68.7400 2.13103227 20231
Glonass 57
1 22057U 92047B 95065.99065605 -.00000071 00000-0 00000+0 0 93
2 22057 64.9061 339.8162 0009298 326.3860 33.5916 2.13102892 20188
Glonass 58
1 22058U 92047C 95067.33878197 -.00000071 00000-0 10000-3 0 08
2 22058 64.9016 339.7844 0009929 270.8000 89.1489 2.13102890 20264
TOPEX
1 22076U 92052A 95065.53070551 -.00000038 00000-0 10000-3 0 8586
2 22076 66.0392 106.0971 0007668 266.9488 93.0648 12.80930314120092
KO-23
```

```
1 22077U 92052B 95069.07000217 -.00000037 00000-0 10000-3 0 4767
2 22077 66.0818 83.2940 0011856 224.1018 135.9048 12.86290422120980
S80/T
1 22078U 92052C 95068.47542934 -.00000037 00000-0 10000-3 0 4735
2 22078 66.0842 83.5406 0012533 218.5159 141.4965 12.86574294120986
GPS BIIA-15
1 22108U 92058A 95066.73179576 .00000028 00000-0 10000-3 0 5392
2 22108 54.2177 246.6583 0112458 145.1954 215.5623 2.00564307 18218
FREJA
1 22161U 92064A 95068.16100034 -.00000069 00000-0 17087-4 0 4938
2 22161 63.0007 342.0557 0802748 338.2338 18.6265 13.21822339116825
LAGEOS II
1 22195U 92070B 95067.10778270 -.00000009 00000-0 10000-3 0 3848
2 22195 52.6635 286.8907 0138398 232.4359 126.3559 6.47293805 56037
GPS BIIA-16
1 22231U 92079A 95067.41284900 -.00000003 00000-0 10000-3 0 5109
2 22231 54.6952 188.4021 0036459 285.2612 74.3290 2.00569407 16803
GPS BIIA-17
1 22275U 92089A 95066.56275499 -.00000001 00000-0 10000-3 0 5384
2 22275 54.6297 185.9550 0050312 255.4117 104.0238 2.00555053 16192
TDRS 5
1 22314U 93003B 95068.43493137 -.00000288 00000-0 10000-3 0 4919
2 22314 1.6875 72.1885 0003750 271.4524 293.8149 1.00276679 7913
GPS BIIA-18
1 22446U 93007A 95067.63063733 -.00000050 00000-0 10000-3 0 5148
2 22446 54.5126 306.4595 0091166 353.0605 6.9523 2.00552304 15204
Glonass 59
1 22512U 93010A 95067.32045678 .00000016 00000-0 10000-3 0 6861
2 22512 64.9905 100.0201 0009257 191.9838 168.0563 2.13102019 15748
Glonass 60
1 22513U 93010B 95067.26000934 .00000016 00000-0 00000+0 0 7249
2 22513 64.9807 100.0344 0007245 211.9564 148.0615 2.13102544 15932
Glonass 61
1 22514U 93010C 95067.08436570 .00000014 00000-0 00000+0 0 7258
2 22514 65.0052 100.0177 0011315 197.9526 162.0689 2.13102907 15935
ASTRO-D
1 22521U 93011A 95065.46041983 .00002569 00000-0 17803-3 0 3882
2 22521 31.1084 171.9024 0057712 199.5042 160.3385 15.02014217111919
UFO F1
1 22563U 93015A 95064.93260784 -.00000031 00000-0 10000-3 0 3947
2 22563 26.1805 295.9278 0004354 307.7653 277.9751 0.99251575 11431
GPS BIIA-19
1 22581U 93017A 95068.77040304 -.00000080 00000-0 10000-3 0 4090
2 22581 55.1840 6.8436 0055135 35.0209 325.3530 2.00554383 14284
ARSENE
1 22654U 93031B 95053.10965271 -.00000117 00000-0 10000-3 0 3064
2 22654 2.3584 88.2613 2904311 204.6294 138.9127 1.42203073 4757
GPS BIIA-20
1 22657U 93032A 95065.91398447 -.00000084 00000-0 10000-3 0 4441
2 22657 55.2307 6.7924 0069788 214.5518 144.9836 2.00571620 9555
```

```
RADCAL
1 22698U 93041A 95067.83667667 .00000099 00000-0 37659-4 0 3840
2 22698 89.5423 295.7510 0093670 45.4804 315.3992 14.21338242 88186
GPS BIIA-21
1 22700U 93042A 95066.37827868 .00000026 00000-0 10000-3 0 3923
2 22700 54.4036 247.4577 0035694 343.7174 16.1443 2.00561505 12362
NOAA-13
1 22739U 93050A 95068.86601599 .00000025 00000-0 38866-4 0 7521
2 22739 98.9817 17.6496 0010775 92.8488 267.3901 14.10925961 81431
GPS BIIA-22
1 22779U 93054A 95067.96004059 -.00000048 00000-0 10000-3 0 4428
2 22779 54.6502 306.4251 0020454 246.9260 112.9093 2.00560952 11158
Meteor 2-21
1 22782U 93055A 95064.82734449 .00000049 00000-0 30870-4 0 3841
2 22782 82.5525 359.1019 0020985 210.4888 149.5047 13.83026871 76252
UFO F2
1 22787U 93056A 95064.80159734 -.00000073 00000-0 10000-3 0 3955
2 22787 4.6542 324.6694 0003086 351.5611 206.6210 1.00273666 5713
SPOT 3
1 22823U 93061A 95065.54622420 -.00000031 00000-0 61520-5 0 4164
2 22823 98.7455 140.9196 0001041 79.5433 280.5855 14.20018544 74726
STELLA
1 22824U 93061B 95066.25087355 -.00000038 00000-0 22353-5 0 3725
2 22824 98.6273 143.8073 0006564 154.7568 205.3935 14.27099991 75198
AO-27
1 22825U 93061C 95065.70659047 .00000000 00000-0 17879-4 0 3744
2 22825 98.6281 143.5283 0008427 156.1252 204.0323 14.27653534 75145
IO-26
1 22826U 93061D 95067.70052003 .00000038 00000-0 33087-4 0 3735
2 22826 98.6229 145.5693 0009077 152.0640 208.1023 14.27761100 75436
HEATHSAT
1 22827U 93061E 95065.20728722 .00000042 00000-0 34711-4 0 4345
2 22827 98.6255 143.0593 0009395 146.6693 213.5087 14.27880498 75081
ITAMSAT
1 22828U 93061F 95065.75842010 .00000019 00000-0 25226-4 0 3516
2 22828 98.6239 143.6870 0010401 143.8758 216.3127 14.28089512 43258
PO-28
1 22829U 93061G 95065.20798762 .00000034 00000-0 31423-4 0 3660
2 22829 98.6247 143.1719 0009884 145.4057 214.7772 14.28067051 75097
KO-25
1 22830U 93061H 95069.19286747 -.00000020 00000-0 90052-5 0 3827
2 22830 98.5266 141.4220 0012360 114.5219 245.7246 14.28081651 75662
GPS BIIA-23
1 22877U 93068A 95066.01451788 -.00000024 00000-0 10000-3 0 2514
2 22877 55.2262 67.7391 0044831 297.3375 62.2378 2.00554193 10007
METEOSAT 6
1 22912U 93073B 95068.06230595 -.00000093 00000-0 10000-3 0 2592
2 22912 0.3374 271.9353 0000820 331.1163 295.8582 1.00270491 3188
HST Array
1 22920U 90037C 95067.72725301 .00009518 00000-0 73435-3 0 2911
```

```
2 22920 28.4682 307.0760 0004324 176.1277 183.8754 14.99980766 69206
Meteor 3-6
1 22969U 94003A 95066.83320147 .00000051 00000-0 10000-3 0 1518
2 22969 82.5547 230.2233 0015201 330.9415 29.0857 13.16727912 53547
TUBSAT-B
1 22970U 94003B 95064.97909133 .00000051 00000-0 10000-3 0 1409
2 22970 82.5573 231.4861 0015776 333.7869 26.2445 13.16824059 53305
ODERACS E
1 22994U 94006F 95061.81894114 .06241027 11780-4 10453-3 0 3399
2 22994 56.9620 210.9976 0005787 293.1349 67.3024 16.47718070 61334
ODERACS F
1 22995U 94006G 95055.74721848 .07840807 11908-4 80136-4 0 3792
2 22995 56.9641 238.6220 0008022 316.4992 43.6881 16.50358678 60374
BREMSAT
1 22998U 94006H 95043.56065712 .17295105 11911-4 80942-4 0 3585
2 22998 56.9722 297.2852 0005621 127.6632 233.8874 16.55784471 42255
GPS BIIA-24
1 23027U 94016A 95066.09082387 -.00000083 00000-0 10000-3 0 1759
2 23027 55.0507 8.8231 0062827 196.7910 163.0049 2.00550074 7315
Glonass 62
1 23043U 94021A 95068.10088163 -.00000071 00000-0 00000+0 0 1702
2 23043 64.7819 340.1482 0004267 196.8817 163.1403 2.13102965 7071
Glonass 63
1 23044U 94021B 95067.98360912 -.00000071 00000-0 00000+0 0 1567
2 23044 64.7689 340.1581 0028153 206.4225 153.4690 2.13103136 7079
Glonass 64
1 23045U 94021C 95065.34406507 -.00000071 00000-0 00000+0 0 1668
2 23045 64.7665 340.2564 0011042 31.3046 328.7916 2.13102117 7011
GOES 8
1 23051U 94022A 95058.18378105 -.00000283 00000-0 10000-3 0 2742
2 23051 0.2167 264.2952 0004062 216.5471 25.4768 1.00375226 2850
MSTI 2
1 23101U 94028A 95068.11664598 .00006733 00000-0 12429-3 0 1574
2 23101 97.1042 262.8055 0010996 253.5123 106.4854 15.49357008 47029
STRV-1A
1 23125U 94034B 95069.23446065 .00001493 00000-0 63178-3 0 1247
2 23125 7.4307 71.1486 7263051 40.1146 355.4395 2.29770380 5370
STRV-1B
1 23126U 94034C 95066.20486128 .00001183 00000-0 48037-3 0 1272
2 23126 7.4299 72.6304 7268020 37.3105 355.7577 2.29389536 5352
Nadezhda 4
1 23179U 94041A 95067.46037129 .00000002 00000-0 -13472-4 0 837
2 23179 82.9446 222.4979 0037038 349.8219 10.2167 13.75664049 32624
Glonass 65
1 23203U 94050A 95067.82797015 .00000050 00000-0 00000+0 0 1169
2 23203 64.8085 219.7884 0008000 136.2166 223.8252 2.13101988 4466
Glonass 66
1 23204U 94050B 95067.12367406 .00000050 00000-0 00000+0 0 1249
2 23204 64.7959 219.8453 0015172 352.6182 7.3350 2.13102108 4446
Glonass 67
```

```
1 23205U 94050C 95068.41428095 .00000048 00000-0 00000+0 0 1130
2 23205 64.8047 219.7849 0001329 356.8791 3.0970 2.13102370 4470
DMSP B5D2-7
1 23233U 94057A 95068.59601829 .00000129 00000-0 93684-4 0 2568
2 23233 98.8907 127.5376 0013683 61.8462 298.4083 14.12584505 27092
Soyuz TM-20
1 23288U 94063A 95067.09693990 -.00009947 00000-0 -12426-3 0 1426
2 23288 51.6478 304.3143 0004264 214.2265 145.9950 15.57876286 24310
OKEAN 1-7
1 23317U 94066A 95068.20439943 .00000210 00000-0 28471-4 0 487
2 23317 82.5462 127.6727 0026223 150.9336 209.3325 14.73908136 21895
ELEKTRO
1 23327U 94069A 95066.97773140 -.00000116 00000-0 10000-3 0 500
2 23327 0.9849 264.6460 0003035 142.5346 186.5389 1.00271019 1319
RESURS 1-3
1 23342U 94074A 95066.72150314 .00000250 00000-0 50035-4 0 666
2 23342 98.0284 128.1345 0001410 77.9831 282.1528 14.69709698 18143
Glonass 68
1 23396U 94076A 95066.38081315 .00000009 00000-0 00000+0 0 612
2 23396 64.9179 100.1504 0030064 195.7672 164.2014 2.13102524 2271
Glonass 69
1 23397U 94076B 95067.49471541 .00000018 00000-0 00000+0 0 676
2 23397 64.9059 100.1292 0014645 319.4739 40.4775 2.13102411 2295
Glonass 70
1 23398U 94076C 95068.31653296 .00000027 00000-0 00000+0 0 702
2 23398 64.8831 100.0893 0005088 283.8448 76.1613 2.13102426 2328
RS-15
1 23439U 94085A 95068.98773623 -.00000039 00000-0 10000-3 0 347
2 23439 64.8157 55.4174 0168013 279.2615 78.9339 11.27526737 8335
NOAA 14
1 23455U 94089A 95068.86170634 .00000096 00000-0 77391-4 0 944
2 23455 98.8920 12.2078 0010330 111.2199 249.0078 14.11495867 9799
1995004C
1 23471U 95004C 95067.92768470 .00024896 00000-0 14481-3 0 244
2 23471 51.6443 295.5821 0016081 73.4014 286.8906 15.78155052 5316
1995004D
1 23472U 95004D 95068.33133623 .00040698 00000-0 20793-3 0 282
2 23472 51.6508 293.0192 0017180 91.4517 268.6523 15.80710114 5381
1995004F
1 23474U 95004F 95055.25000000 .00820333 36251-3 10285-2 0 201
2 23474 51.6420 359.4890 0014037 167.3440 136.9170 16.06823723 3499
1995004G
1 23475U 95004G 95056.04967593 .00938013 11385-4 71397-3 0 152
2 23475 51.8625 355.8014 0107400 312.2362 149.5984 16.02836050 3450
Progress M-26
1 23477U 95005A 95067.09693990 -.00009947 00000-0 -12426-3 0 309
2 23477 51.6478 304.3143 0004264 214.2265 145.9950 15.57876286 3216
1995005B
1 23478U 95005B 95048.64948989 .28376917 12633-4 19181-3 0 127
2 23478 51.6010 36.2624 0008310 159.3273 202.4262 16.52926236 329
```

```
1995006A
1 23497U 95006A 95062.59125430 .00075659 80313-5 11000-3 0 208
2 23497 62.8018 303.5773 0103091 107.8696 253.7344 15.95589014 2378
1995006B
1 23498U 95006B 95068.91364734 .01480898 85162-5 53118-3 0 493
2 23498 62.7877 277.6756 0041429 110.0438 250.4495 16.22031008 3401
1995006C
1 23499U 95006C 95049.28824527 .06335403 81180-5 52566-2 0 42
2 23499 62.8030 355.3853 0080054 110.1799 251.5533 16.06530291 259
STS 67
1 23500U 95007A 95069.25000000 .00001048 00000-0 46212-5 0 250
2 23500 28.4651 31.6542 0013888 16.1142 287.0009 15.72674631 1258
1995008A
1 23501U 95008A 95068.22280119 .00002228 00000-0 97130-4 0 96
2 23501 65.8490 315.3728 0035127 340.7176 19.2624 15.24375139 1027
1995008B
1 23502U 95008B 95068.67483422 .00000050 00000-0 10000-4 0 168
2 23502 65.8521 313.8957 0040852 351.7676 8.0588 15.25381829 1094
1995006D
1 23503U 95006D 95068.41519484 .01207720 51555-3 77457-2 0 173
2 23503 62.8325 281.9413 0081684 10.6824 349.5642 15.71315313 3283
1995006E
1 23504U 95006E 95068.41291490 .00379242 00000-0 26780-2 0 119
2 23504 62.8080 281.9248 0095598 23.3125 336.9550 15.66714527 3284
1995006F
1 23505U 95006F 95068.94772569 .01042195 82906-5 74009-3 0 178
2 23505 62.8245 278.4398 0063216 108.1516 254.0393 16.11013775 3398
1995006G
1 23506U 95006G 95068.66500799 .00241260 80838-5 32299-3 0 138
2 23506 62.7936 279.8118 0090923 106.3422 254.7703 15.98378996 3341
1995008C
1 23507U 95008C 95068.05048571 .00013609 00000-0 64032-3 0 63
2 23507 65.8630 316.0673 0050048 310.6217 48.9010 15.18669427 999
1995008D
1 23508U 95008D 95068.66018990 .00027742 00000-0 93735-3 0 68
2 23508 65.8153 313.8163 0051650 347.9011 12.0184 15.29278862 1237
1995008E
1 23509U 95008E 95068.00033827 .00027896 00000-0 89152-3 0 50
2 23509 65.8177 315.8523 0059251 338.5309 21.3165 15.30641143 999
1995008F
1 23510U 95008F 95068.06538824 .00031973 00000-0 10187-2 0 46
2 23510 65.8847 315.6918 0058426 342.7979 17.0974 15.30737128 1242
1995009A
1 23511U 95009A 95068.74855446 -.00000069 00000-0 10000-3 0 43
2 23511 64.8068 340.4009 0003199 184.8282 175.1948 2.12980075 55
1995009B
1 23512U 95009B 95068.74856247 -.00000069 00000-0 10000-3 0 44
2 23512 64.7974 340.4037 0004852 191.4111 168.6152 2.12976335 52
1995009C
1 23513U 95009C 95068.74845731 -.00000069 00000-0 10000-3 0 30
```

```
2 23513 64.7964 340.4086 0004008 183.2749 176.7476 2.12991214 57
1995009D
1 23514U 95009D 95066.93243375 .13451308 80329-5 75535-4 0 82
2 23514 64.8190 338.6167 0012968 306.5807 53.6827 16.54236460 103
1995009E
1 23515U 95009E 95066.87191215 .17194273 78973-5 13051-3 0 42
2 23515 64.8020 338.8468 0013018 270.4700 89.4999 16.52037135 91
1995009F
1 23516U 95009F 95067.80950170 -.00000071 00000-0 10000-3 0 14
2 23516 64.7928 340.4230 0013193 279.5640 81.9242 2.13277644 36
1995009G
1 23517U 95009G 95068.09971780 -.00000139 00000-0 00000+0 0 28
2 23517 64.7824 339.9668 5808852 297.2067 15.9380 4.23205655 79
1995009H
1 23518U 95009H 95068.80831627 .00000665 00000-0 62401-3 0 34
2 23518 64.8507 339.5740 5810120 297.2243 15.9270 4.23257629 103
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

512. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 19:57:47 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.794865467@eel>
Source record: 25514

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95069.25000000 .00001048 00000-0 46212-5 0 250
2 23500 28.4651 31.6542 0013888 16.1142 287.0009 15.72674631 1258
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

513. Re: Callsigns for WiSP

Newsgroup: rec.radio.amateur.space
Date: 1995-03-10 20:50:02 UTC
From: rparsons@bga.com
Message-ID: <rparsons-1003951450020001@maria-4h.ip.realtime.net>
Source record: 25608

In article <3jq220$pb9@jac.zko.dec.com>, little@pecan.enet.dec.com (Todd Little) wrote:

> I'm sure this information is lurking somewhere just waiting for me to
> find it, but I cannot seem to determine what the callsigns are that
> WiSP wants for each satellite. It wants a Broadcast Callsign and a
> BBS Callsign, yet I haven't hit the combination that allows me to
> download any messages or get a directory fill.
>
> Could someone post the two callsigns for each of the digital satellites?
>
> --
> 73, Member of RACES, ARRL, Arlington Communications League.
> Todd Trained weather spotter and sponsor of the Hunting Ridge
> N9MWB Elementary School Radio Club. See you on 160-1296 and OSCAR.

Sat Callsign

AO-16(PACSAT) 145.90,.92,.94,.96 FM 437.0513 SSB 1200 Baud PSK

LO-19(LUSAT) 145.84,.86,.88,.90 FM 437.1258 SSB 1200 Baud PSK

UO-22(UOSAT5) 145.9, .975 FM 435.12 FM 9600 Baud PSK

KO-23(HL01) 145.85, .90 FM 435.175 FM 9600 Baud PSK

KO-25(HL02) 145.98, .87 FM 436.5 FM 9600 Baud PSK

The digital sats use a program suite containing
PB/PG/PFHADD/PHS or WISP. The broadcast callsign (in PB.CFG) is the
satellite's callsign with an SSID of -11. The BBS callsign
(in PG.CFG) is the satellite's callsign with an SSID of -12.

Ron W5RKN

514. RE: Any mods for Icom IC-275H/IC-475H

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 01:59:16 UTC
From: jho@xilinx.COM
Message-ID: <199503110159.AA04512@clemenza.xilinx.com>
Source record: 25512

John,

I thought about the same thing as you are thinking - to mod my IC970A
after I bought it about 2 years ago. I couldn't find any info about it.
I even asked a Japanese friend of mine to find out info from ICOM Japan.
The answer I got was that all of the ICOM all mode V/UHF rigs are equiped
w/ high sensitivity (SSB/CW) receivers. Build-in band pass filters(covering
ham bands only) are utilized to avoid intermod in the receivers.
Therefore, wideband receive can not be achieved in this type of rigs.

As you know, all the HF SSB rigs are also equiped
with 8-10 passband filters to cover ~ 30MHz frequency span. I think that
the same principle applies here too - to avoid intermod of the high sensitivity
receivers.

The ICOM R7000/9000 use 10-20(?) bandpass filters to achieve wideband(~2GHz)
converage.

By the way, besides 2/475H, you probably wouldn't find the mod-files for Yaesu 736R,
IC970, and KWND TS790A either.

I heard from ICOM Japan, the upper/lower limits of the frequencies
of the IC970 are hard coded in ROM. This might be true for your 2/475H.

Finally, I gave up in finding the mod-file for my ICOM 970A and bought a
scanning receiver.

Hope this answers your question. By the way, what sat ant are you using?
I am using a AOP-1 and found the performance so-so.

73,

Jonathan/ab6ls

==========
Date: Thu, 9 Mar 1995 20:21:10 GMT
From: jcw@kd4dts.radio.org (John C. Wren)
Subject: Any mods for Icom IC-275H/IC-475H

I've just purchased a Icom IC-475H and IC-275H. I've looked at the local
mods BBS and databases, and can't find anything for these radios. Are
they *that* perfect, or am I just missing them?

- John
==========

515. Re: Callsigns for WiSP

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 03:21:27 UTC
From: wa1omm@aol.com
Message-ID: <3jr4vn$q9l@newsbf02.news.aol.com>
Source record: 25516

```
Satellite Broadcast Call BBS Call
-------------------------------------------------------------
KO-23 HL01-11 HL01-12
KO-25 HL02-11 HL02-12
UO-22 UOSAT5-11 UOSAT5-12

73, Paul WA1OMM

Compuserve: 70411,626
Satellite: KO-23 and KO-25
Packet: WA1OMM@KB4N.NH.NOAM
```

516. Re: How do I handle Doppler shift?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 03:27:40 UTC
From: leigh@rain.org
Message-ID: <3jr5bc$40g@news.rain.org>
Source record: 25515

Jeffrey Wittich (jwittich@b4pph107.bnr.ca) wrote:
> Hi all. I am about ready to try a QSO through RS-10/11. When
> working CW, do you adjust the XIT to account for shift, keeping
> the receive constant, or do you change the RIT and keep your
> transmit frequency constant? Or am I completely wrong and should
> do it some other way?

Jeff, if you compensate for doppler shift by adjusting your RIT, you may drift into someone elses's QSO. I've made a few contacts on RS-10 in both CW and SSB; I keep a hand on the transmitter VFO and adjust the transmit freq about every 10 or 15 seconds. It takes practice; I ain't too adept at it yet.

73, and maybe I'll catch you on RS-10. --Leigh/KM6JE in Santa Barbara.

517. Re: Freeware DOVE telemetry deocder windows program

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 03:39:18 UTC
From: "Jeffrey L. Davis" <jdavis@one.net>
Message-ID: <3jr616$al2@mail.one.net>
Source record: 25517

Steve Kittelsen <sak1@delphi.com> wrote:
>
> I have tried to log-on to FTP.amsat.org , but not beeing a member, I don't
> get any access. Any ideas other than becomming a member?
>
> **
> * __/__/\ Steve Kittelsen __________ *
> * / /\ \ Rochester, New York \ / *
> * I I I I " sak1@delphi.com " \ / *
> * \ __\/__ / OPEN YOUR MIND \/ *
> **

Steve:

Try using ftp.qualcomm.com
then select amsat. Dont know why but your problem is common. Hope this
works for you.

Jeff Davis
N9AVG

518. Amsat BB

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 05:04:50 UTC
From: sonealca@aol.com
Message-ID: <3jrb1i$s2c@newsbf02.news.aol.com>
Source record: 25518

Does anyone have the mail address for the AMSAT BB mail list, please forward if you do. Lost the info on this in a Hard Disk crash.

Steve N6CRR/VK8SO

519. Re: M2 or KLM 440/2m antennas?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 15:29:38 UTC
From: bobr@on-ramp.ior.com
Message-ID: <3jsfl2$sss@on-ramp.ior.com>
Source record: 25519

I have owned the KLM 40CX and 14C for several years. I have found both antennas to perform extremely well. I have not had problems with the switching arrangement (I do use the switches). I have no experience with the M2 antennas but I have heard that they may be constructed a bit better than the KLMs but may not perform quite as well. I understand that the 40CX is probably the BEST uplink antenna available. My signals are consistently above average using this antenna. The cushcraft AOP is not recommended (in my opinion).

John C. Wren (jcw@kd4dts.radio.org) wrote:
: I'm looking at putting up a set of satellite antennas, and am trying to decide
: between the M2 and the KLMs. I've touched and looked at the KLMs, but not
: the M2. The KLM seem to be susceptible to crapping up in the switching box
: arrangement. I know a great many people think highly of the KLMs, think that
: the Crushcraft are junk, and have no opinion about the M2s. Anyone out here
: have any thoughts on the matter?

: - John, KD4DTS

--
+--------------------+------------------------+-------------------------+
| Robert J. Raymond | Spokane, Washington | bobr@on-ramp.ior.com |
| Patricia Raymond | Amateur Callsign KG7WC |//www.ior.com:80/~bobr |
+--------------------+------------------------+-------------------------+

520. Freeware DOVE telemetry deocder windows program

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 18:49:00 UTC
From: jann.larsson@swedx.ct.se
Message-ID: <ftn_2.201.339$fidonet_2313afda_Jann.Larsson@swedx.ct.se>
Source record: 25523

> I have uploaded a program I wrote that will decode the telemetry
> that comes
> from the DOVE (DO-17) satellite. It runs with windows 3.1. It is
> freeware
> and can be downloaded via ftp at ftp.amsat.org in the directory
> amsat/software/windows/telemetry. All you need to receive telemetry
> data is
> a 2M radio and a normal packet TNC. If you don't have access to
> Internet then
> you can sent me $1 and I will provide postage, mailer and disk
> (please
> specify) to anywhere in USA or Canada. The file name is
> dovedv12.zip.

The program is also available for FREQ by listed nodes at SweDX in Sweden. Se
origin below.

Electronic greetings, Jann

(UUCP Dialup connection)

521. ARLK010 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 19:41:06 UTC
From: w1aw@arrl.org
Message-ID: <$arlk010.1995@ampr.org>
Source record: 25520
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK010
ARLK010 Keplerian data

ZCZC SK35
QST de W1AW
Keplerian Bulletin 10 ARLK010
From ARRL Headquarters
Newington, CT March 11, 1995
To all radio amateurs

SB KEP ARL ARLK010
ARLK010 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-67
1 23500U 95007A 95069.25000000 .00001048 00000-0 46212-5 0 250
2 23500 28.4651 31.6542 0013888 16.1142 287.0009 15.72674631 1258
AO-10
1 14129U 83058B 95049.74423524 -.00000256 00000-0 10000-3 0 3407
2 14129 26.5642 282.2218 6017196 253.4768 35.4795 2.05881639 59890
RS-10/11
1 18129U 87054A 95068.67743401 .00000048 00000-0 36178-4 0 278
2 18129 82.9257 132.6300 0012318 15.7922 344.3615 13.72349300386322
UO-11
1 14781U 84021B 95067.53511811 .00000193 00000-0 40423-4 0 7806
2 14781 97.7814 74.8058 0012419 139.4582 220.7549 14.69314150589128
RS-12/13
1 21089U 91007A 95067.27808607 .00000027 00000-0 12600-4 0 7813
2 21089 82.9244 175.6015 0030780 92.4240 268.0443 13.74054698204915
AO-13
1 19216U 88051B 95068.36191901 -.00000463 00000-0 10000-4 0 214
2 19216 57.6029 199.6642 7272215 3.7010 359.4224 2.09725757 20076
UO-14
1 20437U 90005B 95069.20690562 .00000065 00000-0 42254-4 0 802
2 20437 98.5711 155.1571 0011267 125.4027 234.8205 14.29878129267608
RS-15
1 23439U 94085A 95068.98773623 -.00000039 00000-0 10000-3 0 347
2 23439 64.8157 55.4174 0168013 279.2615 78.9339 11.27526737 8335
```

```
AO-16
1 20439U 90005D 95069.18244640 .00000031 00000-0 28831-4 0 8786
2 20439 98.5835 156.6748 0011694 126.7972 233.4287 14.29931813267612
DO-17
1 20440U 90005E 95069.25065751 .00000010 00000-0 20794-4 0 8787
2 20440 98.5849 157.1633 0011754 125.6528 234.5749 14.30072524267645
WO-18
1 20441U 90005F 95068.25141602 .00000019 00000-0 24265-4 0 8828
2 20441 98.5849 156.1602 0012365 129.3595 230.8678 14.30044299267508
LO-19
1 20442U 90005G 95069.19085921 .00000057 00000-0 38964-4 0 8782
2 20442 98.5806 157.4111 0012695 126.0698 234.1663 14.30145774267652
FO-20
1 20480U 90013C 95065.26122027 -.00000022 00000-0 14478-4 0 7748
2 20480 99.0677 173.0175 0541064 106.1540 259.9792 12.83229532237748
AO-21
1 21087U 91006A 95068.72538268 .00000094 00000-0 82657-4 0 5736
2 21087 82.9445 306.1977 0037194 63.5194 296.9769 13.74551458206062
UO-22
1 21575U 91050B 95069.20168817 .00000070 00000-0 38101-4 0 5841
2 21575 98.4064 142.9296 0006839 212.0732 148.0029 14.36963943191282
KO-23
1 22077U 92052B 95069.07000217 -.00000037 00000-0 10000-3 0 4767
2 22077 66.0818 83.2940 0011856 224.1018 135.9048 12.86290422120980
KO-25
1 22828U 93061F 95065.75842010 .00000019 00000-0 25226-4 0 3516
2 22828 98.6239 143.6870 0010401 143.8758 216.3127 14.28089512 43258
IO-26
1 22826U 93061D 95067.70052003 .00000038 00000-0 33087-4 0 3735
2 22826 98.6229 145.5693 0009077 152.0640 208.1023 14.27761100 75436
AO-27
1 22825U 93061C 95065.70659047 .00000000 00000-0 17879-4 0 3744
2 22825 98.6281 143.5283 0008427 156.1252 204.0323 14.27653534 75145
PO-28
1 22829U 93061G 95065.20798762 .00000034 00000-0 31423-4 0 3660
2 22829 98.6247 143.1719 0009884 145.4057 214.7772 14.28067051 75097
Mir
1 16609U 86017A 95067.86666546 .00005643 00000-0 80665-4 0 9625
2 16609 51.6474 300.4481 0004353 212.3501 147.7219 15.57908368517321

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
March 14, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

522. STS-67 Element_Set (95070.655)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 21:45:49 UTC
From: elements-request@alsys.com
Message-ID: <STS-67.95070.655@alsys.com>
Source record: 25525
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-67
1 23500U 95007A 95070.65598825 .00011234 00000-0 74632-4 0 112
2 23500 28.4677 21.4123 0014811 34.9187 325.2369 15.72828179 1490

Satellite: STS-67
Catalog number: 23500
Epoch time: 95070.65598825 = (11-Mar-95 15:44:37.38 UTC)
Element set: 011
Inclination: 28.4677 deg
RA of node: 21.4123 deg Space Shuttle Flight STS-67
Eccentricity: .0014811 Keplerian element set JSC-011
Arg of perigee: 34.9187 deg from NASA flight Day 10 vector
Mean anomaly: 325.2369 deg
Mean motion: 15.72828179 rev/day Gil Carman
Decay rate: 1.1234e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 149

This data is also available on the Shuttle Elements Mailing List. For
information, send the command "info elements" to "listserv@alsys.com".

<ftp://seds.lpl.arizona.edu/pub/sat/STS-elements>

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

523. Probe images on CD-ROM

Newsgroup: rec.radio.amateur.space
Date: 1995-03-11 22:12:43 UTC
From: paulpha@aol.com
Message-ID: <3jt78r$9a0@newsbf02.news.aol.com>
Source record: 25521

Voyage Through Solar System CD

Macformat says "Slickly produced multimedia package"
Publishers Weekly "Astounding, often breathtaking videos"
Popular Science "Heavenly Voyage"

Ages 8 to adult. Launches you into escape velocity with the realism of up-close images, full- motion action, and dynamic music. This unique interactive program is the first of its kind, because it utilizes actual video and film from Jet Propulsion Lab and NASA.

Full motion video and animation demonstrate the awe inspiring images and informative text. A Voyage Through the Solar System will answer questions such as: When did our solar system form? What does the surface of Venus look like? How do you pronounce Eistla Regio? Educational as well as entertaining, this program is designed for the whole family. Features: Over 70 action-packed movies with exciting music and narration. True color, high resolution NASA/JPL photos. Detailed information on each member of the Solar System. Printout capabilities.

REQUIRES: IBM PC, 386+, DOS compatible computer, 640x480, 256 color VGA graphics card, monitor. MPC-compatible sound card. 4MB RAM, Windows 3.1+. DOS 3.1

This Hybrid disc includes software for Mac LC2 or better, 256 colors

Palo/Haklar Multimedia
650 N Bronson Street #144
Los Angles, Ca 90004
ph 213-461-0982 fax 213-465-2686

524. $*$*$ 20 Weak Signal Challenge (HAM Post) - Now $30 $*$*$

Newsgroup: rec.radio.amateur.space
Date: 1995-03-12 00:52:19 UTC
From: ir000411@interramp.com
Message-ID: <3jtgk3$8aq@usenet.interramp.com>
Source record: 25524
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.homebrew

$*$*$ 20 Weak Signal Challenge (HAM Post) - Now $30 $*$*$

Three weeks have passed since the original posting of this challenge.
During that period, the Web page was accessed over 1000 times.
The weak signal recording has been listen to and processed by
many. Several operators using their best audio filters have been
able to copy my call. And yet, a correct identification of the calling
station has not been made. I am increasing the amount offered to $30
and will continue to escalate the prize until someone cracks the problem.

Details on the challenge can be obtained from my Web page:

http://www.webcom.com/~af9y/

The winner will be announce in the UseNet groups carrying this post
and my Web page.

Final Note for those trying their own signal processing techniques:

Many have asked about the WAV file format used for the
A/D recording. The format is a PC Windows standard which
contains 43, 8 bit-bytes of header (which can be thrown away)
followed by a consecutive series of 8 bit A/D data. The sample
rate was 8192 samples/sec.

Good Luck,
de Mike Cook - AF9Y

525. AMSAT-DL Address

Newsgroup: rec.radio.amateur.space
Date: 1995-03-12 11:49:41 UTC
From: mcneills@landcare.cri.nz
Message-ID: <mcneills.16.0014D73B@landcare.cri.nz>
Source record: 25522

Can anyone tell me the full mailing adress for AMSAT-Germany (AMSAT-DL) ?

Thanks, in advance, for help on this query.

Stephen ZL4HG

526. Re: Amsat BB

Newsgroup: rec.radio.amateur.space
Date: 1995-03-12 14:18:56 UTC
From: "Jeffrey L. Davis" <jdavis@one.net>
Message-ID: <3juvsg$i5p@mail.one.net>
Source record: 25526

sonealca@aol.com (SOnealCA) wrote:
>
> Does anyone have the mail address for the AMSAT BB mail list, please
> forward if you do. Lost the info on this in a Hard Disk crash.
>
> Steve N6CRR/VK8SO

Address requests for subscription to lists to ; listserv@amsat.org

To directly send mail to the BB use ; amsat-bb@amsat.org

Hope this helps,
73, N9AVG

527. Re: How do I handle Doppler shift?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-12 14:23:06 UTC
From: "Jeffrey L. Davis" <jdavis@one.net>
Message-ID: <3jv04a$i5v@mail.one.net>
Source record: 25527

leigh@rain.org () wrote:
>
> Jeffrey Wittich (jwittich@b4pph107.bnr.ca) wrote:
> > Hi all. I am about ready to try a QSO through RS-10/11. When
> > working CW, do you adjust the XIT to account for shift, keeping
> > the receive constant, or do you change the RIT and keep your
> > transmit frequency constant? Or am I completely wrong and should
> > do it some other way?
>
> Jeff, if you compensate for doppler shift by adjusting your RIT, you may
> drift into someone elses's QSO. I've made a few contacts on RS-10 in
> both CW and SSB; I keep a hand on the transmitter VFO and adjust the
> transmit freq about every 10 or 15 seconds. It takes practice; I ain't
> too adept at it yet.
>
> 73, and maybe I'll catch you on RS-10. --Leigh/KM6JE in Santa Barbara.
>

The general practice is to change the higher of the two frequencies
used. For Mode A (2 meters up/10 meters down) the xmit would be the
one to adjust while listening to your downlink.

73, N9AVG

528. Need ftp site for Kep data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-12 17:14:20 UTC
From: copeland@fohnix.metronet.com
Message-ID: <3jva5c$221@fohnix.metronet.com>
Source record: 25528

I am looking for a site that maintains current Kepler data for
my sattelite tracking program.

--

| There are two types of people in this world, those who separate |
| people into groups,and those who don't. KC5LWF copeland@metronet.com|
----

529. Endavor Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-12 17:49:30 UTC
From: CNJG79B@prodigy.com
Message-ID: <3jvc7a$1bb6@usenetw1.news.prodigy.com>
Source record: 25529

Hello. I would like to know what the uplink and download frequencies are for the Endavor Space Shuttle. I think I heard the downlink on 145.55. I would like to find out the uplink for it. If anyone has any info, please reply here or email CNJG79B on prodigy or CNJG79B@PRODIGY.COM on the internet.

Thanks and 73 de N2TEB in New York

530. WTB: Motorola 68x05, 68x11 stuff

Newsgroup: rec.radio.amateur.space
Date: 1995-03-12 21:28:40 UTC
From: fmitch@netcom.com
Message-ID: <fmitchD5CJns.HA9@netcom.com>
Source record: 25530
Cross-posted to: rec.radio.swap,rec.radio.amateur.space,rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew

hi... mitch here in mobile, alabama...

i am looking for a good (make that cheep!) motorola 68x05 and 68xx11
ice and/or programmer... to be used for development work at vibroplex...

let me know what u have...

please reply via e-mail or call me at the numbers below...

thanks
mitch
wa4osr
--

* * * The *FIRST HAM OWNER* of The Vibroplex Co., Inc. * * *

Email: fmitch@maf.mobile.al.us or, second choice, fmitch@netcom.com
Felton "Mitch" Mitchell, WA4OSR, 11 Midtwon Park, E., Mobile, AL 36606 USA
334-478-8873 Vibroplex, 334-342-7259 home, 334-476-0465 FAX
co-sysop for W4IAX bbs running fbb ... sysop for WA4OSR DXCluster in Mobile..
---

531. Re: WTB: Motorola 68x05, 68x11 stuff

Newsgroup: rec.radio.amateur.space
Date: 1995-03-12 23:03:31 UTC
From: paulzeppa@aol.com
Message-ID: <3jvuk3$qct@newsbf02.news.aol.com>
Source record: 25531
Cross-posted to: rec.radio.swap,rec.radio.amateur.space,rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew

CALL 408-241-7376 FOR DEVICE PROGRAMERS HE SELLS DEVICE PROGRAMERS FOR
ALL APLACATIONS PAUL ZEPPA RF IMAGING AND COMM

532. Wisp Keps Updating

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 01:08:01 UTC
From: william@cortex.ama.ttuhsc.edu
Message-ID: <Pine.SUN.3.91.950312190458.20048B-100000@cortex>
Source record: 25532

Hello all,

I have a trial version of WiSP that I downloaded from AMSAT.
I can get it to read the keplerian files from AMSAT (AMSAT.ALL and
NASA.ALL), but it curiously doesn't include STS 67. So I added STS 67
manually and tried to edit the satellite Kep data by hand.

Everything seems fine, but upon returning to the screen for STS 67, the
Epoch time , Mean anomaly, and orbit number have been changed to all 0's.

I have tried entering the epoch time as 95069.250000 and 95 69.250000
but no good.

Just how do you update the epoch time and mean anomaly ? What could I be
doing wrong ? It seems so simple !

Thanks & 73's

Reddy Biggs
KC5JIF

==========
William C. Biggs , M.D.	william@cortex.ama.ttuhsc.edu
1900 South Coulter Drive	
Amarillo, Texas 79106	FCC Call: KC5JIF
==========

533. Re: Endavor Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 02:18:28 UTC
From: rparsons@bga.com
Message-ID: <rparsons-1203952018280001@vern-a6.ip.realtime.net>
Source record: 25533

In article <3jvc7a$1bb6@usenetw1.news.prodigy.com>, CNJG79B@prodigy.com
(David Mennerich) wrote:

> Hello. I would like to know what the uplink and download frequencies are
> for the Endavor Space Shuttle. I think I heard the downlink on 145.55.
> I would like to find out the uplink for it. If anyone has any info,
> please reply here or email CNJG79B on prodigy or CNJG79B@PRODIGY.COM on
> the internet.
>
> Thanks and 73 de N2TEB in New York

SAREX operates on the following Frequencies:

Voice Downlink 145.55
Voice Uplinks: 144.99, 144.97, 144.95, 144.93 144.91 (Except Europe)
Voice Uplinks: 144.70, 144.75, 144.80 (Europe only)
Voice Callsigns: Ron Parise, WA4SIR, Steve Oswald, KB5YSR, Tammy
Jernigan, KC5MGF, Bill Gregory, KC5MGA, Wendy Lawrence, KC5KII and Sam
Durrance, N3TQA.

Packet Downlink: 145.55
Packet Uplink: 144.49
Packet Callsign: W5RRR-1

Ron W5RKN

534. Re: Freeware DOVE telemetry deocder windows program

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 03:28:31 UTC
From: Steve Kittelsen <sak1@delphi.com>
Message-ID: <h+y7uEX.sak1@delphi.com>
Source record: 25534

Thanks for the qualcomm address.

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " kittelss@vivanet.com " \ / *
* \ __\/__ / * OPEN YOUR MIND * \/ *
**********************************************************************
```

535. Re: Need ftp site for Kep data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 10:59:04 UTC
From: boyer@rd.bbc.co.uk
Message-ID: <D5DL6H.E5J@bbc.co.uk>
Source record: 25535

Charles Copeland (copeland@fohnix.metronet.com) wrote:
: I am looking for a site that maintains current Kepler data for
: my sattelite tracking program.

: --
: --
: | There are two types of people in this world, those who separate |
: | people into groups,and those who don't. KC5LWF copeland@metronet.com|
: --

Try archive.afit.af.mil in pub/space

Regards John B

john.boyer@rd.eng.bbc.co.uk
g6sed.ampr.org (44.131.244.84)
home page: http://www.bbc.co.uk/john_wxpics/index.html

536. Test, please ignore

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 11:37:02 UTC
From: matthews@zarm10.zarm.uni-bremen.de
Message-ID: <matthews.2.00AB8C2F@zarm10.zarm.uni-bremen.de>
Source record: 25542

```
Testing, one, two, three
```

537. Re: Need ftp site for Kep data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 13:39:13 UTC
From: drayegon@enterprise.america.com
Message-ID: <NEWTNews.19998.795105629.drayegon@drayegon.america.com>
Source record: 25536

> I am looking for a site that maintains current Kepler data for
> my sattelite tracking program.

Try http://www.amsat.org or you may subscribe to same place for updates.

73 Ray AD4RR

538. Need STS-67 QSL INFO!

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 15:31:04 UTC
From: tony@gcr1.com
Message-ID: <3k1oci$14se@tetsuo.communique.net>
Source record: 25537

I've worked STS-67 on packet and Voice
Need QSL info ..
Anyone got it ?
reply at:
tony@gcr1.com

Tnx, 73
N5GPI

539. Re: Wisp Keps Updating

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 17:01:05 UTC
From: n7ryw@teleport.com
Message-ID: <3k1tmp$mtv@desiree.teleport.com>
Source record: 25538

In article <Pine.SUN.3.91.950312190458.20048B-100000@cortex>,
william@cortex.ama.ttuhsc.edu said...

>I have tried entering the epoch time as 95069.250000 and 95 69.250000
>but no good.

Try limiting the decimal places to 4 or 3. I beleive there is a limit
there when manually editing the values. IE 95069.25

You can also add the elements in from a separate file. Just use the
update function as usual, but specify the other file. The keps for the
new satellite will get added in(or updated).

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

540. Want FT-736R mods and CAT data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 20:32:50 UTC
From: tony@gcr1.com
Message-ID: <3k29vs$2qp@tetsuo.communique.net>
Source record: 25539

```
Looking for any mods and shareware to run CAT features
also need shematic of CAT interface RS-232 ...
-
anyone with this info or a FTP site that would have this info ...
contact me at:
tony@gcr1.com

73, Tnx
N5GPI
```

541. * SpaceNews 13-Mar-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-03-13 21:58:23 UTC
From: magliaco@pilot.njin.net
Message-ID: <3k2f5v$994@pilot.njin.net>
Source record: 25540
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0313
* SpaceNews 13-Mar-95 *

BID: $SPC0313

=========
SpaceNews
=========

MONDAY MARCH 13, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* H-II LAUNCH SCHEDULE *
========================
February 24, 1995
NASDA HQ, Tokyo

The H-II Launch Vehicle with the Space Flyer Unit (SFU) and Geostationary Meteorological Satellite-5 (GMS-5) aboard is newly scheduled to be launched as follows:

1. Primary Launch Date: March 15, 1995
2. Launch Window: 16:45 - 18:10 (JST=UTC+9h)
3. Alternative Launch Period: March 16 to 31, 1995

Regarding the malfunction having been detected in SFU, it has been recovered to the normal condition and confirmed there is no concerns with the launch. The relating organizations have agreed to settle the above new launch schedule.

[Info via Yoshiro Yamada]

* WEBERSAT NEWS *
==================
The following was copied from WEBERSAT-OSCAR-18's beacon last week:

WEBER-1>CAST <UI>:

4-Mar-95
*Collecting and Sending WOD
Week1: Array Currents Ch# 26 27 28 29 2A 2B
*Photo 8/12 Limb of the Earth
*Photo 9/13 S. Sudan
*Monday, New Spectrum

73, IK3WVJ

* STS-67 LIFTOFF DATA *
==========
STS-67 lifted off successfully with a first motion time of 02-Mar-95 06:38:13 UTC. STS-67 carries catalog number 23500 and international designation number 1995-007A.

[Info via Ken Ernandes]

* LOGGING OUT OF MIR *
==========
More and more people are trying to use the MIR PMS these days, and that is fine if we all follow some simple rules.

How many times have you seen a whole MIR pass full of <<DM>> messages (DM-Disconnect mode) and no data, and it appears that know one is logged in? Well, in reality, someone is logged in, but may have gone out of range of MIR and is unable to logout of the MIR PMS. This results in the PMS that is tied up until the PMS idle timer expires and forces a disconnect to the out-of-range station. After 8-10 minutes, MIR will try to force out the missing station with ten (10) <<D>> (D-Disconnect request) packets. After the last <<D>> packet, MIR will accept the next connect request heard.

Rule: If you are connected to the MIR PMS, make sure you send the LOGOUT command (B) to MIR 2-minutes before LOS or when Mir gets below 10 degrees above the horizon. This will help prevent ruining a whole pass for the stations down range of your QTH.

Remember, only 1 station can connect to MIR's PMS at a time, ALL others must wait.

[Info via G. Miles Mann, mann@pictel.com, WF1F @ K1UGM.MA]

* SpaceNews NEWS *
==========
Maurizio Bertolino has announced that he is translating issues of SpaceNews into the Italian language and making them available free of charge on his Trance BBS in Italy. The number for the BBS is +39-11-482751.

This raises the number of languages SpaceNews is available in to five (English, French, Portugese, Spanish, and Italian). Thanks to all those who take the time to do the translations every week.

* SpaceNews AVAILABILITY *
==========
SpaceNews is a non-commercial electronic journal of interest to Amateur Radio Operators involved in satellite and other advanced areas of telecommunications. It is published every week (as time permits) and is available for unlimited circulation provided no charges are made and no profits are realized from its availability.

SpaceNews is available from a variety of different electronic sources. It is widely distributed on the Amateur Packet Radio (AMPR) network

through a system of thousands of terrestrial packet bulletin board systems around the world, and follows normal AMSAT message routing. It is also uploaded weekly to the AMSAT-OSCAR-16 digital store-and-forward "Pacsat" satellite.

SpaceNews is carried on the Usenet news service under the newsgroups of rec.radio.info, rec.radio.amateur.space, sci.space.news.

Those with Internet access can obtain the latest issue of SpaceNews by using the Unix "finger" command as follows:

finger magliaco@pilot.njin.net

Those with e-mail capabilities can receive SpaceNews by sending a blank message to infobot@infomania.com with a subject of:

#FINGER magliaco@pilot.njin.net

Archives of past SpaceNews issues are available via anonymous FTP at pilot.njin.net (IP address = 128.6.7.38). Files are located under the /pub/SpaceNews directory. Issues from 1993 and 1994 have been compressed in .ZIP files, while issues from 1995 are available individually in ASCII text form.

Many of the files available via FTP at pilot.njin.net are also available at trustno1.pc.cc.cmu.edu [128.2.41.51]. This system is a 486DX2-66 MHz PC running Linux, and can accept 100 simultaneous FTP sessions. It also carries a great deal of information relating to the television program "The X-Files".

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA

Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

542. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-14 03:05:47 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.795150347@eel>
Source record: 25541

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95072.25000000 .00001074 00000-0 47552-5 0 352
2 23500 28.4659 9.8117 0016991 57.5382 346.5299 15.72755465 1734
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

543. Sat tracker for HP100LX??

Newsgroup: rec.radio.amateur.space
Date: 1995-03-14 11:05:36 UTC
From: kevin.jessup@mail.mei.com
Message-ID: <kevin.jessup.434.006B1FAA@mail.mei.com>
Source record: 25543

I'm looking for satellite tracking software which will
run on an HP100LX palmtop computer (CGA monochrome, plain
vanilla DOS 5.0, no extended or expanded memory).

If it only tracks a single sat, that's OK. Graphic
mercator projection of the Earth's surface with
sat circle of visibility would be nice.

Any FTP sites I can check out? Thanks.

--
Kevin Jessup, Software Engineer "Liberty means responsibility,
Marquette Electronics, Inc that is why most men dread it."
Milwaukee WI, 53223 -- G.B. Shaw
kevin.jessup@mail.mei.com
I prefer PGP encrypted mail.

544. No Subject

Newsgroup: rec.radio.amateur.space
Date: 1995-03-14 17:19:26 UTC
From: autotune@tecnet1.jcte.jcs.mil
Message-ID: <199503141837.KAA09777@UCSD.EDU>
Source record: 25545

Greetings to all!
I am trying to locate a good coy of WISP9418.ZIP I have downloaded (twice) it from ftp.amsat.org and (once) from ftp.qualcomm.com and both show errors in the EXE files when unzipped. They are the same errors so I assume either the same person uploaded or it is the same site. Does anyone know hwere I might find a good copy of it? Am trying to download it for a SATGATE station (HP2DFA, Omar) located in Colon, Panama. Any help would be appreciated. TNX! 73's) 0TT0, HP1XNE/KV7J

545. Re: Sunspots, anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-14 17:53:32 UTC
From: pete@freenet.grfn.org
Message-ID: <3k4l6s$4if@locutus.Bethany.ORG>
Source record: 25544

David Tiller (dtiller@rmc.edu) wrote:
: : Just this weekend, my cable company started getting bad picures from
: : their satellite feed. This is a fimilar problem aound here, linked with
: : the sunspots. (or so they tell me!)

: Actually it has nothing at all to do with sunSPOTS, just the sun. A few
: times a year for a couple of minutes the sun happens to be directly behind
: the satellite of interest. The sun itself is a prodigious source of RF on

Thanks for setting me straight on that, David. In the summer here, the
sun effects our cable TV (cable company dish?) daily. I guess their dish
has a wide enough receive area to pick up sun RF more than a few times a year.

--
-=-
Pete Hoffswell |pete@grfn.org |616-336-2304
Holland, Michigan |N9SSA |<URL:http://www.grfn.org/~pete>
-=-

546. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 00:48:51 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.795228531@eel>
Source record: 25546

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95073.25000000 .00001118 00000-0 50462-5 0 378
2 23500 28.4668 2.5343 0017186 69.9000 248.0366 15.72793947 1880
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

547. STS-67 Element_Set (95073.638)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 02:01:04 UTC
From: elements-request@alsys.com
Message-ID: <STS-67.95073.638@alsys.com>
Source record: 25549
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-67
1 23500U 95007A 95073.63813782 -.00022968 00000-0 -16752-3 0 133
2 23500 28.4668 359.7034 0017492 75.2948 284.9597 15.72881103 1961

Satellite: STS-67
Catalog number: 23500
Epoch time: 95073.63813782 = (14-Mar-95 15:18:55.10 UTC)
Element set: 013
Inclination: 28.4668 deg
RA of node: 359.7034 deg Space Shuttle Flight STS-67
Eccentricity: .0017492 Keplerian element set JSC-013
Arg of perigee: 75.2948 deg from NASA flight Day 13 vector
Mean anomaly: 284.9597 deg
Mean motion: 15.72881103 rev/day Gil Carman
Decay rate: -2.2968e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 196

This data is also available on the Shuttle Elements Mailing List. For
information, send the command "info elements" to "listserv@alsys.com".

<ftp://seds.lpl.arizona.edu/pub/sat/STS-elements>

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

548. Re: Need QSL info for STS67

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 03:45:28 UTC
From: rtm@newton.apple.com
Message-ID: <rtm-1403951945280001@kip-84.apple.com>
Source record: 25547

In article <3ji098$4n3@ixnews2.ix.netcom.com>, TomWr@ix.netcom.com (Tom Walker) wrote:

> Does anyone have QSL infofor STS67? I haven't been able to find the
> press kit or info on QSL and have looked in the usual places.
> Thanx!

Send your card (and a biz sized SASE) to:

ARRL EAD STS-67 QSL
225 Main Street
Newington, CT 06111

... and don't hold your breath. Still waiting for cards from the last two missions.

(STS-67 SAREX QSO #1590)

--

Bob Martin N6MZV * rtm@newton.apple.com
Apple Computer, Inc * #include <disclaimer.h>
--

549. Re: Space shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 04:04:46 UTC
From: rtm@newton.apple.com
Message-ID: <rtm-1403952004460001@kip-84.apple.com>
Source record: 25548

In article <3jhocp$v1@newsbf02.news.aol.com>, mbarney5@aol.com (MBarney5) wrote:

> The freq to listen to was posted as 145.55 FM. What type antenna is
> necessary for this reception.
>
> Thanks for the help.
>
> Mike

Depending on your location, a ground plane on the roof will work just fine. Local folks in the Silicon Gulch area can work the shuttle with j-poles, ground planes, and just about anything else. I'm switching between a discone and an eggbeater.

(the eggbeater is a turnstile variant- it's horizontally polarized at the horizon, going to right hand circular straight overhead- good for the shuttle, and also for weather sats at 137 MHz. The response of ground plane antennas, and especially "gain" antennas such as colinears or j-poles drops off directly overhead.)

The current mission (STS-67) is a 28 degree orbit. That makes it a bit more of a challenge if you're north of Los Angeles. Here, the max elevations I see are about 14 degrees above the horizon. But, still doable.

Also pretty good these days is R0MIR, the Russian space station. They also appear on 145.550 (simplex).

The shuttle packet uplink frequency is 144.490 MHz. This is where you transmit. The shuttle transmits on 145.550. PLEASE do not transmit on 145.550. If you do, many people will call you on the phone. Some will offer to help, some will offer to burn your house down.

You don't need a lot of power to work the shuttle- I worked it using about 35 watts into an eggbeater on the roof.

The shuttle is also doing voice work, also on 145.550.

There are numerous orbit prediction packages available for the Macintosh and even for the pc. These are a great aid at telling you when to listen- on STS-67, we get two or three 8 to 10 minute passes per day.

If you'd like to read more, check out the Satellite Experimenter's Handbook by Davidoff. It's published by the ARRL, and available at most amateur radio stores.

Cheers-

--

Bob Martin N6MZV * rtm@newton.apple.com
Apple Computer, Inc * #include <disclaimer.h>
--

550. AAVSO URL?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 09:36:26 UTC
From: S.J.R.Wadeson@bradford.ac.uk
Message-ID: <1995Mar15.093626.25080@bradford.ac.uk>
Source record: 25550

Does anyone know if there is an URL for the American association of
variable star observers, or any other information on this association.,Thanks.

551. Re: Sunspots, anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 12:47:11 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <3k6nkf$93q@kocrsv08.delcoelect.com>
Source record: 25554

>David Tiller (dtiller@rmc.edu) wrote:
>: : Just this weekend, my cable company started getting bad picures from
>: : their satellite feed. This is a fimilar problem aound here, linked with
>: : the sunspots. (or so they tell me!)
>
>: Actually it has nothing at all to do with sunSPOTS, just the sun. A few
>: times a year for a couple of minutes the sun happens to be directly behind
>: the satellite of interest. The sun itself is a prodigious source of RF on

pete@freenet.grfn.org (Pete Hoffswell) writes:
>Thanks for setting me straight on that, David. In the summer here, the
>sun effects our cable TV (cable company dish?) daily. I guess their dish
>has a wide enough receive area to pick up sun RF more than a few times a year.

It's not the dish's fault. You're just an an unlucky latitude. Due to
the Earth's tilt, the apparent elevation of the Sun changes during the
year. For many locations, the Sun's path slowly goes from "south" of the
satellite belt to "north" of it and back again. Twice a year, as the two
coincide, there's solar interference to deal with. Apparently, you're
far enough north that the satellite belt is at the same elevation as the
southernmost excursion of the Sun's path. You only get one interference
period each year instead of two, but it lasts a long time.

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson | Ignorance can be fixed,
(I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.

552. New WWW site: http://www.iea.com/~adrs

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 16:05:51 UTC
From: pp000719@interramp.com
Message-ID: <3k6si2$99p@usenet.interramp.com>
Source record: 25551
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

```
-----------------------------------------
ADRS WWW Site at: http://www.iea.com/~adrs

ADRS FTP Site at: ftp.iea.com/public/adrs

ADRS announces new WWW and FTP sites
-----------------------------------------

The American Digital Radio Society (ADRS), publisher of the Digital
Journal, is pleased to announce its new WWW and anonymous FTP site
addresses now available for use by its members and others in the
world wide ham radio community. THE ADRS WWW and FTP servers are
at a commercial site with very high capacity connections to the
Internet network so that you should encounter no difficulties or
delays in connecting!

The ADRS Web Pages describe and give information about the ADRS, its
publications and services, and contain what is now probably one of the
most complete set of hyperlinks connections to other amateur radio related
WWW sites and related Internet sites worldwide! You are invited to visit
the ADRS WWW Pages at: http://www.iea.com/~adrs to learn more about
ADRS and as the best starting point for exploring amateur radio on the
Internet! To use the ADRS WWW site, you need will need an access to the
Internet which permits you to use Mosaic, Netscape or a similar Web Browser
which provides HTTP (Hyper Text Transfer Protocol) capability. (The new
Prodigy Internet WWW Web Browser was tested and performs well.)

The ADRS Anonymous FTP server contains software libraries which
mirror much of the software which is available on ADRS' BBS, including
the latest versions of special software available only from ADRS.
Files on the FTP server are downloadable. You are also invited to
visit that site at: ftp.iea.com/public/adrs . An extensive listing of
other amateur radio Anonymous FTP sites with hyperlinks to those other
FTP sites worldwide is also included on the ADRS WWW Pages
at: http://www.iea.com/~adrs . To access the ADRS FTP site, you will need
an Internet access over which you can use an FTP client to transfer files
using FTP (File Transfer Protocol).
```

553. Re: Sunspots, anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 16:25:17 UTC
From: dtiller@rmc.edu
Message-ID: <3k74dd$4p@gnd0.rmc.edu>
Source record: 25552

Pete Hoffswell (pete@freenet.grfn.org) wrote:
: David Tiller (dtiller@rmc.edu) wrote:
: : : Just this weekend, my cable company started getting bad picures from
: : : their satellite feed. This is a fimilar problem aound here, linked with
: : : the sunspots. (or so they tell me!)

: : Actually it has nothing at all to do with sunSPOTS, just the sun. A few
: : times a year for a couple of minutes the sun happens to be directly behind
: : the satellite of interest. The sun itself is a prodigious source of RF on

: Thanks for setting me straight on that, David. In the summer here, the
: sun effects our cable TV (cable company dish?) daily. I guess their dish
: has a wide enough receive area to pick up sun RF more than a few times a year.

Maybe they're telling you that 'cause they have other (possibly heat-related)
problems. In the back of most of the sat TV guide magazines (like Orbit,
OnSat, etc) there's a chart of when what sat will be effected where. I can
get one fromm my father if you'd like, and look your area up.

The other possibility is that they're using a small dish on Ku band which
will result in less gain and a much wider beamwidth.

--
David Tiller | Network Administrator | ICBM: 33d 42' 43.75" N |
dtiller@rmc.edu | n2kau/4 | Randolph-Macon College| 77d 31' 32.19" W |
Remember: someday, somewhere, when you least expect it a man with a microphone|
may step up to you and say, "What's the frequency, Kenneth???!!!" |

554. Help with WiSP and LO-19

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 19:34:26 UTC
From: little@iamu.chi.dec.com
Message-ID: <3k7fg2$fdg@jac.zko.dec.com>
Source record: 25555

OK, now that I think I have the callsigns set up correctly for WiSP, I still cannot successfully talk to LO-19. I am receiving it fine, but I never get acknowledged in its list of stations connected, nor do I get any response when I ask for fills. It is possible something is wrong on my transmit side, but this station used to work under PG/PB. What would be causing LO-19 to ignore me or not hear me?

Station set up is:

Yaesu FT-726R
KLM short crossed yagis for up (14 elements?) and down link (18 elements?)
MFJ-1278 with TAPR PSK modem
Mirage B1016 (although I don't usually use it.)

--
73, Member of RACES, ARRL, Arlington Communications League.
Todd Trained weather spotter and sponsor of the Hunting Ridge
N9MWB Elementary School Radio Club. See you on 160-1296 and OSCAR.

555. Help Satellite Mode

Newsgroup: rec.radio.amateur.space
Date: 1995-03-15 19:59:44 UTC
From: Fabrizio Gaucci <MC8431@mclink.it>
Message-ID: <795293984.MC8431@mclink.it>
Source record: 25553

Hi all, can somebody explain me the meaning of the various satellite mode ?
For example, Oscar 13, Mode B, Mode L, Mode J, Mode S, ...
I thank you in advance.

mc8431@mclink.it

556. Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 00:32:01 UTC
From: Darryl Bennett <darrylb@delphi.com>
Message-ID: <pQ4Ym65.darrylb@delphi.com>
Source record: 25556

Did anybody make a packet contact with STS-67?

I tried several times on 145.550 here in central Kentucky, but couldn't hear anything. I copied a strong signal from STS-64, and can only assume that this flight is too southerly. Prediction programs never had it higher than about 12 degrees here.

557. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 00:43:49 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.795314629@eel>
Source record: 25557

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95074.25000000 .00001125 00000-0 50909-5 0 384
2 23500 28.4667 355.2459 0018086 83.9204 148.1026 15.72773546 2042
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

558. Re: Help with WiSP and LO-19

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 02:24:31 UTC
From: Robert D Houghton <rhought@cello.gina.calstate.edu>
Message-ID: <3k87gv$sqo@cello.gina.calstate.edu>
Source record: 25558

This is probably too obvious, but here goes: Under one of the set-up menus (sorry WISP is at work and I'm at home!) there is a check box to enable transmit -- be sure tht it is checked.

++++++++++++++++++++++++++++++	++
	AMSAT member #26148
Robert D. Houghton	digital satellites: KC6LVG@PACSAT
Science Department Chairman	Packet radio: kc6lvg@k6unq.#cas.na
John A. Rowland High School	Other internet:
Rowland Heights, CA 91748	kc6lvg@amsat.org
	rdhoughton@vms4.sci.csupomona.edu
++++++++++++++++++++++++++++++	++

559. Re: Help Satellite Mode

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 05:09:47 UTC
From: little@iamu.chi.dec.com
Message-ID: <3k8h6r$eov@jac.zko.dec.com>
Source record: 25559

In article <795293984.MC8431@mclink.it>, Fabrizio Gaucci <MC8431@mclink.it> writes:
|>
|>Hi all, can somebody explain me the meaning of the various satellite mode ?
|>For example, Oscar 13, Mode B, Mode L, Mode J, Mode S, ...
|>I thank you in advance.

They determine what bands are used for uplink and downlink frequencies.

Mode	Uplink	Downlink
B	70 cm	2 m
J	2 m	70 cm
L	23 cm	70 cm
S	70 cm	13 cm

Sometimes the mode is suffixed with another letter such a D or A meaning
Digital or Analog, or in some cases combined modes such as JL where
either 2 meters or 23 cm can be used for the uplink and 70 cm is used for
the downlink. This is all supposed to be changing, but I haven't seen the
new mode specifiers.

--
73, Member of RACES, ARRL, Arlington Communications League.
Todd Trained weather spotter and sponsor of the Hunting Ridge
N9MWB Elementary School Radio Club. See you on 160-1296 and OSCAR.

560. SAREX/Rebroadcast Frequencies???

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 07:03:14 UTC
From: jacksobp@vuse.vanderbilt.edu
Message-ID: <1995Mar16.070314.25035@news.vanderbilt.edu>
Source record: 25560

I was wondering if someone could post (or email) a list of 2 meter frequencies that STS missions utilize when talking to hams on earth. At the same time I am interested in knowing possible frequencies in any band (HF,VHF,etc) that are often used for rebroadcast of STS/mission control communication. I ran across a 2m simplex (rebroadcast, not SAREX) one while in Maryland this summer during the extended duration microgravity mission and would like to be able to listen again! I've recently been told by a former astronaut that ALL mission's are rebroadcasted in many different bands. I know that these frequencies will naturally vary from location to location, but if I have some idea I can search around for them. Hey I'll even enjoy any current info on the SAREX program itself. Thanks very much!

73
Blake KE4MCU

==========
Blake Jackson \\\ ///
Vanderbilt School of Engineering (EE) \\\ ///
Phone -(615) 421-1800 VANDERBILT
email -jacksobp@ctrvax.vanderbilt.edu \\\ ///
jacksobp@vuse.vanderbilt.edu \\\//
jacksobp@freenet.scri.fsu.edu

On the Web-
http://www.VUSE.Vanderbilt.edu/~jacksobp/jacksobp.html
==========

561. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 09:10:01 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3k8v99$p7k@paperboy.ids.net>
Source record: 25411

In article <pQ4Ym65.darrylb@delphi.com> Darryl Bennett,
darrylb@delphi.com writes:
>Did anybody make a packet contact with STS-67?

You bet!

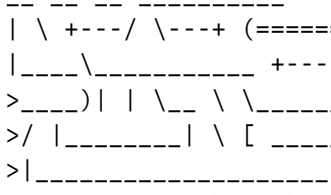
Last night at the AMSAT Spacecraft Integration Facility, where we're putting together the Phase 3-D spacecraft we made several successful contacts with Endeavour.

A couple of days ago I even made a voice QSO with Ron Parise WA4SIR!

Of course I have the advantage of being at a latitude where passes are mostly at a higher elevation, but we worked the packet rig when it was below 20 degrees elevation.

Keep trying - you'll get through sooner or later ...

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET



Roger, go at throttle up CHR$(32) the final frontier

562. Keplerian Elements Help.

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 13:47:47 UTC
From: ppiercey@nlnet.nf.ca
Message-ID: <3k9fi3$5je@coranto.ucs.mun.ca>
Source record: 25412

HI, I was wondering if there was anywhere to get more recent keps. The ones I see posted here are usually a week or more old, especially for shuttle and mir positions, which constantly change. For example, I just read the W1AW posting of keps that had day 69 shuttle keps (this is day 75). Something daily would be good but I'd settle for 2 days old :)

73.

--
==========
Paul J. Piercey (VO1HE)

Packet Address VO1HE@VO1SIG.#ENF.NF.CAN.NA
Internet Address ppiercey@nlnet.nf.ca
SONRA Email Address ppiercey@plato.ucs.mun.ca

"If the world were a more perfect place, we'd all be known as the Flimpsons."

- H.J. Simpson

==========

563. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 17:55:44 UTC
From: little@iamu.chi.dec.com
Message-ID: <3k9u30$8st@jac.zko.dec.com>
Source record: 25413

In article <pQ4Ym65.darrylb@delphi.com>, Darryl Bennett <darrylb@delphi.com> writes:
|>Did anybody make a packet contact with STS-67?
|>
|>I tried several times on 145.550 here in central Kentucky, but couldn't
|>hear anything. I copied a strong signal from STS-64, and can only assume
|>that this flight is too southerly. Prediction programs never had it higher
|>than about 12 degrees here.

Here in Chicago it never makes it above 5 degrees, sigh. Even at only
4 degrees last night, I made a packet contact. ;-) Of the passes visable
last night, only one seemed to have any activity. Not sure what was going
on with the other 2 passes.

--
73, Member of RACES, ARRL, Arlington Communications League.
Todd Trained weather spotter and sponsor of the Hunting Ridge
N9MWB Elementary School Radio Club. See you on 160-1296 and OSCAR.

564. MIR Packet operating info wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-03-16 20:54:14 UTC
From: kbanke@qualcomm.com
Message-ID: <kbanke-160395125214@kbanke-mac.qualcomm.com>
Source record: 25414

I recently connected with MIR on packet but then realized it is not the same as just getting a QSO number from the Shuttle robot. What capabilities can be explored while connected? - Kerry N6IZW -

565. What would you recommend?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 00:42:33 UTC
From: pea@wri.com
Message-ID: <D5K7Az.5CA@wri.com>
Source record: 25416

I'm setting up a satellite station, been down on hf till now, and would like a recommendation on a good vhf/uhf rig to work satellites with.

BAlso, which alt/az antenna rotor would you recommend as well??

Thanks in advance!

--

| = @ | email #1: pea@wri.com |
| = _ \ | |^M M|

566. Re: Can Somebody Help Me?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 02:31:38 UTC
From: peterngc13@aol.com
Message-ID: <3kasaa$fmd@newsbf02.news.aol.com>
Source record: 25417

try 7.185 on 41 meters

567. Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 03:54:01 UTC
From: quasar@cts.com
Message-ID: <quasar.27.2F6907D9@cts.com>
Source record: 25418

In article <pQ4Ym65.darrylb@delphi.com> Darryl Bennett <darrylb@delphi.com> writes:
>From: Darryl Bennett <darrylb@delphi.com>
>Subject: Anybody make STS-67 packet contact
>Date: Wed, 15 Mar 95 19:32:01 -0500

>Did anybody make a packet contact with STS-67?
>
>I tried several times on 145.550 here in central Kentucky, but couldn't
>hear anything. I copied a strong signal from STS-64, and can only assume
>that this flight is too southerly. Prediction programs never had it higher
>than about 12 degrees here.

I made three packet and one phone contact with STS-67. I am in San Diego, CA
and the orbit took the shuttle over Mexico.

73

568. Re: Ham-Space Digest V95 #73

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 03:55:00 UTC
From: C940533@alumnes.ESade.ES
Message-ID: <9502167954.AA795423391@alumnes.esade.es>
Source record: 25415

I need some information about Nasa and the european space project.
Can you help me?. I'm Jordi from Barcelona and i've just subscribed here to get
some information of it.
Hope to here from you soon.
Jordi
_____ Separador de respuesta _____
Asunto: Ham-Space Digest V95 #73
Autor: Ham-Space@ucsd.edu en internet
Fecha: 16/3/95 4:30

Ham-Space Digest Thu, 16 Mar 95 Volume 95 : Issue 73

Today's Topics:
Anybody make STS-67 packet contact
Need STS-67 QSL INFO!
Sunspots, anyone?
Two-Line Orbital Element Set: Space Shuttle

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 16 Mar 1995 09:10:01 GMT
From: Philip Chien <Pchien@ids.net>
Subject: Anybody make STS-67 packet contact

In article <pQ4Ym65.darrylb@delphi.com> Darryl Bennett,
darrylb@delphi.com writes:
>Did anybody make a packet contact with STS-67?

You bet!

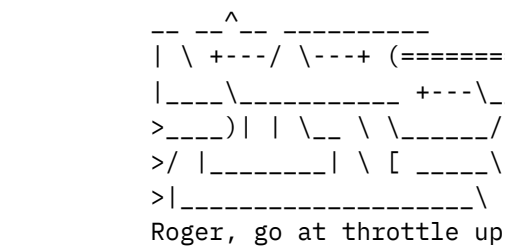
Last night at the AMSAT Spacecraft Integration Facility, where we're
putting together the Phase 3-D spacecraft we made several successful
contacts with Endeavour.

A couple of days ago I even made a voice QSO with Ron Parise WA4SIR!

Of course I have the advantage of being at a latitude where passes are
mostly at a higher elevation, but we worked the packet rig when it was

below 20 degrees elevation.

Keep trying - you'll get through sooner or later ...

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

Date: Mon, 13 Mar 95 15:31:04 GMT
From: tony@gcr1.com (Tony Salvador)
Subject: Need STS-67 QSL INFO!

I've worked STS-67 on packet and Voice
Need QSL info ..
Anyone got it ?
reply at:
tony@gcr1.com

Tnx, 73
N5GPI

Date: 15 Mar 1995 12:47:11 GMT
From: aranders@kosepc01.delcoelect.com (Alan Anderson)
Subject: Sunspots, anyone?

>David Tiller (dtiller@rmc.edu) wrote:
>: : Just this weekend, my cable company started getting bad picures from
>: : their satellite feed. This is a fimilar problem aound here, linked with
>: : the sunspots. (or so they tell me!)
>
>: Actually it has nothing at all to do with sunSPOTS, just the sun. A few
>: times a year for a couple of minutes the sun happens to be directly behind
>: the satellite of interest. The sun itself is a prodigious source of RF on

pete@freenet.grfn.org (Pete Hoffswell) writes:
>Thanks for setting me straight on that, David. In the summer here, the
>sun effects our cable TV (cable company dish?) daily. I guess their dish
>has a wide enough receive area to pick up sun RF more than a few times a year.

It's not the dish's fault. You're just an an unlucky latitude. Due to
the Earth's tilt, the apparent elevation of the Sun changes during the
year. For many locations, the Sun's path slowly goes from "south" of the
satellite belt to "north" of it and back again. Twice a year, as the two
coincide, there's solar interference to deal with. Apparently, you're
far enough north that the satellite belt is at the same elevation as the

southernmost excursion of the Sun's path. You only get one interference
period each year instead of two, but it lasts a long time.

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson | Ignorance can be fixed,
(I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.

Date: 14 Mar 95 03:05:47 GMT
From: tkelso@afit.af.mil (TS Kelso)
Subject: Two-Line Orbital Element Set: Space Shuttle

The most current orbital elements from the NORAD two-line element sets are
carried on the Celestial BBS, (334) 409-9280, and are updated daily (when
possible). Documentation and tracking software are also available on this
system. As a service to the satellite user community, the most current
elements for the current shuttle mission are provided below. The Celestial
BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using
8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation
and software are also available via anonymous ftp from archive.afit.af.mil
(129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95072.25000000 .00001074 00000-0 47552-5 0 352
2 23500 28.4659 9.8117 0016991 57.5382 346.5299 15.72755465 1734
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

End of Ham-Space Digest V95 #73
****

569. Shuttle Freqs and Rebroadcast

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 04:20:38 UTC
From: Dick Harper <dharper@kumc.wpo.ukans.edu>
Message-ID: <1995Mar16.222038.87969@kuhub.cc.ukans.edu>
Source record: 25420

Since there have been several asking, I thought it might be worth
posting.

Shuttle Frequencies:

SAREX

Downlink, voice and packet 145.55MHz

DO NOT TRANSMIT ON THE DOWNLINK FREQUENCY

voice uplink: 144.91, 144.93, 144.95, 144.97, or 144.99. All voice FM.
Note: The astronauts will not favor any one of the above frequencies.
Therefore, the ability to talk with an astronaut depends on selecting one of
the above frequencies chosen by the astronaut.

Packet uplink: 144.49MHz

The Goddard Space Flight Center amateur radio club planned HF
operating frequencies:
3.860MHz 7.185MHz
14.295 21.395
28.650

This information was received from NASA public relations.

GL de N0USP
Dick

P.S. Mir uses 145.55 for uplink and downlink voice and packet.

570. Re: MIR Packet operating info wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 05:42:19 UTC
From: Dennis Erwin Thurlow <geosynq@indy.net>
Message-ID: <3kb7fr$5ec@indy-backup.indy.net>
Source record: 25419

Kerry,
It's a packet bbs. Since time is limited, most people I've monitored
just send the sysop a message containing their call/qth. Or check
for a qso message addressed to them.

I've never managed to connect, but twice I got DICONNECT packets
addressed to me (if you get one when you're not connected it means
BUSY). There's always a pileup here... :-(

571. STS-67 Element_Set (95075.668)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 06:45:34 UTC
From: elements-request@alsys.com
Message-ID: <STS-67.95075.668@alsys.com>
Source record: 25423
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-67
1 23500U 95007A 95075.66837479 .00013435 00000-0 93289-4 0 146
2 23500 28.4678 344.9172 0018137 101.8759 258.3896 15.73163397 2286

Satellite: STS-67
Catalog number: 23500
Epoch time: 95075.66837479 = (16-Mar-95 16:02:27.58 UTC)
Element set: 014
Inclination: 28.4678 deg
RA of node: 344.9172 deg Space Shuttle Flight STS-67
Eccentricity: .0018137 Keplerian element set JSC-014
Arg of perigee: 101.8759 deg from NASA flight Day 15 vector
Mean anomaly: 258.3896 deg
Mean motion: 15.73163397 rev/day Gil Carman
Decay rate: 1.3435e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 228

This data is also available on the Shuttle Elements Mailing List. For
information, send the command "info elements" to "listserv@alsys.com".

<ftp://seds.lpl.arizona.edu/pub/sat/STS-elements>

--
--
Gary Morris Internet: garym@alsys.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

572. SETIQuest

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 12:42:27 UTC
From: Ingrid Siegert Tanghe <ist@america.net>
Message-ID: <Pine.SV4.3.91.950317074200.4266A-100000@atl1.america.net>
Source record: 25421

Volume 1, Issue 2 of SETIQuest magazine is now available. This
issue contains the following topics:

"Where Are They?", by Larry Klaes
A Letter from the SETI League, Inc., by H. Paul Schuch, Ph.D.
A List of SETI Targets, by Andrew J. LePage
Interstellar Probe Status, by Larry Klaes
Publications Watch, by Larry Klaes
Book Review - Ashpole's The Search for Extraterrestrial Intelligence
White's The SETI Factor
Books in Brief
Periodicals
SETIQuest Editorial Board

SETIQuest is the magazine of SETI research and bioastronomy.
For your free copy of Vol 1 No 1 and information on how to
subscribe to SETIQuest, send E-Mail with your regular mailing
address to: sqinqnet@pixelacres.mv.com

Or write to: SETIQuest Magazine
Helmers Publishing
174 Concord Street
Peterborough, NH 03458-0874
U.S.A.

Tel: (603) 924-9631
Fax: (603) 924-7408

Larry Klaes
Editor, SETIQuest Magazine

573. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 16:50:42 UTC
From: rtm@newton.apple.com
Message-ID: <rtm-1703950850430001@17.32.67.169>
Source record: 25422

In article <3k9u30$8st@jac.zko.dec.com>, little@iamu.chi.dec.com (Todd Little) wrote:

> In article <pQ4Ym65.darrylb@delphi.com>, Darryl Bennett <darrylb@delphi.com> writes:
> |>Did anybody make a packet contact with STS-67?
> |>
> |>I tried several times on 145.550 here in central Kentucky, but couldn't
> |>hear anything. I copied a strong signal from STS-64, and can only assume
> |>that this flight is too southerly. Prediction programs never had it higher
> |>than about 12 degrees here.
>
> Here in Chicago it never makes it above 5 degrees, sigh. Even at only
> 4 degrees last night, I made a packet contact. ;-) Of the passes visable
> last night, only one seemed to have any activity. Not sure what was going
> on with the other 2 passes.

In the Silicon Gulch area (37.317268 N, 120.452778 W) the best elevations we saw were on the order of 14 degrees. I copied packets from STS-67 on about 10 passes, and connected on 3. One of the connect passes was at an elevation of 11 degrees. It just takes a little more work (and a little more luck).

Operating hint: if your TNC supports it, use software carrier detect, and run with the radio squelch open. Your TNC can probably decode packets at or a little below the noise level.

73-

--
Bob Martin * rtm@newton.apple.com
N6MZV * N6MZV @ N0ARY.#NOCAL.CA.USA.NOAM
--

574. Re: Keplerian Elements Help.

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 17:40:42 UTC
From: garym@alsys.com
Message-ID: <D5LIFu.2CC@thomsoft.com>
Source record: 25427

In <3k9fi3$5je@coranto.ucs.mun.ca> ppiercey@nlnet.nf.ca (Paul Piercey) writes:
>HI, I was wondering if there was anywhere to get more recent keps. The
>ones I see posted here are usually a week or more old, especially for
>shuttle and mir positions,...

There is a mailing list just for shuttle keps, though it's a little late in this flight to be subscribing. Send a message containing "info elements" to listserv@thomsoft.com and you will get a mail message back about the mailing list. To just subscribe, send a message containing "subscribe elements Your Name" to listserv@thomsoft.com.
--GaryM
(Shuttle Elements List Maintainer)

575. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 18:45:34 UTC
From: copeland@fohnix.metronet.com
Message-ID: <3kclce$67l@fohnix.metronet.com>
Source record: 25425

In article <quasar.27.2F6907D9@cts.com>, SteveF <quasar@cts.com> wrote:
>In article <pQ4Ym65.darrylb@delphi.com> Darryl Bennett <darrylb@delphi.com> writes:
>>From: Darryl Bennett <darrylb@delphi.com>
>>Subject: Anybody make STS-67 packet contact
>>Date: Wed, 15 Mar 95 19:32:01 -0500
>
>>Did anybody make a packet contact with STS-67?
>>
>>I tried several times on 145.550 here in central Kentucky, but couldn't
>>hear anything. I copied a strong signal from STS-64, and can only assume
>>that this flight is too southerly. Prediction programs never had it higher
>>than about 12 degrees here.
>
>I made three packet and one phone contact with STS-67. I am in San Diego, CA
>and the orbit took the shuttle over Mexico.
>

I'm in Dallas,TX. I left my packet radio on for three days hoping to
log the shuttle transmitting packet. I picked up MIR many times,
but never logged the shuttle transmitting on 145.550.

--

| There are two types of people in this world, those who separate |
| people into groups,and those who don't. KC5LWF copeland@metronet.com|
---

576. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 19:11:40 UTC
From: jmaynard@admin5.hsc.uth.tmc.edu
Message-ID: <radio/personal-intro_795467320@rtfm.mit.edu>
Source record: 25424
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 3.1.1.2
Archive-name: radio/personal-intro
Revision: 2.1 1994/11/01 03:50:23
Posting-Frequency: posted on the 15th of each month

This message describes the rec.radio.amateur.*, rec.radio.cb,
rec.radio.info, and rec.radio.swap newsgroups, as well as their Internet
mailing list counterparts and complements. It is intended to serve as a
guide for the new reader on what to find where. Questions and comments may
be directed to the author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@admin5.hsc.uth.tmc.edu. This message was last changed on 31 October
1994 to add the discussion of non-Usenet mailing lists and streamline most
of the history discussion, and to change the moderator information for
rec.radio.info.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

Over the years, as the net grew, the volume of discussion became
progressively higher. First one by one, and then as part of two
reorganizations, what was once one group became many. In the process,
developments elsewhere on the net were reflected in the groups as they were
created, most notably the change to place all of the ham radio groups in one
hierarchy.

The collection of newsgroups continues to grow as more people join the net,
and as more topics of discussion gain volume, I expect to see more groups be
created as well. This follows what is happening on the rest of the net.

Nearly all of the radio newsgroups have corresponding mailing lists, the
notable exception being rec.radio.swap. There are also a few mailing lists
that don't have newsgroups.

The Current Groups
==================

It's important to post messages to the group that's appropriate for them,
and not to the groups that aren't. The whole idea of having different
```

newsgroups is so that folks who aren't interested in, say, homebrewing, don't have to wade through messages about homebrewing on the way to read about Field Day. Posting appropriately is just good etiquette.

The rec.radio.amateur.misc group is the catchall. It is what rec.ham-radio was renamed to during the first major reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, was removed on September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there. To answer a frequently asked question: No, there is no mailing list that goes along with this group. If you can't read Usenet news directly, you're out of luck.

The group rec.radio.amateur.policy was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate - it's now legal to order a pizza on the autopatch, if you're not in the pizza business - as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The group rec.radio.cb is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently David Dodell, WB7TPY. The email address for submissions to the group is rec-radio-info@stat.com. Inquires and other administrivia should be directed to rec-radio-info-request@stat.com. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

Mailing Lists

In addition to the mailing lists that mirror the Usenet newsgroups, there also are a few that stand alone. These cover specific areas of ham radio, and discussion is focused on just those areas.

The cq-contest mailing list is for discussions of contesting in ham radio. To join, send email with the word "subscribe" on a line by itself to cq-contest-request@tgv.com.

The DX mailing list covers the finer points of DXing. This one is also joined by mailing "subscribe" on a line by itself, this time to

dx-request@unbc.edu.

There's also a VHF mailing list, for VHF operators of the weak signal persuasion. You can join this one be sending "subscribe vhf" on a line by itself to vhf-request@w6yx.stanford.edu.

All of the following mailing lists are sponsored to the Boston Amateur Radio Club, as well as some others of local interest. Thanks to N1IST for the information.

qrp-l: This is the qrp mailing list, previously maintained by Bruce Walker at Think.com. It is for discussions about the design, construction, and use of qrp (low power) radios and related equipment.
arrl-ve-list: This is a one-way list, run by Bart Jahnke of the ARRL VEC, for announcements to VEs and VE teams.
w1aw-list: ARRL bulletins, news, and information
newsline-list: Redistribution of Amateur Radio Newsline
letter-list: Redistribution of the ARRL Letter
fox-list: Fox hunting and Radio Direction Finding
fieldorg-l: ARRL field organization discussions
ham-tech: Technical discussions and questions about Amateur Radio
arrl-exam-list: amateur radio license examinations scheduled in the US and in some foreign areas.

To sign up or inquire about these lists, send mail to listserv@netcom.com with the following in the body (subject is ignored) of the message.
<listname> is the name of the list to subscribe to.
To subscribe: subscribe <listname>
To unsubscribe: unsubscribe <listname>
For more information: help
To post (to the two-way lists), send your message to <listname>@netcom.com

Please do NOT send subscription requests to the mailing lists themselves; that doesn't work very often, and is very annoying to those on the list. Also, please keep your electronic mail address current with any mailing lists you subscribe to, as dealing with returned email is a nuisance for the person maintaining the mailing list.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while

still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
"All is strange and vague." "Are we dead?" "Or is this Ohio?"
-- Yakko and Dot Warner

577. Re: Need ftp site for Kep data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 21:49:49 UTC
From: hawk@zinger.sps.mot.com
Message-ID: <D5Ltz1.H8G@oakhill.sps.mot.com>
Source record: 25426

```
ftp anonymous@archive.afit.af.mil
cd /pub/space

regards

George Hawkins
-------------------------------------------------------------------------
GEORGE HAWKINS KKK KK IIIIIIII 5555555 XXX XXX
K K II 55 X X
K K II 55555 X X MOBILE DXCC-175
K K K II 55 X 160 <> 10
K K II 5 X X SEE YOU ON
K K II 55 X X BANDS FROM
KKK KK IIIIIIII 555555 XXX XXX MY TRUCK!
-------------------------------------------------------------------------
George Hawkins Internet: hawk@hawk.sps.mot.com
Principal Staff Engineer UUCP: cs.utexas.edu!oakhill!hawk!hawk
Motorola Digital Signal Processor Division
6501 William Cannon Drive West Phone (512) 891-4543
Austin Texas 78735-8598 FAX (512) 891-2947
-------------------------------------------------------------------------
```

578. Two-Line Orbital Element Sets (TLE568)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 23:07:51 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.795481671@dolphin>
Source record: 25428

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #568 -
Alouette 1
1 00424U 62049A 95072.23554270 .00000075 00000-0 77838-4 0 868
2 00424 80.4621 19.5452 0023649 139.4990 220.7922 13.67834948619180
ATS 1
1 02608U 66110A 95074.54107502 -.00000095 00000-0 10000-3 0 9246
2 02608 14.6244 357.6437 0009460 50.8652 309.2511 1.00313627 20252
ATS 3
1 03029U 67111A 95075.17750931 -.00000111 00000-0 10000-3 0 3407
2 03029 14.7942 4.6589 0008745 274.0894 213.1177 1.00273466100162
Cosmos 398
1 04966U 71016A 95075.99251102 .00193703 85853-5 25932-3 0 7769
2 04966 51.4116 282.2003 0721531 136.6792 229.2972 14.61317228811553
Starlette
1 07646U 75010A 95072.40098923 -.00000101 00000-0 33575-4 0 8702
2 07646 49.8283 170.9961 0206260 145.4418 216.0080 13.82188704 15099
LAGEOS
1 08820U 76039A 95072.44266911 .00000021 00000-0 10000-3 0 908
2 08820 109.8285 227.7999 0044244 227.8482 131.8304 6.38664540184341
ETS-2
1 09852U 77014A 95072.35273885 -.00000272 00000-0 10000-3 0 185
2 09852 12.5967 38.2965 0001755 44.7197 315.3519 1.00000526 13026
GOES 2
1 10061U 77048A 95075.51027647 .00000104 00000-0 10000-3 0 5021
2 10061 11.6582 42.4686 0011779 101.6125 51.2242 1.00154374 9846
IUE
1 10637U 78012A 95074.16645144 -.00000198 00000-0 10000-3 0 1143
2 10637 35.0451 90.5076 1321447 43.9099 46.5954 1.00253260 15323
GPS BI-01
1 10684U 78020A 95070.31439901 -.00000010 00000-0 10000-3 0 3436
2 10684 64.7856 37.5989 0061193 163.4411 196.7565 1.98069816110221
```

```
GPS BI-02
1 10893U 78047A 95074.54566854 .00000050 00000-0 10000-3 0 1525
2 10893 63.3649 275.7442 0220780 14.1380 346.4952 2.01627106123544
GOES 3
1 10953U 78062A 95075.52221671 .00000065 00000-0 10000-3 0 4656
2 10953 10.6254 45.2399 0003184 123.7964 17.0759 1.00281376 14459
SeaSat 1
1 10967U 78064A 95072.54524805 -.00000040 00000-0 31493-4 0 3818
2 10967 108.0038 299.6059 0002182 251.5529 108.5374 14.38018669875089
GPS BI-03
1 11054U 78093A 95066.28841502 .00000019 00000-0 10000-3 0 2700
2 11054 63.0720 273.9787 0044488 177.9621 182.0594 1.93505270119603
Nimbus 7
1 11080U 78098A 95073.59818622 -.00000076 00000-0 -30429-4 0 4854
2 11080 99.0141 311.5859 0009455 122.8173 237.3902 13.83714720827475
GPS BI-04
1 11141U 78112A 95071.90215276 -.00000008 00000-0 10000-3 0 9646
2 11141 64.7920 39.2210 0048692 26.3303 333.9099 1.92894865 8962
GPS BI-05
1 11690U 80011A 95072.15905909 -.00000007 00000-0 10000-3 0 8922
2 11690 65.1320 39.2019 0145903 196.0459 163.4767 2.00562074124935
GPS BI-06
1 11783U 80032A 95069.88226677 .00000054 00000-0 10000-3 0 622
2 11783 62.5087 269.2618 0216640 29.5395 331.7022 2.03456666109383
GOES 5
1 12472U 81049A 95071.88575616 -.00000268 00000-0 10000-3 0 8457
2 12472 7.3441 55.1040 0005274 14.8112 345.3352 1.00309927 8461
Cosmos 1383
1 13301U 82066A 95076.12514917 .00001801 00000-0 20944-2 0 3880
2 13301 82.9323 109.6632 0029314 63.3325 297.0751 13.68066665634747
LandSat 4
1 13367U 82072A 95075.67546072 -.00000034 00000-0 22965-5 0 6323
2 13367 98.1373 133.7165 0007805 121.0502 239.1460 14.57150124673742
IRAS
1 13777U 83004A 95075.07398162 -.00000196 00000-0 -10478-3 0 9005
2 13777 98.9699 265.3314 0012528 285.0900 74.8879 13.99219141289162
Cosmos 1447
1 13916U 83021A 95075.77476386 .00000029 00000-0 15248-4 0 4864
2 13916 82.9461 170.0909 0038358 352.1006 7.9540 13.74323118600770
TDRS 1
1 13969U 83026B 95060.81971363 -.00000206 00000-0 10000-3 0 4005
2 13969 8.1795 48.4858 0000400 146.9739 343.3819 1.00263149 16633
GOES 6
1 14050U 83041A 95075.41666503 .00000049 00000-0 10000-3 0 3679
2 14050 6.1647 58.2004 0004215 328.7489 166.5491 1.00300807101595
OSCAR 10
1 14129U 83058B 95049.74423524 -.00000256 00000-0 10000-3 0 3407
2 14129 26.5642 282.2218 6017196 253.4768 35.4795 2.05881639 59890
LandSat 5
1 14780U 84021A 95074.68171692 .00000049 00000-0 20808-4 0 2112
```

```
2 14780 98.1258 133.4647 0005422 126.3475 233.8225 14.57156000587019
UoSat 2
1 14781U 84021B 95071.55302975 .00000188 00000-0 39570-4 0 7818
2 14781 97.7815 78.6341 0012714 127.4448 232.7915 14.69315851589716
GPS BI-09
1 15039U 84059A 95071.95794652 -.00000022 00000-0 10000-3 0 2771
2 15039 64.4590 33.6245 0081815 16.9653 343.2986 1.92302304 78547
Cosmos 1574
1 15055U 84062A 95075.86398809 .00000047 00000-0 34228-4 0 6871
2 15055 82.9533 223.9363 0026993 174.4631 185.6838 13.73618864538069
GPS BI-10
1 15271U 84097A 95075.34366410 .00000045 00000-0 10000-3 0 9271
2 15271 62.1725 269.3390 0154568 352.9853 6.7893 2.00594004 76063
Cosmos 1602
1 15331U 84105A 95073.80279572 .00000367 00000-0 40416-4 0 3747
2 15331 82.5342 184.2952 0021685 33.0368 327.2196 14.84582041564669
NOAA 9
1 15427U 84123A 95075.80765145 .00000073 00000-0 62413-4 0 1755
2 15427 99.0112 133.9342 0014855 166.5211 193.6363 14.13691322528865
GPS BI-11
1 16129U 85093A 95071.17120693 -.00000012 00000-0 10000-3 0 6406
2 16129 65.1267 36.6195 0152994 87.5999 274.1411 1.89368039 13152
Mir
1 16609U 86017A 95076.20542235 .00004003 00000-0 58988-4 0 9702
2 16609 51.6469 258.6527 0004069 256.2339 103.8210 15.57986483518622
SPOT 1
1 16613U 86019A 95075.24583014 .00000090 00000-0 62356-4 0 7919
2 16613 98.6584 148.6348 0001079 107.2149 252.9145 14.20048301155174
Cosmos 1766
1 16881U 86055A 95074.16923850 .00000170 00000-0 17670-4 0 2892
2 16881 82.5160 241.8346 0021090 55.7110 304.6064 14.83592295465632
EGP
1 16908U 86061A 95076.14443300 -.00000083 00000-0 10000-3 0 9830
2 16908 50.0131 325.2217 0011295 288.3949 71.5657 12.44411808 59377
NOAA 10
1 16969U 86073A 95075.89102329 .00000042 00000-0 35994-4 0 851
2 16969 98.5099 81.5654 0012073 254.0119 105.9734 14.24926168441334
MOS-1
1 17527U 87018A 95074.69085831 -.00000011 00000-0 23740-4 0 1862
2 17527 98.9969 142.2273 0000368 138.3605 221.7623 13.94919164410799
GOES 7
1 17561U 87022A 95073.35589105 .00000084 00000-0 10000-3 0 2897
2 17561 2.1322 73.2745 0003292 330.3027 119.3057 1.00266204 12688
Kvant-1
1 17845U 87030A 95075.88473028 -.00009555 00000-0 -11870-3 0 1818
2 17845 51.6465 260.2615 0004054 263.6990 96.4574 15.57963932452932
DMSP B5D2-3
1 18123U 87053A 95075.88260528 .00000010 00000-0 27349-4 0 8756
2 18123 98.7822 268.4714 0014824 119.5472 240.7184 14.15394039399661
RS-10/11
```

```
1 18129U 87054A 95075.60375205 .00000031 00000-0 17998-4 0 329
2 18129 82.9254 127.5111 0011890 357.0574 3.0501 13.72349451387276
Meteor 2-16
1 18312U 87068A 95072.30456863 .00000070 00000-0 49352-4 0 3800
2 18312 82.5586 358.4205 0014054 76.2113 284.0609 13.84051469382285
Meteor 2-17
1 18820U 88005A 95075.86531887 .00000058 00000-0 38581-4 0 5664
2 18820 82.5383 51.6842 0017512 129.5591 230.7122 13.84733537360093
DMSP B5D2-4
1 18822U 88006A 95075.58077087 .00000012 00000-0 23638-4 0 8933
2 18822 98.4153 283.8708 0005484 268.7054 91.3496 14.23145385369345
Glonass 34
1 19163U 88043A 95071.36712129 .00000063 00000-0 10000-3 0 9742
2 19163 65.0916 101.4282 0007524 145.9919 214.1293 2.13102664 52377
Glonass 36
1 19165U 88043C 95075.17736352 .00000079 00000-0 10000-3 0 3731
2 19165 65.1155 101.2508 0005192 236.3296 123.7824 2.13102182 53074
METEOSAT 3
1 19215U 88051A 95075.24891700 -.00000278 00000-0 10000-3 0 978
2 19215 2.3108 70.4943 0000788 62.3021 60.5875 1.00286056 12640
AO-13
1 19216U 88051B 95069.31554275 -.00000291 00000-0 10000-4 0 227
2 19216 57.6014 199.4908 7272351 3.7877 359.4107 2.09723509 20090
OKEAN 1
1 19274U 88056A 95074.17781128 .00000331 00000-0 38360-4 0 9890
2 19274 82.5146 342.1175 0018856 193.3785 166.6938 14.82309422361226
Meteor 3-2
1 19336U 88064A 95076.20615897 .00000051 00000-0 10000-3 0 3784
2 19336 82.5424 130.5135 0016000 304.5797 55.3808 13.16971621319198
Glonass 39
1 19503U 88085C 95070.04305856 -.00000063 00000-0 10000-3 0 2660
2 19503 65.7111 340.3537 0007433 174.1427 185.8989 2.13101927 50457
NOAA 11
1 19531U 88089A 95075.89948611 .00000015 00000-0 33242-4 0 9910
2 19531 99.1905 76.7795 0012719 86.2787 273.9846 14.13042064333725
TDRS 2
1 19548U 88091B 95074.51333459 .00000089 00000-0 10000-3 0 1028
2 19548 1.5492 75.3809 0001456 310.7881 159.8842 1.00276584 10928
Glonass 40
1 19749U 89001A 95075.24368350 .00000078 00000-0 10000-3 0 4821
2 19749 65.0478 100.8430 0005372 248.4781 111.5138 2.13101264 48078
Glonass 41
1 19750U 89001B 95075.29949541 .00000078 00000-0 10000-3 0 3925
2 19750 65.0619 100.9180 0007641 198.1061 161.9377 2.13101835 48093
GPS BII-01
1 19802U 89013A 95071.46246555 .00000014 00000-0 10000-3 0 327
2 19802 55.1689 129.0571 0028332 182.4381 177.6316 2.00571947 44437
Akebono
1 19822U 89016A 95075.88674837 .00012243 00000-0 72465-3 0 4560
2 19822 75.0820 27.9044 3784512 89.6563 312.6612 7.83771460130579
```

```
Meteor 2-18
1 19851U 89018A 95073.02625345 .00000039 00000-0 21876-4 0 3782
2 19851 82.5178 288.7790 0013523 185.0723 175.0309 13.84385851305029
MOP-1
1 19876U 89020B 95072.91815411 -.00000077 00000-0 10000-3 0 1028
2 19876 1.0239 70.9119 0000587 218.8709 203.9804 1.00270146 2065
TDRS 3
1 19883U 89021B 95069.36564420 -.00000276 00000-0 10000-3 0 540
2 19883 0.0539 3.3382 0003529 343.4168 271.3244 1.00266836194453
GPS BII-02
1 20061U 89044A 95071.80342622 -.00000019 00000-0 10000-3 0 416
2 20061 54.5331 305.4204 0140225 213.7166 145.4405 2.00563952 42180
Nadezhda 1
1 20103U 89050A 95075.90042347 .00000108 00000-0 98869-4 0 3260
2 20103 82.9547 86.6561 0036048 249.9399 109.7877 13.73851621285754
GPS BII-03
1 20185U 89064A 95076.13286819 .00000049 00000-0 10000-3 0 705
2 20185 55.0251 129.4924 0054668 310.6341 49.0137 2.00549242 40842
GMS 4
1 20217U 89070A 95071.99419501 -.00000297 00000-0 10000-3 0 1665
2 20217 0.8368 75.7169 0000558 359.6081 232.3964 1.00260053 20787
INTERCOSMOS 24
1 20261U 89080A 95072.37070867 .00000187 00000-0 52511-4 0 3939
2 20261 82.5916 205.6657 1243105 11.7550 350.9892 12.47229981248331
GPS BII-04
1 20302U 89085A 95071.67349257 .00000030 00000-0 10000-3 0 439
2 20302 53.4266 245.5359 0008142 182.9757 177.0089 2.00554556 39558
Meteor 3-3
1 20305U 89086A 95076.06245802 .00000044 00000-0 10000-3 0 2732
2 20305 82.5412 81.3225 0005934 5.8878 354.2275 13.04409037258477
COBE
1 20322U 89089A 95073.47461663 .00000117 00000-0 10309-3 0 1036
2 20322 98.9648 90.9055 0008274 237.2482 122.7894 14.03444511272306
Kvant-2
1 20335U 89093A 95075.88473028 -.00009555 00000-0 -11870-3 0 2043
2 20335 51.6465 260.2615 0004054 263.6990 96.4574 15.57963932301696
GPS BII-05
1 20361U 89097A 95076.17582123 .00000020 00000-0 10000-3 0 9021
2 20361 55.7036 71.4392 0076433 119.7551 241.0325 2.00561580 29126
SPOT 2
1 20436U 90005A 95075.72242612 -.00000044 00000-0 00000+0 0 9102
2 20436 98.7418 150.9593 0000813 108.1635 251.9630 14.20017074266772
UO-14
1 20437U 90005B 95073.26551584 .00000022 00000-0 25319-4 0 810
2 20437 98.5711 159.1524 0011530 113.8220 246.4169 14.29878385268185
UO-15
1 20438U 90005C 95073.18878698 .00000018 00000-0 24049-4 0 8788
2 20438 98.5699 157.7220 0010504 117.6596 242.5652 14.29200586268070
PACSAT
1 20439U 90005D 95073.24090276 .00000024 00000-0 26328-4 0 8794
```

```
2 20439 98.5829 160.6739 0011957 115.5632 244.6781 14.29932319268190
DO-17
1 20440U 90005E 95073.72851389 .00000005 00000-0 18729-4 0 8794
2 20440 98.5842 161.5774 0011946 113.0216 247.2225 14.30072935268288
WO-18
1 20441U 90005F 95072.72936049 .00000015 00000-0 22551-4 0 8835
2 20441 98.5842 160.5737 0012481 116.1606 244.0855 14.30044952268146
LO-19
1 20442U 90005G 95073.24870976 .00000031 00000-0 28670-4 0 8791
2 20442 98.5808 161.4122 0012784 114.3190 245.9323 14.30146151268235
GPS BII-06
1 20452U 90008A 95075.57746518 .00000005 00000-0 10000-3 0 146
2 20452 54.0289 185.4480 0057411 80.5240 280.1188 2.00568647 37613
MOS-1B
1 20478U 90013A 95074.73674890 .00000091 00000-0 10000-3 0 7557
2 20478 98.9993 146.5123 0000366 339.8337 20.2810 13.94917557180501
DEBUT
1 20479U 90013B 95073.21487416 -.00000051 00000-0 -49529-4 0 8789
2 20479 99.0670 179.6280 0540926 87.8088 278.4820 12.83328869238771
FO-20
1 20480U 90013C 95073.83757618 -.00000038 00000-0 -20874-4 0 7767
2 20480 99.0678 179.9950 0541171 86.7912 279.4930 12.83229391238846
MOS-1B R/B
1 20491U 90013D 95074.42668826 .00000699 00000-0 13887-2 0 1148
2 20491 99.0253 232.2586 0469438 291.4608 63.7104 13.02982023241983
LACE
1 20496U 90015A 95074.90009729 .00002316 00000-0 76781-4 0 5123
2 20496 43.1037 302.5102 0011472 319.0313 40.9710 15.34239027283245
Nadezhda 2
1 20508U 90017A 95075.84036740 .00000046 00000-0 33482-4 0 3246
2 20508 82.9509 221.2667 0043813 200.3070 159.6346 13.73490551252974
OKEAN 2
1 20510U 90018A 95074.11596202 .00000295 00000-0 37170-4 0 3898
2 20510 82.5244 293.2226 0020243 27.8298 332.3989 14.78463032271698
INTELSAT-6
1 20523U 90021A 95071.69310894 -.00000251 00000-0 10000-3 0 4950
2 20523 0.0097 334.3091 0000169 98.1719 312.3888 1.00270509 11261
GPS BII-07
1 20533U 90025A 95075.98522046 -.00000013 00000-0 10000-3 0 250
2 20533 54.8694 305.8621 0049190 79.0698 281.5442 2.00560601 36395
PegSat
1 20546U 90028A 95076.05406967 .00008490 00000-0 18178-3 0 7672
2 20546 94.1059 92.1462 0066875 333.4839 26.2963 15.42410221274278
HST
1 20580U 90037B 95075.04147224 .00000562 00000-0 40619-4 0 6022
2 20580 28.4721 289.4522 0006101 47.1906 312.9196 14.90826816 69997
MACSAT 2
1 20608U 90043B 95072.29855389 .00000247 00000-0 40264-4 0 796
2 20608 89.9309 177.3000 0103499 230.3867 128.8164 14.64808290258679
Glonass 44
```

```
1 20619U 90045A 95074.67394480 -.00000037 00000-0 10000-3 0 1731
2 20619 65.3275 339.6709 0023861 209.9689 149.9359 2.13102709 37519
Glonass 45
1 20620U 90045B 95070.10013300 -.00000063 00000-0 10000-3 0 1803
2 20620 65.3081 339.8202 0008753 67.3065 292.8045 2.13102800 37458
Glonass 46
1 20621U 90045C 95072.04319841 -.00000052 00000-0 10000-3 0 7802
2 20621 65.3211 339.8003 0012579 189.0782 170.9375 2.13101562 37492
Kristall
1 20635U 90048A 95075.88473028 -.00009555 00000-0 -11870-3 0 9977
2 20635 51.6465 260.2615 0004054 263.6990 96.4574 15.57963932272719
ROSAT
1 20638U 90049A 95075.72112950 .00000463 00000-0 49385-4 0 3983
2 20638 52.9878 203.2805 0013582 168.5194 191.6112 15.07115700263170
Meteor 2-19
1 20670U 90057A 95073.21892966 -.00000106 00000-0 -10854-3 0 8790
2 20670 82.5494 353.9950 0017311 105.7450 254.5616 13.84167128237976
CRRES
1 20712U 90065A 95072.21875054 .00000206 00000-0 29024-3 0 604
2 20712 17.9950 77.4217 7181652 32.8201 356.2202 2.35379156 32229
GPS BII-08
1 20724U 90068A 95071.31901473 .00000013 00000-0 10000-3 0 8861
2 20724 54.8079 127.2604 0116463 170.0457 190.2571 2.00560172 32167
Feng Yun1-2
1 20788U 90081A 95075.21892266 -.00000027 00000-0 10000-4 0 2779
2 20788 98.8160 91.4185 0014533 336.6200 23.5302 14.01356010231814
Meteor 2-20
1 20826U 90086A 95074.06164489 .00000028 00000-0 12267-4 0 8894
2 20826 82.5251 290.4580 0014427 14.2097 345.9458 13.83603769225218
GPS BII-09
1 20830U 90088A 95071.86701863 .00000025 00000-0 10000-3 0 8955
2 20830 55.6419 69.6041 0064639 101.2998 259.4589 2.00569041 32812
GPS BIIA-10
1 20959U 90103A 95075.26167752 .00000048 00000-0 10000-3 0 8322
2 20959 55.0158 129.0625 0088451 238.8338 120.3721 2.00556895 31478
DMSP B5D2-5
1 20978U 90105A 95075.85601009 .00000149 00000-0 68596-4 0 1169
2 20978 98.6497 144.3679 0080384 81.6313 279.3966 14.32524850224093
Glonass 47
1 21006U 90110A 95073.00854872 .00000076 00000-0 10000-3 0 7443
2 21006 65.0217 100.2802 0060340 187.4932 172.5101 2.13102728 33180
Glonass 48
1 21007U 90110B 95075.07342317 .00000078 00000-0 10000-3 0 8756
2 21007 65.0471 100.2661 0033852 177.5904 182.5066 2.13101298 33219
Glonass 49
1 21008U 90110C 95073.08606818 .00000077 00000-0 00000+0 0 469
2 21008 65.0264 100.2972 0011360 274.1426 85.8045 2.13099616 33164
AO-21
1 21087U 91006A 95075.56781757 .00000094 00000-0 82657-4 0 5751
2 21087 82.9455 301.1359 0036954 45.7673 314.6499 13.74551529207001
```

```
RS-12/13
1 21089U 91007A 95075.72500149 .00000039 00000-0 24542-4 0 7835
2 21089 82.9246 169.3410 0030999 70.3777 290.0718 13.74055172206075
MOP-2
1 21140U 91015B 95076.10932292 -.00000020 00000-0 10000-3 0 9143
2 21140 0.1870 102.6779 0003564 296.2662 173.8626 1.00277715 17011
Nadezhda 3
1 21152U 91019A 95075.81230732 .00000035 00000-0 21312-4 0 164
2 21152 82.9253 125.3105 0041918 175.4979 184.6562 13.73515791200820
Glonass 50
1 21216U 91025A 95073.96495156 -.00000040 00000-0 10000-3 0 3902
2 21216 65.0632 339.3782 0013781 247.8278 112.0411 2.13102454 30712
Glonass 51
1 21217U 91025B 95070.74866648 -.00000059 00000-0 10000-3 0 8000
2 21217 65.0543 339.4802 0010798 242.9863 116.9403 2.13101460 30630
Glonass 52
1 21218U 91025C 95073.20758010 -.00000044 00000-0 10000-3 0 2769
2 21218 65.0450 339.3932 0009034 306.3633 53.5907 2.13102667 30693
GRO
1 21225U 91027B 95073.55751415 .00003538 00000-0 73771-4 0 2001
2 21225 28.4598 153.4611 0002792 43.7208 316.3604 15.42275075 98700
Meteor 3-4
1 21232U 91030A 95075.78593393 .00000050 00000-0 10000-3 0 7881
2 21232 82.5444 336.8757 0012005 223.4823 136.5334 13.16466627187227
NOAA 12
1 21263U 91032A 95075.90427317 .00000052 00000-0 42483-4 0 4119
2 21263 98.5912 102.3043 0013108 161.3204 198.8459 14.22499278199307
OKEAN 3
1 21397U 91039A 95074.40856162 .00000315 00000-0 41889-4 0 894
2 21397 82.5234 205.7147 0024292 93.4419 266.9569 14.76341657203522
GPS BIIA-11
1 21552U 91047A 95073.04036343 .00000024 00000-0 10000-6 0 8344
2 21552 55.9100 67.1958 0063834 242.5700 116.8085 2.00571565 27028
ERS-1
1 21574U 91050A 95074.80156915 .00000064 00000-0 37178-4 0 1053
2 21574 98.4921 150.4053 0001066 90.9630 269.1675 14.35947791191683
UO-22
1 21575U 91050B 95073.24031113 .00000055 00000-0 33210-4 0 5858
2 21575 98.4060 146.8727 0006838 199.5282 160.5638 14.36964530191860
ORBCOMM-X
1 21576U 91050C 95072.73151794 .00000057 00000-0 34183-4 0 6808
2 21576 98.4039 144.9081 0003215 203.4817 156.6217 14.36368795191707
TUBSAT-A
1 21577U 91050D 95072.73443212 .00000016 00000-0 20126-4 0 5792
2 21577 98.4042 145.4174 0005853 202.7948 157.2975 14.36475192191739
SARA
1 21578U 91050E 95074.23798013 .00000268 00000-0 10087-3 0 7797
2 21578 98.4215 151.7100 0004486 192.8122 167.2949 14.38962316192188
TDRS 4
1 21639U 91054B 95074.52940940 .00000075 00000-0 10000-3 0 8713
```

```
2 21639 0.0410 283.8847 0002665 53.0081 212.0304 1.00275649107299
Meteor 3-5
1 21655U 91056A 95072.10141389 .00000051 00000-0 10000-3 0 7853
2 21655 82.5519 286.8190 0011999 248.0999 111.8848 13.16838190171858
UARS
1 21701U 91063B 95071.53617421 .00000184 00000-0 37240-4 0 6564
2 21701 56.9857 163.8577 0005527 105.5608 254.6001 14.96354434191107
DMSP B5D2-6
1 21798U 91082A 95075.90360104 .00000062 00000-0 56228-4 0 7663
2 21798 98.9612 87.4362 0013851 85.2573 275.0178 14.13871049170165
Glonass 53
1 21853U 92005A 95075.29657552 .00000077 00000-0 10000-3 0 9855
2 21853 64.9679 99.8899 0008064 178.1740 181.9019 2.13102279 24349
Glonass 54
1 21854U 92005B 95075.58709521 .00000076 00000-0 00000+0 0 1027
2 21854 64.9774 99.8839 0016551 8.0677 352.0327 2.13104239 24330
Glonass 55
1 21855U 92005C 95075.18102615 .00000078 00000-0 00000+0 0 969
2 21855 64.9783 99.9008 0007884 219.5200 140.4956 2.13102251 24317
JERS-1
1 21867U 92007A 95074.43390445 .00002004 00000-0 17178-3 0 5280
2 21867 97.7222 152.2005 0002593 84.6081 275.5816 14.98652034169008
GPS BIIA-12
1 21890U 92009A 95075.49674676 .00000019 00000-0 10000-3 0 6323
2 21890 53.9808 245.5487 0056983 176.3576 183.6578 2.00549339 22441
GPS BIIA-13
1 21930U 92019A 95075.20410809 -.00000065 00000-0 10000-3 0 6102
2 21930 55.6893 6.9615 0041157 175.1610 184.8850 2.00566061 21361
EUVE
1 21987U 92031A 95073.27937114 .00001615 00000-0 65335-4 0 3904
2 21987 28.4330 40.4914 0009783 51.2229 308.9241 15.19137318153509
SAMPEX
1 22012U 92038A 95075.05580398 .00000585 00000-0 49280-4 0 6131
2 22012 81.6696 243.9881 0117389 231.5355 127.5276 14.91310240146795
GPS BIIA-14
1 22014U 92039A 95075.24683613 .00000003 00000-0 10000-3 0 5174
2 22014 54.8601 186.8904 0095867 314.3708 44.8414 2.00547775 13200
Glonass 56
1 22056U 92047A 95074.14241452 -.00000040 00000-0 00000+0 0 91
2 22056 64.8967 339.5131 0005269 291.5099 68.4867 2.13103547 20387
Glonass 57
1 22057U 92047B 95073.02955671 -.00000046 00000-0 00000+0 0 112
2 22057 64.9079 339.5697 0009034 326.5878 33.3965 2.13102912 20338
Glonass 58
1 22058U 92047C 95073.43914932 -.00000043 00000-0 10000-3 0 25
2 22058 64.9020 339.5721 0009481 272.4955 87.4387 2.13102877 20398
TOPEX
1 22076U 92052A 95074.50943642 -.00000038 00000-0 10000-3 0 8606
2 22076 66.0388 87.4467 0007680 267.6064 92.4071 12.80930535121247
KO-23
```

```
1 22077U 92052B 95073.42404675 -.00000037 00000-0 10000-3 0 4778
2 22077 66.0826 74.1764 0011466 223.9343 136.0762 12.86290156121549
S80/T
1 22078U 92052C 95072.98397915 -.00000037 00000-0 10000-3 0 4744
2 22078 66.0829 74.0957 0012367 216.9760 143.0406 12.86574316121560
GPS BIIA-15
1 22108U 92058A 95075.70603189 .00000019 00000-0 10000-3 0 5425
2 22108 54.2165 246.2873 0117323 147.1402 213.5682 2.00564306 18390
FREJA
1 22161U 92064A 95072.17055927 .00000014 00000-0 50976-4 0 4948
2 22161 63.0024 331.9037 0803475 338.5974 18.3127 13.21823140117355
LAGEOS II
1 22195U 92070B 95075.60307758 -.00000009 00000-0 10000-3 0 3863
2 22195 52.6598 281.5210 0138416 236.1884 122.5428 6.47293804 56581
GPS BIIA-16
1 22231U 92079A 95071.40132699 -.00000018 00000-0 10000-3 0 5117
2 22231 54.6867 188.2425 0036240 285.0799 74.4992 2.00569706 16886
GPS BIIA-17
1 22275U 92089A 95074.04173279 -.00000006 00000-0 10000-3 0 5395
2 22275 54.6291 185.6566 0050314 255.5721 103.8572 2.00555019 16341
TDRS 5
1 22314U 93003B 95068.43493137 -.00000288 00000-0 10000-3 0 4919
2 22314 1.6875 72.1885 0003750 271.4524 293.8149 1.00276679 7913
GPS BIIA-18
1 22446U 93007A 95075.10966642 -.00000013 00000-0 10000-3 0 5161
2 22446 54.5184 306.1491 0086897 353.1718 6.7772 2.00551533 15354
Glonass 59
1 22512U 93010A 95072.01307370 .00000070 00000-0 10000-3 0 6874
2 22512 64.9924 99.8616 0009252 192.4578 167.5928 2.13102017 15844
Glonass 60
1 22513U 93010B 95073.82964665 .00000079 00000-0 00000+0 0 7270
2 22513 64.9819 99.8134 0007376 213.7970 146.2279 2.13102491 16076
Glonass 61
1 22514U 93010C 95075.06177574 .00000078 00000-0 00000+0 0 7284
2 22514 65.0084 99.7537 0010655 198.7181 161.3156 2.13102971 16108
ASTRO-D
1 22521U 93011A 95073.50138709 .00002020 00000-0 13847-3 0 3908
2 22521 31.1096 120.7176 0057736 279.8945 79.5186 15.02043724113122
UFO F1
1 22563U 93015A 95072.00000000 -.00000159 00000-0 10000-3 0 3959
2 22563 26.1685 295.7796 0003510 346.4293 244.8006 0.99255024 11500
GPS BIIA-19
1 22581U 93017A 95074.25506341 -.00000068 00000-0 10000-3 0 4117
2 22581 55.1846 6.6220 0055065 34.7223 325.6359 2.00553957 14393
ARSENE
1 22654U 93031B 95053.10965271 -.00000117 00000-0 10000-3 0 3064
2 22654 2.3584 88.2613 2904311 204.6294 138.9127 1.42203073 4757
GPS BIIA-20
1 22657U 93032A 95075.88529765 -.00000064 00000-0 10000-3 0 4478
2 22657 55.2194 6.3953 0069149 214.6141 144.9400 2.00571328 9755
```

```
RADCAL
1 22698U 93041A 95072.13110246 .00000087 00000-0 32352-4 0 3858
2 22698 89.5428 295.5289 0093606 31.8075 328.8722 14.21338655 88795
GPS BIIA-21
1 22700U 93042A 95072.36123542 .00000031 00000-0 10000-3 0 3956
2 22700 54.3868 247.1965 0035315 341.3624 18.4993 2.00562091 12485
NOAA-13
1 22739U 93050A 95075.88657252 .00000049 00000-0 52193-4 0 7578
2 22739 98.9831 24.6699 0010800 74.6457 285.5902 14.10926954 82429
GPS BIIA-22
1 22779U 93054A 95074.94018958 -.00000012 00000-0 10000-3 0 4462
2 22779 54.6464 306.1418 0019912 246.8855 112.9673 2.00561708 11292
Meteor 2-21
1 22782U 93055A 95073.79825163 .00000072 00000-0 51935-4 0 3864
2 22782 82.5521 351.9946 0021579 184.1306 175.9672 13.83027836 77495
UFO F2
1 22787U 93056A 95064.80159734 -.00000073 00000-0 10000-3 0 3955
2 22787 4.6542 324.6694 0003086 351.5611 206.6210 1.00273666 5713
SPOT 3
1 22823U 93061A 95073.57879977 .00000077 00000-0 56951-4 0 4189
2 22823 98.7444 148.8570 0001569 90.7758 269.3599 14.20020950 75867
STELLA
1 22824U 93061B 95075.22521802 -.00000042 00000-0 81752-6 0 3748
2 22824 98.6274 152.6580 0007001 129.2801 230.9001 14.27100230 76473
AO-27
1 22825U 93061C 95074.18686234 -.00000018 00000-0 10517-4 0 3768
2 22825 98.6271 151.8968 0008732 131.1863 229.0079 14.27654627 76359
IO-26
1 22826U 93061D 95072.18561881 .00000024 00000-0 27374-4 0 3740
2 22826 98.6230 149.9968 0009300 138.4754 221.7142 14.27761498 76078
HEATHSAT
1 22827U 93061E 95074.24680261 .00000015 00000-0 23561-4 0 4367
2 22827 98.6242 151.9792 0009594 120.4364 239.7763 14.27881780 76371
ITAMSAT
1 22828U 93061F 95074.23610641 .00000010 00000-0 21566-4 0 3538
2 22828 98.6226 152.0540 0010705 118.6580 241.5674 14.28090678 44468
PO-28
1 22829U 93061G 95069.76218971 .00000022 00000-0 26581-4 0 3671
2 22829 98.6239 147.6664 0010329 132.4029 227.8027 14.28067676 75740
KO-25
1 22830U 93061H 95073.74702935 -.00000037 00000-0 22949-5 0 3834
2 22830 98.5258 145.8659 0012458 101.8508 258.4070 14.28081760 76315
GPS BIIA-23
1 22877U 93068A 95071.99775577 .00000021 00000-0 10000-3 0 2529
2 22877 55.1913 67.4569 0035043 292.7258 66.9930 2.00553450 10120
METEOSAT 6
1 22912U 93073B 95073.18974122 -.00000092 00000-0 10000-3 0 2625
2 22912 0.3136 268.2630 0000528 345.3948 336.1766 1.00270804 3231
HST Array
1 22920U 90037C 95073.58240418 .00007180 00000-0 54991-3 0 2945
```

```
2 22920 28.4717 268.9021 0004400 246.8074 113.2242 15.00048750 70083
Meteor 3-6
1 22969U 94003A 95074.88769870 .00000051 00000-0 10000-3 0 1534
2 22969 82.5558 224.5410 0015078 310.2352 49.7448 13.16728193 54600
TUBSAT-B
1 22970U 94003B 95074.47662744 .00000051 00000-0 10000-3 0 1432
2 22970 82.5540 224.7774 0016087 310.6304 49.3411 13.16824181 54554
ODERACS E
1 22994U 94006F 95061.81894114 .06241027 11780-4 10453-3 0 3399
2 22994 56.9620 210.9976 0005787 293.1349 67.3024 16.47718070 61334
ODERACS F
1 22995U 94006G 95055.74721848 .07840807 11908-4 80136-4 0 3792
2 22995 56.9641 238.6220 0008022 316.4992 43.6881 16.50358678 60374
GPS BIIA-24
1 23027U 94016A 95074.06863122 -.00000068 00000-0 10000-3 0 1796
2 23027 55.0488 8.5036 0062352 196.9672 162.8266 2.00550579 7478
Glonass 62
1 23043U 94021A 95074.20125373 -.00000040 00000-0 00000+0 0 1723
2 23043 64.7774 339.9387 0004414 191.6378 168.3964 2.13103332 7203
Glonass 63
1 23044U 94021B 95074.08399833 -.00000041 00000-0 00000+0 0 1589
2 23044 64.7737 339.9393 0027460 205.5756 154.3331 2.13103179 7203
Glonass 64
1 23045U 94021C 95072.38297649 -.00000051 00000-0 00000+0 0 1685
2 23045 64.7620 340.0142 0011113 30.9300 329.1749 2.13102324 7164
GOES 8
1 23051U 94022A 95071.50000000 -.00000261 00000-0 00000+0 0 2751
2 23051 0.1930 251.7970 0000049 135.1590 247.2530 1.00284173 2982
MSTI 2
1 23101U 94028A 95074.57502440 .00008063 00000-0 14804-3 0 1609
2 23101 97.1038 269.1694 0010343 227.2224 132.8147 15.49451334 48025
STRV-1A
1 23125U 94034B 95075.32675257 .00001425 00000-0 47550-3 0 1264
2 23125 7.4358 68.7446 7261624 44.9612 354.8422 2.29780568 5517
STRV-1B
1 23126U 94034C 95073.17885202 .00001589 00000-0 52932-3 0 1293
2 23126 7.4418 69.8091 7266279 42.9494 355.1042 2.29409718 5517
Nadezhda 4
1 23179U 94041A 95075.89738728 .00000023 00000-0 85331-5 0 854
2 23179 82.9444 216.2432 0036036 326.3593 33.5276 13.75664322 33780
Glonass 65
1 23203U 94050A 95075.33609983 .00000024 00000-0 00000+0 0 1183
2 23203 64.8114 219.5363 0007695 138.3896 221.6317 2.13102166 4626
Glonass 66
1 23204U 94050B 95074.16253683 .00000023 00000-0 00000+0 0 1264
2 23204 64.7979 219.6069 0015101 351.7786 8.1608 2.13102286 4599
Glonass 67
1 23205U 94050C 95074.04537324 .00000023 00000-0 00000+0 0 1157
2 23205 64.8053 219.5947 0001354 351.6663 8.2938 2.13102185 4591
DMSP B5D2-7
```

```
1 23233U 94057A 95075.89166663 .00000116 00000-0 86543-4 0 2642
2 23233 98.8900 134.7752 0013545 42.2257 317.9955 14.12586655 28123
Soyuz TM-20
1 23288U 94063A 95075.88471176 -.00015950 00000-0 -20281-3 0 1487
2 23288 51.6466 260.2616 0004057 262.3566 97.6897 15.57956249 25682
OKEAN 1-7
1 23317U 94066A 95072.75293065 .00000328 00000-0 46355-4 0 497
2 23317 82.5456 123.4896 0026648 136.0593 224.2783 14.73911088 22569
ELEKTRO
1 23327U 94069A 95066.97773140 -.00000116 00000-0 10000-3 0 500
2 23327 0.9849 264.6460 0003035 142.5346 186.5389 1.00271019 1319
RESURS 1-3
1 23342U 94074A 95074.55088093 .00000177 00000-0 37851-4 0 726
2 23342 98.0275 135.8359 0001589 78.6201 281.5226 14.69712766 19294
Glonass 68
1 23396U 94076A 95073.41970013 .00000078 00000-0 00000+0 0 634
2 23396 64.9165 99.9109 0030062 194.9247 165.0611 2.13102991 2426
Glonass 69
1 23397U 94076B 95074.53362270 .00000079 00000-0 00000+0 0 696
2 23397 64.9073 99.8897 0014914 320.2093 39.7549 2.13102437 2443
Glonass 70
1 23398U 94076C 95075.35546587 .00000077 00000-0 00000+0 0 736
2 23398 64.8952 99.8404 0005229 291.6617 68.3635 2.13102178 2474
RS-15
1 23439U 94085A 95073.33372608 -.00000039 00000-0 10000-3 0 351
2 23439 64.8157 48.3880 0168058 278.5635 79.6279 11.27526738 8829
NOAA 14
1 23455U 94089A 95075.80855799 .00000078 00000-0 67081-4 0 1012
2 23455 98.8927 19.0929 0010552 93.0354 267.2061 14.11497112 10782
Progress M-26
1 23477U 95005A 95074.02454622 -.00001116 00000-0 -80014-5 0 352
2 23477 51.6448 269.5903 0003949 254.9935 105.0015 15.57959164 4298
1995005B
1 23478U 95005B 95048.64948989 .28376917 12633-4 19181-3 0 127
2 23478 51.6010 36.2624 0008310 159.3273 202.4262 16.52926236 329
1995006A
1 23497U 95006A 95062.59125430 .00075659 80313-5 11000-3 0 208
2 23497 62.8018 303.5773 0103091 107.8696 253.7344 15.95589014 2378
1995006B
1 23498U 95006B 95071.73479965 .24931156 90282-5 26579-3 0 628
2 23498 62.7783 266.1006 0008060 120.4744 239.9716 16.50178347 3864
1995006C
1 23499U 95006C 95049.28824527 .06335403 81180-5 52566-2 0 42
2 23499 62.8030 355.3853 0080054 110.1799 251.5533 16.06530291 259
STS 67
1 23500U 95007A 95075.91666667 .00001139 00000-0 51146-5 0 407
2 23500 28.4671 343.1038 0018397 105.8172 223.4406 15.73022750 2302
1995008A
1 23501U 95008A 95075.07484603 .00001260 00000-0 58429-4 0 140
2 23501 65.8485 293.8441 0035975 337.3138 180.9013 15.24399030 2063
```

```
1995008B
1 23502U 95008B 95075.68843549 .00002336 00000-0 96670-4 0 264
2 23502 65.8512 291.8290 0041492 350.1020 9.9461 15.25810038 2164
1995006D
1 23503U 95006D 95073.46571554 .54268981 90286-5 22244-1 0 263
2 23503 62.7981 262.5634 0027956 359.3849 0.6065 16.21743448 4085
1995006E
1 23504U 95006E 95075.92681228 .00648441 14488-3 36520-2 0 217
2 23504 62.7963 253.6518 0077860 24.7897 335.1823 15.74467213 4463
1995006F
1 23505U 95006F 95072.65207516 .04744362 86717-5 62500-3 0 250
2 23505 62.7538 263.4388 0037708 116.9804 244.2170 16.32562233 3990
1995006G
1 23506U 95006G 95075.53896203 .00304336 81429-5 32299-3 0 221
2 23506 62.8120 252.8265 0087523 108.2651 252.7062 16.02173425 4442
1995008C
1 23507U 95008C 95073.05524980 .00015447 00000-0 72201-3 0 94
2 23507 65.8630 300.4940 0050368 306.4470 53.2043 15.18812973 1758
1995008D
1 23508U 95008D 95075.72214505 .00031710 00000-0 10589-2 0 103
2 23508 65.8077 291.4213 0049399 341.9547 17.9036 15.29718277 2313
1995008E
1 23509U 95008E 95075.18657075 .00034131 00000-0 10673-2 0 99
2 23509 65.8219 293.0451 0061419 334.6953 25.1163 15.31129395 2098
1995008F
1 23510U 95008F 95074.98994491 .00037252 00000-0 11651-2 0 100
2 23510 65.8796 293.7520 0059326 338.0878 21.7415 15.31217336 2301
1995009A
1 23511U 95009A 95075.81527641 -.00000035 00000-0 00000+0 0 118
2 23511 64.7768 340.1664 0077634 87.6179 273.2399 2.10491023 200
1995009B
1 23512U 95009B 95075.30948153 -.00000035 00000-0 00000+0 0 118
2 23512 64.7582 340.2243 0084847 260.9977 98.0869 2.15633076 199
1995009C
1 23513U 95009C 95075.31867784 -.00000036 00000-0 00000+0 0 133
2 23513 64.7900 340.1762 0027528 260.5236 99.1653 2.13873996 194
1995009D
1 23514U 95009D 95066.93243375 .13451308 80329-5 75535-4 0 82
2 23514 64.8190 338.6167 0012968 306.5807 53.6827 16.54236460 103
1995009E
1 23515U 95009E 95066.87191215 .17194273 78973-5 13051-3 0 42
2 23515 64.8020 338.8468 0013018 270.4700 89.4999 16.52037135 91
1995009F
1 23516U 95009F 95075.77709329 -.00000034 00000-0 10000-3 0 106
2 23516 64.7872 340.1571 0012249 283.2897 76.5989 2.13311668 208
1995009G
1 23517U 95009G 95073.77076234 .00000076 00000-0 31637-4 0 45
2 23517 64.7934 337.8316 5808256 296.9827 16.0408 4.23207653 316
1995009H
1 23518U 95009H 95075.18749634 .00000067 00000-0 82348-5 0 62
```

```
2 23518 64.8552 337.1816 5809411 296.9627 16.0396 4.23257097 373
Soyuz TM-21
1 23519U 95010A 95075.88470677 -.00015624 00000-0 -19851-3 0 121
2 23519 51.6467 260.2616 0004052 262.5390 97.4799 15.57956744518576
1995010B
1 23520U 95010 B 95075.76122103 .21411582 00000-0 28719-3 0 158
2 23520 051.6268 260.2137 0001718 187.8642 172.3061 16.49223966000420
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

579. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 23:09:53 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.795481793@dolphin>
Source record: 25429

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 67
1 23500U 95007A 95075.91666667 .00001139 00000-0 51146-5 0 407
2 23500 28.4671 343.1038 0018397 105.8172 223.4406 15.73022750 2302
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

580. Kep data for 3/17 ??

Newsgroup: rec.radio.amateur.space
Date: 1995-03-17 23:21:28 UTC
From: copeland@fohnix.metronet.com
Message-ID: <3kd5ho$q2n@fohnix.metronet.com>
Source record: 25430

News said today the space shuttle will remain in orbit for one
more day. Will land Saturday.

Does anybody have the kep data for Friday and Saturday?

--

| There are two types of people in this world, those who separate |
| people into groups,and those who don't. KC5LWF copeland@metronet.com|
---

581. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-18 14:58:06 UTC
From: little@iamu.chi.dec.com
Message-ID: <3kesdu$k2i@jac.zko.dec.com>
Source record: 25431

In article <quasar.27.2F6907D9@cts.com>, quasar@cts.com (SteveF) writes:

|>I made three packet and one phone contact with STS-67. I am in San Diego, CA
|>and the orbit took the shuttle over Mexico.

Why would you make more than one packet contact? They automatically dupe
check their log and toss out all but the first contact. Making multiple
contacts simply denies others the opportunity to make a contact.

--
73, Member of RACES, ARRL, Arlington Communications League.
Todd Trained weather spotter and sponsor of the Hunting Ridge
N9MWB Elementary School Radio Club. See you on 160-1296 and OSCAR.

582. ARLK011 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-18 19:27:27 UTC
From: w1aw@arrl.org
Message-ID: <$arlk011.1995@ampr.org>
Source record: 25433
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK011
ARLK011 Keplerian data

ZCZC SK36
QST de W1AW
Keplerian Bulletin 11 ARLK011
From ARRL Headquarters
Newington, CT March 18, 1995
To all radio amateurs

SB KEP ARL ARLK011
ARLK011 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-67
1 23500U 95007A 95075.91666667 .00001139 00000-0 51146-5 0 407
2 23500 28.4671 343.1038 0018397 105.8172 223.4406 15.73022750 2302
AO-10
1 14129U 83058B 95049.74423524 -.00000256 00000-0 10000-3 0 3407
2 14129 26.5642 282.2218 6017196 253.4768 35.4795 2.05881639 59890
RS-10/11
1 18129U 87054A 95075.60375205 .00000031 00000-0 17998-4 0 329
2 18129 82.9254 127.5111 0011890 357.0574 3.0501 13.72349451387276
UO-11
1 14781U 84021B 95075.97953466 .00000206 00000-0 42700-4 0 7826
2 14781 97.7816 82.8523 0012687 113.2087 247.0460 14.69318224590361
RS-12/13
1 21089U 91007A 95075.72500149 .00000039 00000-0 24542-4 0 7835
2 21089 82.9246 169.3410 0030999 70.3777 290.0718 13.74055172206075
AO-13
1 19216U 88051B 95069.31554275 -.00000291 00000-0 10000-4 0 227
2 19216 57.6014 199.4908 7272351 3.7877 359.4107 2.09723509 20090
UO-14
1 20437U 90005B 95073.26551584 .00000022 00000-0 25319-4 0 810
2 20437 98.5711 159.1524 0011530 113.8220 246.4169 14.29878385268185
RS-15
1 23439U 94085A 95073.33372608 -.00000039 00000-0 10000-3 0 351
2 23439 64.8157 48.3880 0168058 278.5635 79.6279 11.27526738 8829
```

```
AO-16
1 20439U 90005D 95073.24090276 .00000024 00000-0 26328-4 0 8794
2 20439 98.5829 160.6739 0011957 115.5632 244.6781 14.29932319268190
DO-17
1 20440U 90005E 95073.72851389 .00000005 00000-0 18729-4 0 8794
2 20440 98.5842 161.5774 0011946 113.0216 247.2225 14.30072935268288
WO-18
1 20441U 90005F 95072.72936049 .00000015 00000-0 22551-4 0 8835
2 20441 98.5842 160.5737 0012481 116.1606 244.0855 14.30044952268146
LO-19
1 20442U 90005G 95073.24870976 .00000031 00000-0 28670-4 0 8791
2 20442 98.5808 161.4122 0012784 114.3190 245.9323 14.30146151268235
FO-20
1 20480U 90013C 95073.83757618 -.00000038 00000-0 -20874-4 0 7767
2 20480 99.0678 179.9950 0541171 86.7912 279.4930 12.83229391238846
AO-21
1 21087U 91006A 95075.56781757 .00000094 00000-0 82657-4 0 5751
2 21087 82.9455 301.1359 0036954 45.7673 314.6499 13.74551529207001
UO-22
1 21575U 91050B 95073.24031113 .00000055 00000-0 33210-4 0 5858
2 21575 98.4060 146.8727 0006838 199.5282 160.5638 14.36964530191860
KO-23
1 22077U 92052B 95073.42404675 -.00000037 00000-0 10000-3 0 4778
2 22077 66.0826 74.1764 0011466 223.9343 136.0762 12.86290156121549
KO-25
1 22828U 93061F 95074.23610641 .00000010 00000-0 21566-4 0 3538
2 22828 98.6226 152.0540 0010705 118.6580 241.5674 14.28090678 44468
IO-26
1 22826U 93061D 95072.18561881 .00000024 00000-0 27374-4 0 3740
2 22826 98.6230 149.9968 0009300 138.4754 221.7142 14.27761498 76078
AO-27
1 22825U 93061C 95074.18686234 -.00000018 00000-0 10517-4 0 3768
2 22825 98.6271 151.8968 0008732 131.1863 229.0079 14.27654627 76359
PO-28
1 22829U 93061G 95069.76218971 .00000022 00000-0 26581-4 0 3671
2 22829 98.6239 147.6664 0010329 132.4029 227.8027 14.28067676 75740
Mir
1 16609U 86017A 95076.20542235 .00004003 00000-0 58988-4 0 9702
2 16609 51.6469 258.6527 0004069 256.2339 103.8210 15.57986483518622

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
March 21, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

583. AMSAT address???

Newsgroup: rec.radio.amateur.space
Date: 1995-03-18 19:39:07 UTC
From: kwl@cyberspace.com
Message-ID: <3kfcsr$6mq@wage.cyberspace.com>
Source record: 25432

Hi all,
Does anyone have AMSAT's mail or FTP address? I want to get more
technical and detailed info on all amateur satellites in orbit.

TNX ES 73 Ken KA9RVK

584. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-18 20:19:06 UTC
From: Darryl Bennett <darrylb@delphi.com>
Message-ID: <Ze0b2Va.darrylb@delphi.com>
Source record: 25434

Todd Little <little@iamu.chi.dec.com> writes:

>Here in Chicago it never makes it above 5 degrees, sigh. Even at only
>4 degrees last night, I made a packet contact. ;-) Of the passes visable
>last night, only one seemed to have any activity. Not sure what was going
>on with the other 2 passes.

What's your setup? Particularly, can you describe your antenna system?

585. Time Step Prosat II Autosave

Newsgroup: rec.radio.amateur.space
Date: 1995-03-19 08:31:21 UTC
From: mklee@actrix.gen.nz
Message-ID: <D5oIC9.ILE@actrix.gen.nz>
Source record: 25435

Hi

I have an intermitent problem with autosave receive mode using Time Step Prosat II. I have, on several occasions, set the receive schedule and select autosave mode. However, there are times when it did work and recorded the correct images. However, it is more often that it did not capture the images scheduled.

Has anyone experienced similar problems? If not, then what is it that I am not doing right?

Regards

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

586. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-19 17:48:31 UTC
From: quasar@cts.com
Message-ID: <quasar.29.2F6C6E6F@cts.com>
Source record: 25438

In article <3kesdu$k2i@jac.zko.dec.com> little@iamu.chi.dec.com (Todd Little) writes:
>From: little@iamu.chi.dec.com (Todd Little)
>Subject: Re: Anybody make STS-67 packet contact
>Date: 18 Mar 1995 14:58:06 GMT

>In article <quasar.27.2F6907D9@cts.com>, quasar@cts.com (SteveF) writes:

>|>I made three packet and one phone contact with STS-67. I am in San Diego, CA
>|>and the orbit took the shuttle over Mexico.

>Why would you make more than one packet contact? They automatically dupe
>check their log and toss out all but the first contact. Making multiple
>contacts simply denies others the opportunity to make a contact.

>--
>73, Member of RACES, ARRL, Arlington Communications League.
>Todd Trained weather spotter and sponsor of the Hunting Ridge
>N9MWB Elementary School Radio Club. See you on 160-1296 and OSCAR.

I would hardly say that my three packet connections over the two week mission
denied others of making contact with STS 67 since a contact is about 2 seconds
long. As for the dups, I am aware of this fact, I only QSL'd on one confirmed
packet connection and I did QSL on my phone conact just for grins.

73 de Steve

587. Can the Shuttle be heard in Britain?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-19 17:55:03 UTC
From: Al@alcarg.demon.co.uk
Message-ID: <795635703snz@alcarg.demon.co.uk>
Source record: 25436

Hi

I have tried to listen in on the Shuttle transmissions using the various wavelengths posted in the group. However I have yet to hear anything! I am situated in Northern England and I was wondering am I just too far away from the "flight" path to pick anything up?

Cheers
Al

588. Thanks for AMSAT address

Newsgroup: rec.radio.amateur.space
Date: 1995-03-19 19:16:22 UTC
From: kwl@cyberspace.com
Message-ID: <3khvu6$jsi@wage.cyberspace.com>
Source record: 25437

Whew, yesterday I posted a request for AMSAT's ftp address and this morning I had no less than a dozen responses. So instead of e-mail, I wanted to thank you all here!

Thanks again

Ken L. KA9RVK/0

589. NAITVE OS/2 Sat tracker?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-19 23:54:55 UTC
From: gsmith@alpha.wright.edu
Message-ID: <3kig8f$alt@mercury.wright.edu>
Source record: 25439

Hi all:
I was wondering if there was a naitive OS/2 satelite tracking
program ?
Greg, N8PPZ

590. Req: ur wisdom on S-band antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-03-20 04:50:06 UTC
From: bob@texas.net
Message-ID: <3kj1hu$5d2@empire.texas.net>
Source record: 25440

I'm getting ready to put up my first satellite station, and am likely
to include Mode S. What's being used out there for antennas? I'd guess
parabolic reflectors would be quite feasible at 2.4 Gig--any good
commercial stuff out there? Thanks in advance for your inputs

---
Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

591. Sat. Packet Info Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-03-20 13:00:15 UTC
From: egan@vms.macc.wisc.edu
Message-ID: <3kkjta$nm1@news.doit.wisc.edu>
Source record: 25443

Good Afternoon. I am looking for information on satellite
packet operation and would greatly appreciate pointers
to books or FTP sources. Thanks to all in advance.
73,
Mike, WA9DOS
egan@macc.wisc.edu

592. Re: NAITVE OS/2 Sat tracker?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-20 20:53:21 UTC
From: jim@draco.bison.mb.ca
Message-ID: <3kkq01$arb@draco.bison.mb.ca>
Source record: 25441

Gregory Smith (gsmith@alpha.wright.edu) wrote:
:Hi all:
: I was wondering if there was a naitive OS/2 satelite tracking
:program ?
: Greg, N8PPZ

Yeah, I'm looking for an OS/2 PM satellite tracker, too! I
started to use a DOS app. called PC-Track 2.14 then upgraded to 3.04.
PC-T worked fine under OS/2 2.1 and Warp except when I had less then 3
sats. to track the tracking speed seemed to fast. Then I tried PC-Track
3.00 and the session would randomly exit. 3.0 usess DPMI memory and that
may be the reason why it doesn't work. The thing about OS/2 DPMI is that
you can only go in there once when you install a DPMI app and later the
DOS Settings box is greyed out....so back I go to PC-Track 2.14

So YES, I would like an OS/2 satellite tracking program.

--
Winnipeg MB Canada jim@draco.bison.mb.ca
TEAM OS/2 MIME OK
VE4JAF
Proud to be a non-hyphenated Polish Canadian!

593. STS-67 QSL Bureau

Newsgroup: rec.radio.amateur.space
Date: 1995-03-20 20:57:46 UTC
From: paidukas@huey.mis.semi.harris.com
Message-ID: <3kkq8b$eh1@hearye.mlb.semi.harris.com>
Source record: 25442

Can somebody please send to me via E-mail the name, address, and phone number
of the bureau handling the QSL card exchange for STS-67 SAREX contact?

Paul KE4QJA (paidukas@huey.mis.semi.harris.com)
Packet: KE4QJA@KD4WLE.#MLBFL.FL.US.NA Internet: KE4QJA@theborg.mlb.fl.us

594. Sat. Packet Info Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-03-20 22:55:24 UTC
From: kwl@cyberspace.com
Message-ID: <3kl14s$lmd@wage.cyberspace.com>
Source record: 25444

Hi Mike,

Two good satellite info ftp sites I know of are...

ftp.qrz.com All sorts of ham files
ftp.amsat.com Excellent satellite info. Just today I got some good
packet info from them.

73s Ken KA9RVK

595. Receptions from space..

Newsgroup: rec.radio.amateur.space
Date: 1995-03-20 23:24:17 UTC
From: gregemm@aol.com
Message-ID: <3kl2r1$jih@newsbf02.news.aol.com>
Source record: 25445

Other than the space shuttle, what receptions are possible from sattelites? What frequencies should I look on , and what times are they most active? Any help is appreciated.

596. Re: Sat. Packet Info Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 01:46:43 UTC
From: bob@texas.net
Message-ID: <3klb63$bj2@empire.texas.net>
Source record: 25446

In article <3kl14s$lmd@wage.cyberspace.com>, kwl@cyberspace.com (Kenneth W Linder) says:

>Two good satellite info ftp sites I know of are...
>
>ftp.qrz.com All sorts of ham files
>ftp.amsat.com Excellent satellite info. Just today I got some good
> packet info from them.
>
>73s Ken KA9RVK

That second address should be ftp.amsat.org me thinks...
^^^

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

597. HELP! with rs-10/11

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 01:52:57 UTC
From: c002@Lehigh.EDU
Message-ID: <3klbhp$5tuj@ns2-1.CC.Lehigh.EDU>
Source record: 25447

Hello out there in Hamspace land...

I just realized when reading through some sat stuff, my Hamcomm program MIGHT be able to get a ROBOT answer from RS-10.
after about 2 hours running around setting up my 2m ht and a scanner for downlink, and finding the right antennas hopeing the computer will not be to bad RFI........it finnaly gets over the horizen, and bang nothing.....maybe my scanner is not good enought, or my keps are old <only 2weeks>

#1. WHY can i not contact it? i send out rs-10 de n3sqe ar but i hear nothing in return....not even the beacon
#2. what IS cw? i tx cw from hamcomm by holding the ptt down...is that right? or should a find a way to acctully put the PTT circuit from HC on my HT?

please help.....

DAvid
|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

598. Inconsiderate behavior and SAREX - was Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 03:13:32 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3klg8s$61n@paperboy.ids.net>
Source record: 25448

In article <quasar.27.2F6907D9@cts.com>, quasar@cts.com (SteveF) writes:
>
>>|>I made three packet and one phone contact with STS-67. I am in San Diego, CA
>>|>and the orbit took the shuttle over Mexico.
>
In article <3kesdu$k2i@jac.zko.dec.com> little@iamu.chi.dec.com (Todd Little) replied:

>>Why would you make more than one packet contact? They automatically dupe
>>check their log and toss out all but the first contact. Making multiple
>>contacts simply denies others the opportunity to make a contact.

quasar@cts.com (SteveF) responded:

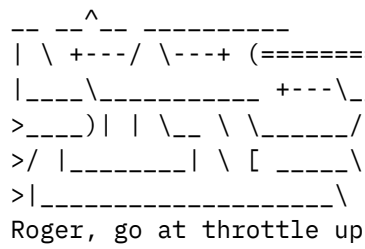
>I would hardly say that my three packet connections over the two week mission
>denied others of making contact with STS 67 since a contact is about 2 seconds
>long. As for the dups, I am aware of this fact, I only QSL'd on one confirmed
>packet connection and I did QSL on my phone conact just for grins.

Actually I'd say that the four seconds it took for you to perform your extra packet contacts statistically cost two other people their potential packet contacts. Listen to the packet downlink some times - you can occasionally find blank spots but for the most part the shuttle's packet rig is constantly responding to packet connect attempts. So by being so inconsiderate to make additional attempts to contact the shuttle - even though you realized that you had made a successful contact - you probably prevented somebody else from getting through. Could they have gotten through on a later pass? Possibly, but not certainly.

One inconsiderate person who feels that they have to make additional spurious contacts just to brag that they got through three times is not going to cause many people to miss their possible contacts with the shuttle. But that attitude will hurt, and will prevent people from getting through.

I'm sending a copy of this post to the SAREX working group, with the recomendation that in the future any call sign which appears in the log on more than one pass over a particular location be denied a QSL, or at least sent a note informing them of their inconsideration.

But there's nothing wrong with attempting both packet and voice contacts
on a mission.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

599. Re: Can the Shuttle be heard in Britain?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 03:56:51 UTC
From: quasar@cts.com
Message-ID: <quasar.32.2F6E4E82@cts.com>
Source record: 25449

In article <795635703snz@alcarg.demon.co.uk> Al@alcarg.demon.co.uk (Al Cargill) writes:
>From: Al@alcarg.demon.co.uk (Al Cargill)
>Subject: Can the Shuttle be heard in Britain?
>Date: Sun, 19 Mar 1995 17:55:03 +0000

>Hi

> I have tried to listen in on the Shuttle transmissions using the
> various wavelengths posted in the group. However I have yet to hear
> anything! I am situated in Northern England and I was wondering am I
> just too far away from the "flight" path to pick anything up?

>Cheers
>Al

Hi Al. Yes, you were for the past shuttle (STS 67) too far north. I can not say that for past shuttle missions, because I am very new to satellites and such.

73 de Steve

600. Re: Thanks for AMSAT address

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 03:57:49 UTC
From: quasar@cts.com
Message-ID: <quasar.33.2F6E4EBD@cts.com>
Source record: 25450

In article <3khvu6$jsi@wage.cyberspace.com> kwl@cyberspace.com (Kenneth W Linder) writes:
>From: kwl@cyberspace.com (Kenneth W Linder)
>Subject: Thanks for AMSAT address
>Date: 19 Mar 1995 11:16:22 -0800

>Whew, yesterday I posted a request for AMSAT's ftp address and this
>morning I had no less than a dozen responses. So instead of e-mail, I
>wanted to thank you all here!

>Thanks again

>Ken L. KA9RVK/0

Your Welcome!!

73 de Steve

601. 2-mtr SSB Phone on SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 05:17:06 UTC
From: KKEYSEEA@EUROPA.UMUC.EDU
Message-ID: <3klngi$7gg@nova.umuc.edu>
Source record: 25451

I say this jokingly, but maybe it will start an interesting thread:

I, WB4U, hereby volunteer for a future SAREX mission,
intending to take aboard the STS a REAL radio capable of handling
the massive pileups that naturally occur as a result of the
popular SAREX missions. SAREX will transmit on 144.110 SSB and
work stations SPLIT FREQUENCY on SSB that are transmitting in the
range of 144.120 to 144.190. This is a style similar to that used
by the rarest of DX stations on the HF bands.

In this way, the most efficient use of spectrum and power
on board the shuttle will be accomplished. Unattended, the station
will revert to FM packet as seen previously.

OK, so I will not likely win a ticket to ride the shuttle.... but
why has the idea of SSB VHF/UHF not been utilized for SAREX?

best regards (i.e. 73) de WB4U
Ken Keyseear
Gaithersburg MD (FM-19)

602. Re:UOSAT images

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 09:44:00 UTC
From: blanch@gaig.upc.es
Message-ID: <3km750$lbh@diable.upc.es>
Source record: 25452

Some weeks ago I got some images from UOSAT from an ftp adress, but now
I dont remember that adress. Can someone help me ?

603. Re: Req: ur wisdom on S-band antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 10:35:55 UTC
From: deap1032@servus11.rus.uni-stuttgart.de
Message-ID: <3kma6b$1a4u@info4.rus.uni-stuttgart.de>
Source record: 25455

>What's being used out there for antennas? I'd guess
>parabolic reflectors would be quite feasible at 2.4 Gig--any good
>commercial stuff out there? Thanks in advance for your inputs

At this frequency a parabolic dish with a diam. of about 4'
is a good choice. Some folks prefer home brew wire mesh
dishes because they have less wind load, others use
TVRO dishes, depending on availability.

73, Moritz DL5UH

604. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 12:55:13 UTC
From: burke_br@adcae1.comm.mot.com
Message-ID: <1995Mar21.125513.23089@lmpsbbs.comm.mot.com>
Source record: 25453

In article darrylb@delphi.com, Darryl Bennett <darrylb@delphi.com> writes:
}Did anybody make a packet contact with STS-67?
}
}I tried several times on 145.550 here in central Kentucky, but couldn't
}hear anything. I copied a strong signal from STS-64, and can only assume
}that this flight is too southerly. Prediction programs never had it higher
}than about 12 degrees here.

If you were transmitting on 145.55, you were on the wrong frequency. All shuttle communications are split. Packet uplink is 144.700. Voice is 144.950Mhz(-600kHz).

73,
Bruce, WB4YUC, el YUCCO. . .

605. Re: HELP! with rs-10/11

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 12:58:38 UTC
From: EEHOWARD@eehoward.bocaraton.ibm.com
Message-ID: <D5sK1q.EK6@bocanews.bocaraton.ibm.com>
Source record: 25454

In <3klbhp$5tuj@ns2-1.CC.Lehigh.EDU>, c002@Lehigh.EDU writes:
>Hello out there in Hamspace land...
>
>I just realized when reading through some sat stuff, my Hamcomm program MIGHT
>be able to get a ROBOT answer from RS-10.
>after about 2 hours running around setting up my 2m ht and a scanner for
>downlink, and finding the right antennas hopeing the computer will not be to
>bad RFI........it finnaly gets over the horizen, and bang
>nothing.....maybe my scanner is not good enought, or my keps are old <only
>2weeks>
>
>#1. WHY can i not contact it? i send out rs-10 de n3sqe ar but i hear
>nothing in return....not even the beacon
>#2. what IS cw? i tx cw from hamcomm by holding the ptt down...is that right?
> or should a find a way to acctully put the PTT circuit from HC on my HT?

The downlink for RS/10 is in the 10m (29.3xxmhz) band, single sideband. If
your scanner is FM it will not receive it. Also it takes a beam of "about" more
than 10 elements aimed directly at the bird to get a good signal in.
CW is continous wave. A radio carrier with no modulation. I really don't
think your scanner will receive RS/10.
73 Ed

606. Re: Req: ur wisdom on S-band antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 15:03:54 UTC
From: n7ryw@teleport.com
Message-ID: <3kmpsb$hi8@desiree.teleport.com>
Source record: 25456

In article <3kj1hu$5d2@empire.texas.net>, bob@texas.net said...

>I'm getting ready to put up my first satellite station, and am likely
>to include Mode S. What's being used out there for antennas? I'd guess
>parabolic reflectors would be quite feasible at 2.4 Gig--any good
>commercial stuff out there? Thanks in advance for your inputs

By far the most popular is the 2'x3' wire reflector from R. Myers. It is useable on Mode S, but marginal. It suffers from polarity mismatch as well as a not too great a reflector. It does have the advantage of being inexpensive and very easy to mount.

Far better performance would be had from a 3' round dish with a circular polarity feed, but you would need to set up the mounting hardware yourself.

I use a 6' dish and feedhorn, but this is really overkill. The signals are definitely nice, though!
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

607. Re: Inconsiderate behavior and SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 15:12:55 UTC
From: n7ryw@teleport.com
Message-ID: <3kmqd7$hi8@desiree.teleport.com>
Source record: 25457

In article <3klg8s$61n@paperboy.ids.net>, Pchien@ids.net said...

>Actually I'd say that the four seconds it took for you to perform your
>extra packet contacts statistically cost two other people their
potential
>packet contacts.

Exactly. Each needless connect is one that can't be made by someone else.

>I'm sending a copy of this post to the SAREX working group, with the
>recomendation that in the future any call sign which appears in the log
>on more than one pass over a particular location be denied a QSL, or at
>least sent a note informing them of their inconsideration.

A good idea. The software could do a dup-check, and refuse the connect
with a message "You already connected. Please give others a chance!".
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

608. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 15:29:33 UTC
From: sdimse@umed.med.miami.edu
Message-ID: <3kmrct$kfd@miasun.med.miami.edu>
Source record: 25458

darrylb@delphi.com (Darryl Bennett) writes:
: Did anybody make a packet contact with STS-67?
:
: I tried several times on 145.550 here in central Kentucky, but couldn't
: hear anything. I copied a strong signal from STS-64, and can only assume
: that this flight is too southerly. Prediction programs never had it higher
: than about 12 degrees here.

I made one with a bit of trouble compare to other flights. I think the
biggest problem was that since it was an astronomy mission, the payload
bay was pointing at space rather than earth. On most passes The signal
was only strong enough for contact on a portion of the orbit. So it took
a little bit of luck and a lot of persistance to get this one. Oh yea,
the 24 degree latitude helped. Oh well, someone has to live up north to
keep the country balanced!

73 de Steve KO4HD
sdimse@umed.med.miami.edu

609. * SpaceNews 20-Mar95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 19:33:32 UTC
From: magliaco@pilot.njin.net
Message-ID: <3kn9mc$e2u@pilot.njin.net>
Source record: 25459
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0320
* SpaceNews 20-Mar-95 *

BID: $SPC0320

=========
SpaceNews
=========

MONDAY MARCH 20, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* NOAA-14 EXPERIENCES FAILURE *
==============================
The motor for the Microwave Sounding Unit on the NOAA-14 spacecraft has stopped working, investigation into the failure is in progress. Records show the unit is from a delivery made to Martin Marietta dating back to 1984. Future NOAA spacecraft will not have this same unit--it will be replaced with a different type. NOAA-14 has been in orbit since last December.

[Info via Pat Kilroy]

* MIR NEWS *
============
Astrounaut Dr. Norm Thagard and two cosmonauts were launched to Mir last Monday and docked with Mir on Thursday. Joe Dreifuss, WA2GSY reported contacting Dr. Thagard on Friday morning at 14:27 UTC on 2-meters. He was using R0MIR as his callsign. Joe reported the downlink signal from Mir was very strong and easily heard even on an HT with a rubber duck antenna.

* UNAMSAT-1 NEWS *
==================
The UNAMSAT-1 spacecraft has arrived in Moscow for a launch from Plesetsk on 28-Mar-95. The launch window begins at 05:00 UTC and ends at 10:00 UTC. UNAMSAT-1 will be carried along with TECHSAT and a Russian communiations satellite on a Start-1 rocket.

The following are the UNAMSAT-1 operating frequencies:

TX1 * default * 437.135 MHz
TX2 437.179 MHz

Telemetry transmissions will start 20 minutes after separation. If the software survives the launch, the beacon will transmit normal telemetry,

otherwise the mailbox will be in operation.

The Rx freqs are:
Channel A 145.922 MHz
Channel B 145.942 MHz
Channel C 145.962 MHz
Channel E/F 145.872 MHz

(Channel D is non-existant)

The receiver will be closed for use other than commanding the spacecraft, but controllers will let make it known when the satellite is available for use as soon as possible.

[Info via David Liberman, XE1TU of the UNAMSAT-1 Team]

* UPCOMING LAUNCHES *
==========
DATE TIME MISSION VEHICLE AGENCY
====== ====== ======= ======= ======
19 Mar 06:19 INTELSAT 705 Atlas 2 INTELSAT
28 Mar GURWIN 1 Start-1 Russia
EKA
ENB
Mar ORBCOMM 1 & 2 Pegasus OSC
MICROLAB
01 Apr 04:45 MSAT USA Atlas 2 Martin
05 Apr PROGRESS M-27 Soyuz Russia
11 Apr Classified Titan 4 USAF
Apr Express Proton Russia
Apr STEP-3 Pegasus XL USAF
Apr ERS-2 Ariane 4 Ariane
Apr 05:00 Plasma Physics Black Brant NASA
Apr Delta Clipper-X BMDO
Apr DMSP 5D-3-F15 Titan 2 DOD
Apr HETE/SAC-B Pegasus XL NASA
Apr CONSORT 7 Starfire EER System

[Info via Pat Kilroy]

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center

Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

610. Re: Sat. Packet Info Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-03-21 20:26:00 UTC
From: nw2l@aol.com
Message-ID: <3kncoo$455@newsbf02.news.aol.com>
Source record: 25460

Two additional information sources are the CQ videos, "Getting Started in Amateur Satellites" and "Getting Started in Packet Radio." They are available directly from CQ (for $19.95 + $4 shipping) at 1-800-853-9797.

73,
Rich Moseson, NW2L
CQ Online

CQ Communications, Inc. - Publishers of: CQ-The Radio Amateur's Journal, Popular Communications, Communications Quarterly, MicroComputer Journal, Electronic Servicing and Technology, CQ Guides, Pop' Comm Guides, CQ Books and Videos. Toll-free order line: 1-800-853-9797.

611. STS-67 QSL Bureau

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 02:57:59 UTC
From: quasar@cts.com
Message-ID: <quasar.36.2F6F9237@cts.com>
Source record: 25311

In article <3kkq8b$eh1@hearye.mlb.semi.harris.com> paidukas@huey.mis.semi.harris.com (Paul Aidukas) writes:
>From: paidukas@huey.mis.semi.harris.com (Paul Aidukas)
>Subject: STS-67 QSL Bureau
>Date: 20 Mar 1995 20:57:46 GMT

>Can somebody please send to me via E-mail the name, address, and phone number
>of the bureau handling the QSL card exchange for STS-67 SAREX contact?

>----
>Paul KE4QJA (paidukas@huey.mis.semi.harris.com)
>Packet: KE4QJA@KD4WLE.#MLBFL.FL.US.NA Internet: KE4QJA@theborg.mlb.fl.us

Send your QSLs to :
ARRL EAD
STS 67 QSL
225 Main Street
Newington, CT 06111

If you would like a return QSL, include the following information on your QSL :
STS 67 DATE TIME in UTC FREQUENCY & MODE (FM or Packet)

In addition - you must include a SASE using a large business size envelope.
The Edison Radio Amateurs Association in Detroit/Edison Michigan has
generously agreed to distribute QSLs for the STS 67 mission.

612. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 03:17:20 UTC
From: quasar@cts.com
Message-ID: <quasar.37.2F6F96BF@cts.com>
Source record: 25312

In article <1995Mar21.125513.23089@lmpsbbs.comm.mot.com> burke_br@adcae1.comm.mot.com (Bruce Burke Redi) writes:
>From: burke_br@adcae1.comm.mot.com (Bruce Burke Redi)
>Subject: Re: Anybody make STS-67 packet contact
>Date: Tue, 21 Mar 1995 12:55:13 GMT

>In article darrylb@delphi.com, Darryl Bennett <darrylb@delphi.com> writes:
>}Did anybody make a packet contact with STS-67?
>}
>}I tried several times on 145.550 here in central Kentucky, but couldn't
>}hear anything. I copied a strong signal from STS-64, and can only assume
>}that this flight is too southerly. Prediction programs never had it higher
>}than about 12 degrees here.

>If you were transmitting on 145.55, you were on the wrong frequency. All
>shuttle communications are split. Packet uplink is 144.700. Voice is
>144.950Mhz(-600kHz).

>73,
>Bruce, WB4YUC, el YUCCO. . .

Bruce, I am sorry to point out your mistaken concerning the uplink and downlink frequencies of STS 67. The PACKET uplink was 144.490 and the phone uplinks were 144.91, 144.93, 144.95, 144.97, and 144.99 . No + or - 600 Khz. The downlink was 145.550 for both phone and packet.

73 de Steve

613. Re: Inconsiderate behavior and SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 05:07:41 UTC
From: mbordel@phoenix.net
Message-ID: <mbordel-2103952309040001@dial40.phoenix.net>
Source record: 25313

> I'm sending a copy of this post to the SAREX working group, with the
> recomendation that in the future any call sign which appears in the log
> on more than one pass over a particular location be denied a QSL, or at
> least sent a note informing them of their inconsideration.

I'm not going to deny anyone the chance to make a contact. Some people try many times to get a "worked" contact. SAREX is an experiment. Let's remember that. And the configuration will not always remain the same. I'm not going to deny someone a QSL for multiple contacts. You should only get one QSL card anyway.

The SAREX team does find that there is a lot of packet activity out there and we encourage it. But I feel that we should have better management of the packet frequencies. Packet could be run alot more efficiently and not spread all over the band. Many of the SAREX contacts made during the flight are interrupted by packet bursts. This helps no one.

How about different frequency areas for APRS, space, local, networked, etc. It needs to be enforced.

--
Matt Bordelon KC5BTL
SAREX

-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: 2.6.2

mQCPAy86OVEAAAEEALhqyXqqkrVcTH2/DSEj0OfxsMTzYeVwWlv2fJJRBXhUWo7c
2fenbLpKn7UToL5HpD+KVxDg5PVmH0/BrD6PvNifnwgrfXIhtFTR+v+bR9PEj6lb
ByC9dyr5ktiVCDTk1t3C5mN15vD89U+6sUvNKapSASCNYJ7rUOPCe/MuQrNtABEB
AAG0KU1hdHRoZXcgRy4gQm9yZGVsb24gPG1ib3JkZWxAcGhvZW5peC5uZXQ+
=11am
-----END PGP PUBLIC KEY BLOCK-----

614. Re: Inconsiderate behavior and SAREX - was Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 05:09:43 UTC
From: mbordel@phoenix.net
Message-ID: <mbordel-2103952311080001@dial40.phoenix.net>
Source record: 25314

Phil,

There are no QSL's for new conferences.

--
Matt Bordelon KC5BTL
SAREX Principal Investigator

-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: 2.6.2

mQCPAy86OVEAAAEEALhqyXqqkrVcTH2/DSEj0OfxsMTzYeVwWlv2fJJRBXhUWo7c
2fenbLpKn7UToL5HpD+KVxDg5PVmH0/BrD6PvNifnwgrfXIhtFTR+v+bR9PEj6lb
ByC9dyr5ktiVCDTk1t3C5mN15vD89U+6sUvNKapSASCNYJ7rUOPCe/MuQrNtABEB
AAG0KU1hdHRoZXcgRy4gQm9yZGVsb24gPG1ib3JkZWxAcGhvZW5peC5uZXQ+
=11am
-----END PGP PUBLIC KEY BLOCK-----

615. Re: Inconsiderate behavior and SAREX - was Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 07:30:36 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3kojms$ot8@paperboy.ids.net>
Source record: 25315

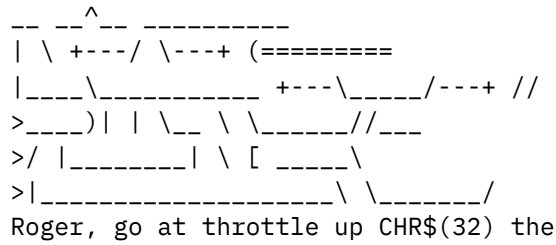
In article <mbordel-2103952311080001@dial40.phoenix.net> Matt Bordelon, mbordel@phoenix.net writes:
>Phil,
>
>There are no QSL's for new[s] conferences.

DARN! Good thing I made a voice contact via 2 meters with Ron WA4SIR in addition to talking to him during the inflight crew conference. (And actually a couple of days before I talked to him during the inflight crew conference).

Actually a hearty hurrah to Matt and the entire SAREX team, especially John and Karen Nickel, Pat Kilroy, the rest of the ground support team, and of course the STS-67 astronauts - even what's-his-face who doesn't have a license.

The SAREX team completed its longest, and most difficult (in many ways) mission to date with a perfect success record. All 26 school contacts were completed, plus many packet contacts and random voice QSOs, even though the primary payload's requirements result in so many attitude pointing requirements that predicting which window to use the antenna in was a major chore.

In any case I wouldn't have bet money ahead of time that all 26 schools would have been completed successfully - and was quite pleased to see it happen.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

616. Re: Need ftp site for Kep data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 07:56:09 UTC
From: kebsch@pdb.sni.de
Message-ID: <3kol6p$eek@nanette.pdb.sni.de>
Source record: 25316

In <3jva5c$221@fohnix.metronet.com> copeland@fohnix.metronet.com (Charles Copeland) writes:

>I am looking for a site that maintains current Kepler data for
>my sattelite tracking program.

Hi Charles,

please try ftp.amsat.org:/amsat.keps.current for the latest kep's.

>| There are two types of people in this world, those who separate |
>| people into groups,and those who don't. KC5LWF copeland@metronet.com|

My separation: Some are QSLing, some are not QSLing, hi :-)

Have fun ..

73 de DK3VN
Waldemar
--
Waldemar Kebsch, c/o Siemens | DK3VN (QRV on 40/20/15/10 since 9/94)
Nixdorf Informationssysteme AG | The last courtesy of a QSO is a QSL!
33106 Paderborn, Federal Republic | Big antennas, high in the sky, are
of Germany, kebsch.pad@sni.de | better than small ones, low! [38c]

617. Re: How do I handle Doppler shift?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 09:01:15 UTC
From: kebsch@pdb.sni.de
Message-ID: <3kop0r$i0o@nanette.pdb.sni.de>
Source record: 25317

In <3jpso9$s28@crchh327.bnr.ca> jwittich@b4pph107.bnr.ca (Jeffrey Wittich) writes:

>Hi all. I am about ready to try a QSO through RS-10/11. When
>working CW, do you adjust the XIT to account for shift, keeping
>the receive constant, or do you change the RIT and keep your
>transmit frequency constant? Or am I completely wrong and should
>do it some other way?

>Thanks, The birds are new to me. I wanna do things as properly as
>possible.

>73, Jeff.

Hi Jeff and the community,

(sorry for my English, but I can't resit, hi)

SAT-Rule #1: Correct the Doppler shift on the higher frequency.

RS-10/11, RS-15: Tune the 145MHz VFO to correct the Doppler shift.

When you have got some experience via RS-10/11 then you should try RS-15
and give me a call, hi. Few days ago I have worked some guys from the
States with the locators "EN.." and "FN..". My locator is "JO..",
figure it out via RS-15 (I am on 29,370..29,375MHz, USB, sorry no CW), hi.

My Equipment: Groundplanes for 145MHz and 29MHz, 150W output on 145MHz.

Have fun on RS-10/11 ...

73 de DK3VN
Waldemar
--
Waldemar Kebsch, c/o Siemens | DK3VN (QRV on 40/20/15/10 since 9/94)
Nixdorf Informationssysteme AG | The last courtesy of a QSO is a QSL!
33106 Paderborn, Federal Republic | Big antennas, high in the sky, are
of Germany, kebsch.pad@sni.de | better than small ones, low! [38c]

618. Re: Need ftp site for Kep data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 14:08:32 UTC
From: jimkd0av@aol.com
Message-ID: <3kpb10$hfl@newsbf02.news.aol.com>
Source record: 25318

U may also want to try

archive.afit.af.mil

pub/space and look for .tle files. Just about everything is their
and updated daily.

Jim

619. Re: HELP! with rs-10/11

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 22:22:38 UTC
From: kf8bex@oeonline.com
Message-ID: <D5v4ts.4v7@oeonline.com>
Source record: 25319

>#1. WHY can i not contact it? i send out rs-10 de n3sqe ar but i hear
>nothing in return....not even the beacon
>#2. what IS cw? i tx cw from hamcomm by holding the ptt down...is that right?
> or should a find a way to acctully put the PTT circuit from HC on my HT?
>
> please help.....
>
>DAvid
>

#1 Listen for the beacon on 29.357 MHz before attempting the Robot on 29.403. The Robot is somewhat intermittent. There have been times when I could not access it either. Also, you need about 50 Watts ERP From your station to make a solid contact with RS-10. And, even so, if the sat is not high enough (about 25 or more degrees), it may not be able to hear you.

#2 CW utilizes the On/Off keying of a transmitter. By holding down the PTT, you are sending the Robot a continuous carrier. This may result in a continuous carrier back from the Robot. Anyhow, you would have to be able to key your HT pretty fast to respond to the speed range of the Robot.

My advice is: a.) try an amplifier or better yet, b.) try a 2-Meter CW transmitter.

Good Luck and 73

Mike, KF8BE

620. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-22 22:27:37 UTC
From: little@iamu.chi.dec.com
Message-ID: <3kq88p$m9@jac.zko.dec.com>
Source record: 25320

In article <Ze0b2Va.darrylb@delphi.com>, Darryl Bennett <darrylb@delphi.com> writes:
|>Todd Little <little@iamu.chi.dec.com> writes:
|>
|>>Here in Chicago it never makes it above 5 degrees, sigh. Even at only
|>>4 degrees last night, I made a packet contact. ;-) Of the passes visable
|>>last night, only one seemed to have any activity. Not sure what was going
|>>on with the other 2 passes.
|>
|>
|>What's your setup? Particularly, can you describe your antenna system?
|>

Hi Darryl,

Sure, I'm using a Yaesu FT-726R, a Mirage B1016 amp, 50' of heliax,
GAsFET preamp, and the KLM 14 element crossed yagi. It is the same
system I use for the OSCARs such as AO-13, AO-13, FO-20, and several of
the PACSATs.

Oh yeah, the antennas are mounted on my garage about 15-20' above the
ground with AZ-EL rotors.

--
73, Member of AMSAT, ARRL, Palatine RACES, and the Arlington
Todd Communications League. Weather spotter and sponsor of the Hunting
N9MWB Ridge Elementary School Radio Club. See you on 160-1296 and OSCAR.

621. Re: NAITVE OS/2 Sat tracker?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-23 05:55:21 UTC
From: <>
Message-ID: <3kr2g9$r8v@krel.iea.com>
Source record: 25321

In <3kig8f$alt@mercury.wright.edu>, gsmith@alpha.wright.edu (Gregory Smith) writes:
>Hi all:
> I was wondering if there was a naitive OS/2 satelite tracking
>program ?
> Greg, N8PPZ
I do not know of any native OS/2 sat tracking programs. I know a negative reply doesn't help, but I didn't want your post to go unanswered! I use a dos based sat tracking program, run it either full screen or in a dos window while I also have a dos packet program running in a second window.

Mike

622. Re: NAITVE OS/2 Sat tracker?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-23 19:10:29 UTC
From: cdlevin@shadow.net
Message-ID: <3ksh35$1o3@anshar.shadow.net>
Source record: 25322

In <3kig8f$alt@mercury.wright.edu>, gsmith@alpha.wright.edu (Gregory Smith) writes:
>Hi all:
> I was wondering if there was a naitive OS/2 satelite tracking
>program ?
> Greg, N8PPZ
Hi, I was wondering the same thing. There is a program out called traksat for windows, it might just be the one for os/2, but I don't know, and it's not shareware. I've been running stsplus, but it won't run in a window, just in a fullscreen. I have the address and phone number of the guy who wrote Traksat for Windows, but don't have it handy right now. If you want it, e-mail me, and I'll dig it up. He's the same guy who wrote the shareware Traksat, Paul Trauffler, and his address and phone are both in the order docs for that program. You might want to give him a call, but I cannot guarantee that Traksat for Windows will run under OS/2 warp. 73 de Curtis, kd4zkw.

623. Re: Inconsiderate behavior and SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-23 20:23:17 UTC
From: winter@guest.apple.com
Message-ID: <1995Mar23.202317.5735@guest.apple.com>
Source record: 25323

In article <3kmqd7$hi8@desiree.teleport.com>,
William Roth <n7ryw@teleport.com> wrote:
>In article <3klg8s$61n@paperboy.ids.net>, Pchien@ids.net said...
>>I'm sending a copy of this post to the SAREX working group, with the
>>recomendation that in the future any call sign which appears in the log
>>on more than one pass over a particular location be denied a QSL, or at
>>least sent a note informing them of their inconsideration.
>
>A good idea. The software could do a dup-check, and refuse the connect
>with a message "You already connected. Please give others a chance!".

Hey, let's calm down here, everyone. This is a problem that can be
dealt with a lot more effectively through education than through
punishment.

First of all, it's entirely possible for someone to not know that
the SAREX packet robot heard them, and thus make further attempts
during that pass or a later one. It's happened to me: a few missions
ago, I was suprised to see my callsign on the HEARD list a day earlier
than I thought I had gotten through.

Second, think about how many uplink attempts the robot would wipe
out if it spent much of its time sending dupe messages.

Third, the SAREX Working Group and the clubs who volunteer their
time to answer the thousands of SAREX QSLs have better things to
do than write letters to people who have duplicate contacts--
especially the single dupe that you two consider so immoral.

Here are my recommendations:

* To the SAREX WG and everyone who's worked the shuttle: Spread
the word far and wide that simply being on the "HEARD" list will
get you a two-way QSL for the shuttle. Since this is a reversal
of an earlier policy, I'm sure that many people still don't know it.

* To the SAREX WG: Consider no longer publishing the "WORKED"
list. It creates a two-level award system even though people really
only have to be on the heard list to get a two-way QSL. I realize
that this might be a controversial suggestion (hey, I'd love to
make that worked list just once myself!), but since the humans
in the WG have already decided not to slavishly follow the SAREX
software's distinction between worked and heard stations in sending
out QSLs, there's no reason they can't just ignore the difference
when they create the contact list.

73,
Patty

p.s. If anyone wants some real dupe-crazy lids to go after, try
helping with the QSLing for a major DXpedition sometime. Like
the guy who made nearly 30 QSOs with a South Pacific DXpedition
a few years ago....We didn't write him a letter--or toss out all
his QSOs--but we were sure tempted.

--
============================== Patty Winter ==============================
Apple contractor Internet: winter@guest.apple.com
Sunnyvale, California AMPRNet: 44.4.4.44
"Here I've been talking with the most intelligent people

624. Re: Inconsiderate behavior and SAREX - was Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-24 04:56:06 UTC
From: swt@aloha.net
Message-ID: <3ktj70$jj1@nuhou.aloha.net>
Source record: 25324

Philip Chien <Pchien@ids.net> wrote:
>In article <mbordel-2103952311080001@dial40.phoenix.net> Matt Bordelon,
>mbordel@phoenix.net writes:
>>Phil,
>>
>>There are no QSL's for new[s] conferences.
>
>DARN! Good thing I made a voice contact via 2 meters with Ron WA4SIR in
>addition to talking to him during the inflight crew conference. (And
>actually a couple of days before I talked to him during the inflight crew
>conference).
>
>Actually a hearty hurrah to Matt and the entire SAREX team, especially
>John and Karen Nickel, Pat Kilroy, the rest of the ground support team,
>and of course the STS-67 astronauts - even what's-his-face who doesn't
>have a license.

*****Geeze Philip, at least you could have used a REAL name in this Statement.
*****I would have thought a "Space Writer and consultant" could act a little more
*****mature ??

*****Be careful who you write about sir. Some of us who work "Behind the scenes" for SAREX
*****do NOT appriciate your comments. If you have complaint , send it to a person instead
of
*****posting a complaint on the news group. You detract from the Positive efforts that all
of us
*****who work as volunteers for SAREX try to create. What a shame you couldn't make a
*****more positive effort to work with the SAREX program , instead of taking such a stand
to criticize it.

>In any case I wouldn't have bet money ahead of time that all 26 schools
>would have been completed successfully - and was quite pleased to see it
>happen.

****Perhpas you should not gamble ???? Once again , your comment was NOT appriciated !
****So if you have a problem with me now, send ME a message, but first get your facts right
and find out
****who I am before you l refer to me as a "Whats his face".....

Steve W. Teegarden
WH6IC
swt@aloha.net

>Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET
> __ __^__ __________

```
> | \ +---/ \---+ (=========
> |____\___________ +---\_____/---+ //
> >____)| | \__ \ \______//___
> >/ |________| \ [ _____\
> >|_____________________\ \_______/
> Roger, go at throttle up CHR$(32) the final frontier
```

625. Re: HELP! with rs-10/11

Newsgroup: rec.radio.amateur.space
Date: 1995-03-24 12:43:48 UTC
From: gerheim@PROBLEM_WITH_INEWS_GATEWAY_FILE
Message-ID: <3kueq4$p9f@hatch.sonalysts.com>
Source record: 25325

c002@Lehigh.EDU wrote:
> Hello out there in Hamspace land...

> I just realized when reading through some sat stuff, my Hamcomm program MIGHT
> be able to get a ROBOT answer from RS-10.
> after about 2 hours running around setting up my 2m ht and a scanner for
> downlink, and finding the right antennas hopeing the computer will not be to
> bad RFI.....it finnaly gets over the horizen, and bang
> nothing.....maybe my scanner is not good enought, or my keps are old <only
> 2weeks>

> #1. WHY can i not contact it? i send out rs-10 de n3sqe ar but i hear
> nothing in return....not even the beacon
> #2. what IS cw? i tx cw from hamcomm by holding the ptt down...is that right?
> or should a find a way to acctully put the PTT circuit from HC on my HT?

The "scanner" is listening at the _beacon's_ downlink frequency, right?,
not the transponder's downlink> The beacon transmits
on 29.454 MHz or somewhere around there.

Anyway, the procedure is to first listen for the beacon calling for
robot contacts in CW. Then transmit a series of dits on the uplink while
you tune the frequency through the robot uplink frequency till you hear
your signal in the beacon. This is quite a thrill, as it is appreciably
stronger than the transponder's response. When you're in the window,
transmit RS12 DE N3SQE as clearly as you can. It will respond and give
you a qso number. Make sure you copy the number. You might even want to
tape record the QSO so you can get the number right.

You may not be able to hit the uplink window with an HT because the
frequency changes in 5 kHz steps. I used a
partially disabled (no SSB) all-mode XCVR for the 2 meter uplink just so I
could fine-tune the frequency.

My own experience with the robot was pretty comical. I'd follow all
the instructions and get no response from the robot except that it would
retransmit my transmissions. Over and over. Then some other stations
would step up and get a QSO number on the first try. ...And I'd try it
again. No go. This was a year or 2 ago. Just a few months ago, I
tried the procedure and it worked. I have the QSL card in my office
at work.

Good Luck! - AL

--
****
Al Gerheim, N4QN |Opinions expressed here| Sonalysts, Inc.

gerheim@sonalysts.com |are my own. | 215 Parkway North
Work: (203)442-4355 | | Waterford CT 06385
****

626. PK232 & WISP

Newsgroup: rec.radio.amateur.space
Date: 1995-03-24 20:58:24 UTC
From: billh@gn2.getnet.com
Message-ID: <3kvbpg$19t@infoman.net99.net>
Source record: 25326

I'm having an irritating little problem with WISP. About 3 of5 times it finishes a pass and exits it kicks the PK232 TNC out of KISS mode. If I let it go on into the next pass it goes in with MON 0, KISS off, and HB 9600 which obviously won't work. I've gotten in the habit of running a comm program every time I start up just to make sure TNC is set right.

Anyone having similar problems or got an idea how I can fix it.
73

Bill Hosking, W7JSW
Scottsdale, Arizona

627. Two-Line Orbital Element Sets (TLE573)

Newsgroup: rec.radio.amateur.space
Date: 1995-03-24 23:29:03 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.796087743@eel>
Source record: 25327

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #573 -
Alouette 1
1 00424U 62049A 95080.86683473 .00000128 00000-0 13994-3 0 887
2 00424 80.4635 11.0330 0024085 117.1367 243.2231 13.67836363620361
ATS 1
1 02608U 66110A 95074.54107502 -.00000095 00000-0 10000-3 0 9246
2 02608 14.6244 357.6437 0009460 50.8652 309.2511 1.00313627 20252
ATS 3
1 03029U 67111A 95080.17463896 -.00000121 00000-0 10000-3 0 3427
2 03029 14.8005 4.5979 0009348 275.0295 216.1445 1.00273014100217
Cosmos 398
1 04966U 71016A 95082.82392473 .00218395 84881-5 26880-3 0 7843
2 04966 51.4153 252.1885 0711872 159.4127 203.7083 14.64305570812551
Starlette
1 07646U 75010A 95080.57080352 -.00000118 00000-0 19233-4 0 8721
2 07646 49.8286 138.7556 0206197 172.3801 188.0319 13.82188645 16221
LAGEOS
1 08820U 76039A 95081.36838177 .00000023 00000-0 10000-3 0 922
2 08820 109.8296 230.8577 0044025 225.4585 134.2332 6.38664340184914
ETS-2
1 09852U 77014A 95072.35273885 -.00000272 00000-0 10000-3 0 185
2 09852 12.5967 38.2965 0001755 44.7197 315.3519 1.00000526 13026
GOES 2
1 10061U 77048A 95082.44455854 .00000079 00000-0 10000-3 0 5061
2 10061 11.6699 42.3839 0011821 103.4039 29.7944 1.00157494 9919
IUE
1 10637U 78012A 95082.12384875 -.00000232 00000-0 10000-3 0 1171
2 10637 35.0578 90.3800 1321981 44.1371 38.3865 1.00250700 15400
GPS BI-01
1 10684U 78020A 95078.89724386 -.00000016 00000-0 10000-3 0 3448
2 10684 64.7928 37.3385 0061068 163.1186 197.0644 1.98070011110395
```

```
GPS BI-02
1 10893U 78047A 95078.51337253 .00000033 00000-0 10000-3 0 1537
2 10893 63.3651 275.6157 0220896 14.3926 346.2662 2.01627711123622
GOES 3
1 10953U 78062A 95082.62152532 .00000050 00000-0 10000-3 0 4681
2 10953 10.6417 45.1378 0002103 112.7457 71.2363 1.00283906 14523
SeaSat 1
1 10967U 78064A 95081.17114269 -.00000036 00000-0 32546-4 0 3833
2 10967 107.9953 317.4568 0001927 251.9690 108.1240 14.38020528876329
GPS BI-03
1 11054U 78093A 95077.65758174 .00000037 00000-0 10000-3 0 2727
2 11054 63.0661 273.6410 0044543 177.3548 182.6850 1.93505311119822
Nimbus 7
1 11080U 78098A 95081.69671186 -.00000054 00000-0 -10564-4 0 4872
2 11080 99.0147 319.3508 0009631 101.8700 258.3533 13.83714457828591
GPS BI-04
1 11141U 78112A 95077.08630319 -.00000016 00000-0 10000-3 0 9650
2 11141 64.7914 39.0714 0048641 26.5178 333.7044 1.92894915 9064
GPS BI-05
1 11690U 80011A 95082.13109874 -.00000014 00000-0 10000-3 0 8948
2 11690 65.1406 38.8929 0148236 196.0760 163.4506 2.00562259125131
GPS BI-06
1 11783U 80032A 95077.74627712 .00000036 00000-0 10000-3 0 632
2 11783 62.5037 269.0014 0216969 29.4923 331.7337 2.03456757109544
GOES 5
1 12472U 81049A 95077.86692990 -.00000272 00000-0 10000-3 0 8462
2 12472 7.3549 55.0354 0005258 14.8468 345.2714 1.00307916 8527
Cosmos 1383
1 13301U 82066A 95079.12375815 -.00000016 00000-0 -36319-4 0 3902
2 13301 82.9316 107.4632 0029230 55.5526 304.8370 13.68064620635157
LandSat 4
1 13367U 82072A 95083.16027772 .00000294 00000-0 75216-4 0 6409
2 13367 98.1338 141.0297 0007974 101.7622 258.4470 14.57148101674834
IRAS
1 13777U 83004A 95082.51077666 -.00000120 00000-0 -52425-4 0 9078
2 13777 98.9691 272.6102 0012120 262.7203 97.2589 13.99218226290203
Cosmos 1447
1 13916U 83021A 95080.21579543 .00000035 00000-0 20743-4 0 4872
2 13916 82.9464 166.8083 0037951 339.8175 20.1483 13.74323244601387
TDRS 1
1 13969U 83026B 95077.81016013 -.00000188 00000-0 10000-3 0 4015
2 13969 8.1841 48.5366 0001119 136.4238 6.7095 1.00262067 16809
GOES 6
1 14050U 83041A 95081.20334859 .00000033 00000-0 10000-3 0 3694
2 14050 6.1772 58.1074 0005604 346.9499 77.9535 1.00302683101651
OSCAR 10
1 14129U 83058B 95075.48118362 -.00000307 00000-0 10000-3 0 3416
2 14129 26.5260 277.9703 6017649 260.5240 30.8666 2.05880038 60422
LandSat 5
1 14780U 84021A 95081.20513197 .00000053 00000-0 21644-4 0 2134
```

```
2 14780 98.1255 139.8282 0005811 109.6846 250.4976 14.57157288587960
UoSat 2
1 14781U 84021B 95079.99743355 .00000156 00000-0 34193-4 0 7838
2 14781 97.7816 86.6804 0012908 102.0579 258.2092 14.69319611590954
GPS BI-09
1 15039U 84059A 95077.15808378 -.00000025 00000-0 10000-3 0 2795
2 15039 64.4591 33.4747 0082623 16.0063 344.2070 1.92302260 78644
Cosmos 1574
1 15055U 84062A 95079.87027667 .00000038 00000-0 23850-4 0 6887
2 15055 82.9537 220.9816 0027342 163.1961 197.0102 13.73619038538619
GPS BI-10
1 15271U 84097A 95080.32883610 .00000038 00000-0 10000-3 0 9295
2 15271 62.1936 269.1699 0154489 353.2484 6.5498 2.00594451 76169
Cosmos 1602
1 15331U 84105A 95082.76704812 .00000287 00000-0 31040-4 0 3768
2 15331 82.5350 175.9028 0020780 5.1146 355.0278 14.84587218565996
NOAA 9
1 15427U 84123A 95082.53138630 .00000096 00000-0 74696-4 0 1847
2 15427 99.0056 140.7019 0015353 147.4759 212.7364 14.13693264529815
GPS BI-11
1 16129U 85093A 95078.03614433 -.00000018 00000-0 10000-3 0 6415
2 16129 65.1301 36.4360 0152984 87.5878 274.1379 1.89368074 13284
Mir
1 16609U 86017A 95082.87611463 .00004307 00000-0 62764-4 0 9773
2 16609 51.6474 225.2103 0003868 285.9770 74.0801 15.58075020519669
SPOT 1
1 16613U 86019A 95081.79860049 .00000090 00000-0 62356-4 0 7934
2 16613 98.6563 155.0448 0001092 85.3348 274.7947 14.20049658156108
Cosmos 1766
1 16881U 86055A 95082.86969089 .00000204 00000-0 21774-4 0 2913
2 16881 82.5163 233.6806 0020610 29.1296 331.1067 14.83596076466924
EGP
1 16908U 86061A 95080.56168701 -.00000083 00000-0 10000-3 0 9841
2 16908 50.0120 311.6412 0011297 299.5455 60.4254 12.44411756 59922
NOAA 10
1 16969U 86073A 95082.77249020 .00000059 00000-0 43269-4 0 937
2 16969 98.5104 88.2381 0012265 231.9819 128.0247 14.24927643442319
MOS-1
1 17527U 87018A 95082.72436284 .00000059 00000-0 75953-4 0 1883
2 17527 98.9975 150.0613 0000282 128.7230 231.3953 13.94922444411916
GOES 7
1 17561U 87022A 95082.62525984 .00000070 00000-0 10000-3 0 3034
2 17561 2.1519 73.2365 0003972 332.6558 222.9731 1.00270010 12773
Kvant-1
1 17845U 87030A 95082.87610041 .00016748 00000-0 22454-3 0 1914
2 17845 51.6475 225.2115 0004100 280.3977 79.5895 15.58087582454021
DMSP B5D2-3
1 18123U 87053A 95082.73966014 .00000002 00000-0 23235-4 0 8831
2 18123 98.7822 275.2239 0015132 100.5561 259.7326 14.15394977400630
RS-10/11
```

```
1 18129U 87054A 95082.16552540 .00000050 00000-0 38312-4 0 376
2 18129 82.9240 122.6600 0011320 338.6622 21.4055 13.72350011388179
Meteor 2-16
1 18312U 87068A 95081.19652252 .00000078 00000-0 57034-4 0 3823
2 18312 82.5599 351.3717 0014037 54.4848 305.7622 13.84052523383518
Meteor 2-17
1 18820U 88005A 95082.87423290 .00000004 00000-0 -97470-5 0 5723
2 18820 82.5409 46.1089 0017898 111.3386 248.9687 13.84733415361062
DMSP B5D2-4
1 18822U 88006A 95082.11931689 .00000011 00000-0 23314-4 0 8971
2 18822 98.4124 290.1180 0005342 244.3829 115.6799 14.23146273370278
Glonass 34
1 19163U 88043A 95083.09856659 .00000056 00000-0 10000-3 0 9766
2 19163 65.0965 101.0312 0007418 146.8740 213.2171 2.13102642 52624
Glonass 36
1 19165U 88043C 95082.21615031 .00000050 00000-0 10000-3 0 3766
2 19165 65.0855 101.0304 0001584 256.1009 103.8864 2.13102143 53222
METEOSAT 3
1 19215U 88051A 95083.12242328 -.00000295 00000-0 10000-3 0 1015
2 19215 2.3283 70.4073 0000828 51.5783 33.9838 1.00283386 12723
AO-13
1 19216U 88051B 95077.42153742 -.00000446 00000-0 10000-4 0 235
2 19216 57.5894 198.0161 7274253 4.4299 359.3561 2.09725869 20263
OKEAN 1
1 19274U 88056A 95082.75081633 .00000278 00000-0 31687-4 0 9915
2 19274 82.5155 334.0989 0019586 164.6973 195.4831 14.82313795362490
Meteor 3-2
1 19336U 88064A 95081.14432071 .00000051 00000-0 10000-3 0 3795
2 19336 82.5446 127.0234 0015574 291.3752 68.5709 13.16972216319841
Glonass 39
1 19503U 88085C 95078.95907460 -.00000038 00000-0 10000-3 0 2692
2 19503 65.7109 340.0544 0007390 174.1781 185.8842 2.13101940 50648
NOAA 11
1 19531U 88089A 95082.76789242 -.00000026 00000-0 11411-4 0 9981
2 19531 99.1915 83.8313 0012797 68.2316 292.0210 14.13042613334699
TDRS 2
1 19548U 88091B 95082.56700279 .00000076 00000-0 10000-3 0 1071
2 19548 1.5672 75.2573 0003272 324.5790 173.6608 1.00280003 11000
Glonass 40
1 19749U 89001A 95080.40556355 .00000046 00000-0 10000-3 0 4835
2 19749 65.0493 100.6688 0005375 248.4490 111.5414 2.13101264 48187
Glonass 41
1 19750U 89001B 95078.11493406 .00000059 00000-0 10000-3 0 3955
2 19750 65.0652 100.8222 0007113 210.5924 149.3862 2.13103351 48158
GPS BII-01
1 19802U 89013A 95077.94371613 .00000041 00000-0 10000-3 0 342
2 19802 55.1765 128.7997 0027410 183.4634 176.6149 2.00572668 44566
Akebono
1 19822U 89016A 95083.15991769 .00013044 00000-0 76399-3 0 4587
2 19822 75.0839 23.7635 3784099 84.2350 316.7873 7.83952078131148
```

```
Meteor 2-18
1 19851U 89018A 95081.55470057 .00000054 00000-0 34999-4 0 3807
2 19851 82.5179 281.9783 0014377 160.2995 199.8723 13.84386575306200
MOP-1
1 19876U 89020B 95072.91815411 -.00000077 00000-0 10000-3 0 1028
2 19876 1.0239 70.9119 0000587 218.8709 203.9804 1.00270146 2065
TDRS 3
1 19883U 89021B 95077.42592593 -.00000275 00000-0 10000-3 0 558
2 19883 0.0675 93.0322 0003003 270.8978 283.9876 1.00274594194532
GPS BII-02
1 20061U 89044A 95077.78640130 -.00000020 00000-0 10000-3 0 449
2 20061 54.5172 305.1883 0139263 213.1289 146.0443 2.00564273 42303
Nadezhda 1
1 20103U 89050A 95082.81920218 -.00000009 00000-0 -24995-4 0 3339
2 20103 82.9558 81.5516 0036098 230.0344 129.7640 13.73851096286708
GPS BII-03
1 20185U 89064A 95082.11611034 .00000007 00000-0 10000-3 0 727
2 20185 55.0325 129.2607 0263139 133.0423 230.1481 2.00549511 40960
GMS 4
1 20217U 89070A 95082.73236884 -.00000306 00000-0 10000-3 0 1694
2 20217 0.8550 75.8009 0000533 94.0518 54.5543 1.00279643 20896
INTERCOSMOS 24
1 20261U 89080A 95080.39161653 .00000040 00000-0 84197-5 0 3950
2 20261 82.5925 200.5447 1242937 353.5311 5.0910 12.47230710249338
GPS BII-04
1 20302U 89085A 95080.14963323 .00000025 00000-0 10000-3 0 442
2 20302 53.4223 245.1810 0008396 185.3895 174.5603 2.00554320 39722
Meteor 3-3
1 20305U 89086A 95080.58794697 .00000044 00000-0 10000-3 0 2757
2 20305 82.5403 78.1884 0006875 349.2992 10.7949 13.04407816259060
COBE
1 20322U 89089A 95081.53064724 .00000323 00000-0 23413-3 0 1050
2 20322 98.9656 98.8474 0008487 213.1034 146.9600 14.03451519273433
Kvant-2
1 20335U 89093A 95082.87610041 .00016748 00000-0 22454-3 0 2127
2 20335 51.6475 225.2115 0004100 280.3977 79.5895 15.58087582302784
GPS BII-05
1 20361U 89097A 95080.66307331 .00000009 00000-0 10000-3 0 9034
2 20361 55.7073 71.2598 0076445 119.9773 240.7989 2.00561594 29211
SPOT 2
1 20436U 90005A 95081.78209797 -.00000044 00000-0 00000+0 0 9124
2 20436 98.7425 156.9457 0000891 117.2182 242.9089 14.20017385267638
UO-14
1 20437U 90005B 95082.22244091 .00000011 00000-0 21028-4 0 831
2 20437 98.5704 167.9674 0011831 88.7234 271.5303 14.29879217269465
UO-15
1 20438U 90005C 95081.72990423 .00000010 00000-0 20831-4 0 8808
2 20438 98.5689 166.1165 0010945 94.2347 266.0077 14.29201110269295
PACSAT
1 20439U 90005D 95081.77764822 .00000039 00000-0 32061-4 0 8816
```

```
2 20439 98.5820 169.0864 0012148 92.0844 268.1729 14.29933459269415
DO-17
1 20440U 90005E 95082.19445232 .00000022 00000-0 25234-4 0 8812
2 20440 98.5835 169.9242 0012239 89.9528 270.3057 14.30074095269498
WO-18
1 20441U 90005F 95081.19546693 .00000021 00000-0 24923-4 0 8852
2 20441 98.5835 168.9208 0012778 92.4206 267.8432 14.30045813269359
LO-19
1 20442U 90005G 95081.78418044 .00000018 00000-0 23744-4 0 8818
2 20442 98.5814 169.8298 0013068 90.0563 270.2117 14.30147012269452
GPS BII-06
1 20452U 90008A 95079.56600855 .00000014 00000-0 10000-3 0 153
2 20452 54.0256 185.2780 0057325 80.4987 280.1638 2.00568490 37693
MOS-1B
1 20478U 90013A 95082.69857175 .00000091 00000-0 10000-3 0 7594
2 20478 98.9978 154.2928 0000171 51.8125 308.3052 13.94916291181618
DEBUT
1 20479U 90013B 95081.32266981 -.00000021 00000-0 17901-4 0 8800
2 20479 99.0675 186.2253 0540919 69.4792 296.3489 12.83328924239818
FO-20
1 20480U 90013C 95082.80360601 -.00000031 00000-0 -45267-5 0 7785
2 20480 99.0672 187.2884 0541100 66.5072 299.1915 12.83229415239999
MOS-1B R/B
1 20491U 90013D 95082.87294236 .00000694 00000-0 13810-2 0 1169
2 20491 99.0284 239.3435 0468984 271.6422 83.1031 13.02995408243086
LACE
1 20496U 90015A 95082.25660549 .00001415 00000-0 50183-4 0 5142
2 20496 43.1042 260.6052 0010813 1.2144 358.8736 15.34268452284377
Nadezhda 2
1 20508U 90017A 95082.76098040 .00000019 00000-0 43120-5 0 3315
2 20508 82.9525 216.1633 0044249 180.7719 179.3376 13.73490592253926
OKEAN 2
1 20510U 90018A 95082.98193490 .00000198 00000-0 23935-4 0 3913
2 20510 82.5238 284.9858 0019368 0.0170 0.1042 14.78466147273004
INTELSAT-6
1 20523U 90021A 95073.31015625 -.00000250 00000-0 10000-3 0 4965
2 20523 0.0707 42.2485 0001568 307.4688 258.9076 1.00270124 11274
GPS BII-07
1 20533U 90025A 95078.97672185 -.00000026 00000-0 10000-3 0 278
2 20533 54.8592 305.7399 0048954 78.4297 282.1627 2.00560536 36454
PegSat
1 20546U 90028A 95083.06072195 .00006374 00000-0 13654-3 0 7700
2 20546 94.1093 96.1058 0066091 306.0556 53.4582 15.42494244275359
HST
1 20580U 90037B 95081.60220694 .00000516 00000-0 36065-4 0 6045
2 20580 28.4719 247.3009 0005821 112.2784 247.8415 14.90832023 70970
MACSAT 2
1 20608U 90043B 95081.24772981 .00000206 00000-0 32851-4 0 818
2 20608 89.9315 177.2281 0104196 198.4300 161.3134 14.64811491259988
Glonass 44
```

1 20619U 90045A 95081.71287238 -.00000056 00000-0 10000-3 0 1759
2 20619 65.3232 339.4426 0025289 208.5783 151.3349 2.13102474 37663
Glonass 45
1 20620U 90045B 95082.77033172 -.00000062 00000-0 10000-3 0 1830
2 20620 65.3230 339.3899 0007497 47.8276 312.4037 2.13102476 37721
Glonass 46
1 20621U 90045C 95080.95922068 -.00000051 00000-0 10000-3 0 7823
2 20621 65.3251 339.4991 0012379 190.2423 169.7826 2.13101542 37688
Kristall
1 20635U 90048A 95082.87610041 .00016748 00000-0 22454-3 0 52
2 20635 51.6475 225.2115 0004100 280.3977 79.5895 15.58087582273807
ROSAT
1 20638U 90049A 95080.42947567 .00000170 00000-0 30176-4 0 3990
2 20638 52.9881 182.0884 0013568 181.6211 178.4738 15.07119560263888
Meteor 2-19
1 20670U 90057A 95081.74872539 -.00000092 00000-0 -95887-4 0 8818
2 20670 82.5511 347.2242 0017587 84.0303 276.2863 13.84165074239152
CRRES
1 20712U 90065A 95081.98896759 .00000154 00000-0 31306-3 0 667
2 20712 17.9895 73.5625 7180049 39.9682 355.1690 2.35383276 32459
GPS BII-08
1 20724U 90068A 95081.29073064 .00000011 00000-0 10000-3 0 8885
2 20724 54.8133 126.8625 0116590 170.9238 189.3666 2.00560111 32362
Feng Yun1-2
1 20788U 90081A 95083.21558794 -.00000027 00000-0 10000-4 0 2896
2 20788 98.8160 99.1449 0014342 314.6142 45.3449 14.01274242232935
Meteor 2-20
1 20826U 90086A 95081.58246470 .00000012 00000-0 -22511-5 0 8911
2 20826 82.5226 284.4707 0014388 354.3673 5.7292 13.83604172226259
GPS BII-09
1 20830U 90088A 95081.33974645 .00000008 00000-0 10000-3 0 8971
2 20830 55.6462 69.2228 0064531 101.2816 259.4484 2.00569120 33007
GPS BIIA-10
1 20959U 90103A 95083.23909570 .00000008 00000-0 10000-3 0 8382
2 20959 54.9995 128.7252 0086253 232.8901 126.3724 2.00557767 31631
DMSP B5D2-5
1 20978U 90105A 95082.42157802 .00000133 00000-0 62852-4 0 1271
2 20978 98.6488 150.9166 0080379 62.4408 298.4912 14.32527044225039
Glonass 47
1 21006U 90110A 95082.39367851 .00000052 00000-0 10000-3 0 7467
2 21006 65.0251 99.9641 0059775 187.9520 172.0084 2.13102736 33387
Glonass 48
1 21007U 90110B 95079.29674283 .00000050 00000-0 10000-3 0 8776
2 21007 65.0452 100.1522 0033843 179.2135 180.8418 2.13101239 33305
Glonass 49
1 21008U 90110C 95082.94063942 .00000055 00000-0 00000+0 0 498
2 21008 65.0281 99.9645 0011277 276.9978 82.9187 2.13099021 33371
AO-21
1 21087U 91006A 95082.04628610 .00000094 00000-0 82657-4 0 5772
2 21087 82.9427 296.3384 0036757 27.9681 332.3439 13.74552048207890

```
RS-12/13
1 21089U 91007A 95079.73000050 .00000023 00000-0 83376-5 0 7841
2 21089 82.9240 166.3729 0030900 59.8448 300.5762 13.74055091206625
MOP-2
1 21140U 91015B 95080.41895255 -.00000026 00000-0 10000-3 0 9202
2 21140 0.1253 115.3653 0003016 301.3444 271.8936 1.00279306 17051
Nadezhda 3
1 21152U 91019A 95082.58709278 .00000058 00000-0 45071-4 0 233
2 21152 82.9251 120.2938 0042386 156.5999 203.7097 13.73516532201751
Glonass 50
1 21216U 91025A 95082.88118041 -.00000062 00000-0 10000-3 0 3935
2 21216 65.0547 339.0749 0009216 205.2115 154.7871 2.13102973 30903
Glonass 51
1 21217U 91025B 95082.94952442 -.00000063 00000-0 10000-3 0 8031
2 21217 65.0520 339.0597 0010861 242.2582 117.6737 2.13101419 30894
Glonass 52
1 21218U 91025C 95081.65426702 -.00000056 00000-0 10000-3 0 2771
2 21218 65.0452 339.0941 0004327 292.6528 67.3205 2.13102698 30870
GRO
1 21225U 91027B 95082.16345515 .00002574 00000-0 52005-4 0 2026
2 21225 28.4598 93.5996 0003251 137.0891 222.9935 15.42318313100038
Meteor 3-4
1 21232U 91030A 95080.19399416 .00000050 00000-0 10000-3 0 7893
2 21232 82.5447 333.7608 0012146 211.0592 148.9818 13.16466880187802
NOAA 12
1 21263U 91032A 95082.79746576 .00000040 00000-0 37037-4 0 4188
2 21263 98.5913 109.0268 0013479 141.7946 218.4165 14.22500793200285
OKEAN 3
1 21397U 91039A 95078.81403336 .00000326 00000-0 43509-4 0 909
2 21397 82.5242 201.6374 0024501 80.0919 280.3052 14.76344539204179
GPS BIIA-11
1 21552U 91047A 95080.51876655 .00000005 00000-0 10000-6 0 8374
2 21552 55.9404 66.9108 0064184 242.7305 116.6099 2.00570933 27178
ERS-1
1 21574U 91050A 95083.17064471 .00002697 00000-0 10160-2 0 1131
2 21574 98.5530 158.6670 0001425 94.6184 265.5169 14.32263343192881
UO-22
1 21575U 91050B 95081.73534054 .00000019 00000-0 20926-4 0 5875
2 21575 98.4049 155.1654 0007296 172.2755 187.8533 14.36965565193082
ORBCOMM-X
1 21576U 91050C 95081.23006402 .00000034 00000-0 26181-4 0 6824
2 21576 98.4031 153.1953 0003501 174.6348 185.4874 14.36370037192921
TUBSAT-A
1 21577U 91050D 95081.23235265 .00000013 00000-0 19089-4 0 5810
2 21577 98.4039 153.7075 0005947 176.6964 183.4258 14.36476024192953
SARA
1 21578U 91050E 95083.20794939 .00000241 00000-0 92075-4 0 7819
2 21578 98.4205 160.5120 0005122 164.8690 195.2652 14.38967571193477
TDRS 4
1 21639U 91054B 95078.52414134 .00000073 00000-0 10000-3 0 8738
```

```
2 21639 0.0344 282.7599 0002641 54.5086 213.7717 1.00277215107334
Meteor 3-5
1 21655U 91056A 95079.54741655 .00000051 00000-0 10000-3 0 7872
2 21655 82.5493 281.5577 0012133 226.6791 133.3301 13.16837763172830
UARS
1 21701U 91063B 95080.22108595 .00000061 00000-0 26488-4 0 6585
2 21701 56.9858 129.0641 0005364 112.2438 247.9158 14.96359284192409
DMSP B5D2-6
1 21798U 91082A 95082.69724223 .00000064 00000-0 57587-4 0 7743
2 21798 98.9618 94.2467 0013916 67.0353 293.2286 14.13872512171124
Glonass 53
1 21853U 92005A 95082.33543980 .00000051 00000-0 10000-3 0 9871
2 21853 64.9712 99.6528 0008002 179.8977 180.1498 2.13102264 24498
Glonass 54
1 21854U 92005B 95081.21814896 .00000047 00000-0 00000+0 0 1046
2 21854 64.9758 99.6924 0016180 9.5732 350.5017 2.13103637 24454
Glonass 55
1 21855U 92005C 95080.81212000 .00000046 00000-0 00000+0 0 993
2 21855 64.9770 99.7125 0007896 219.3319 140.6671 2.13102224 24432
JERS-1
1 21867U 92007A 95082.71310934 .00000062 00000-0 10000-4 0 5331
2 21867 97.7228 160.3999 0002649 68.5414 291.5830 14.98660951170248
GPS BIIA-12
1 21890U 92009A 95082.47735798 .00000021 00000-0 10000-3 0 6347
2 21890 53.9790 245.2637 0056666 176.4180 183.5928 2.00548392 22586
GPS BIIA-13
1 21930U 92019A 95081.68563315 -.00000075 00000-0 10000-3 0 6125
2 21930 55.6842 6.7053 0040637 174.4271 185.6320 2.00565784 21492
EUVE
1 21987U 92031A 95080.04596691 .00001081 00000-0 40578-4 0 3929
2 21987 28.4335 355.0502 0010048 126.6459 233.5066 15.19150430154532
SAMPEX
1 22012U 92038A 95082.90607448 .00001176 00000-0 10104-3 0 6150
2 22012 81.6694 235.6999 0117901 205.4322 154.1066 14.91327287147967
GPS BIIA-14
1 22014U 92039A 95081.23019607 -.00000002 00000-0 10000-3 0 5222
2 22014 54.8597 186.6538 0099629 314.9995 44.1572 2.00548356 13326
Glonass 56
1 22056U 92047A 95082.58906248 -.00000061 00000-0 00000+0 0 137
2 22056 64.8914 339.2200 0005135 291.1201 68.8706 2.13103279 20564
Glonass 57
1 22057U 92047B 95080.06847384 -.00000046 00000-0 00000+0 0 137
2 22057 64.9098 339.3243 0008476 325.6505 34.3464 2.13102635 20483
Glonass 58
1 22058U 92047C 95081.88584699 -.00000058 00000-0 10000-3 0 55
2 22058 64.9002 339.2787 0009402 273.4610 86.4938 2.13102884 20578
TOPEX
1 22076U 92052A 95083.17586008 -.00000038 00000-0 10000-3 0 8620
2 22076 66.0396 69.4450 0007695 267.2031 92.8091 12.80930891122358
KO-23
```

```
1 22077U 92052B 95082.36538616 -.00000037 00000-0 10000-3 0 4796
2 22077 66.0813 55.4552 0011266 221.5920 138.4242 12.86290257122693
S80/T
1 22078U 92052C 95081.37921044 -.00000037 00000-0 10000-3 0 4765
2 22078 66.0798 56.5069 0011992 215.4708 144.5510 12.86574316122645
GPS BIIA-15
1 22108U 92058A 95081.68890960 .00000026 00000-0 10000-3 0 5444
2 22108 54.2257 246.0278 0117943 149.3318 211.4611 2.00565052 18519
FREJA
1 22161U 92064A 95078.14706393 -.00000201 00000-0 -37367-4 0 4962
2 22161 62.9997 316.7701 0803483 339.1150 17.8677 13.21822867118140
LAGEOS II
1 22195U 92070B 95079.61903349 -.00000009 00000-0 10000-3 0 3877
2 22195 52.6595 278.9829 0138402 237.9606 120.7441 6.47293920 56843
GPS BIIA-16
1 22231U 92079A 95081.37266659 -.00000004 00000-0 10000-3 0 5146
2 22231 54.6846 187.8449 0036136 283.3725 76.2316 2.00568744 17082
GPS BIIA-17
1 22275U 92089A 95078.52915346 .00000019 00000-0 10000-3 0 5406
2 22275 54.6322 185.4757 0051115 254.5489 104.8876 2.00555091 16434
TDRS 5
1 22314U 93003B 95076.40502894 -.00000286 00000-0 10000-3 0 4925
2 22314 1.6813 73.1084 0002453 271.2612 290.2843 1.00274066 7990
GPS BIIA-18
1 22446U 93007A 95081.09293485 -.00000033 00000-0 10000-3 0 5199
2 22446 54.5099 305.9112 0082292 352.8850 7.0421 2.00550998 15476
Glonass 59
1 22512U 93010A 95077.17493994 .00000065 00000-0 10000-3 0 6890
2 22512 64.9911 99.6847 0008565 196.1735 163.8808 2.13102038 15957
Glonass 60
1 22513U 93010B 95081.33775510 .00000047 00000-0 00000+0 0 7291
2 22513 64.9874 99.5612 0007384 213.4593 146.5376 2.13102440 16235
Glonass 61
1 22514U 93010C 95082.56987629 .00000053 00000-0 00000+0 0 7314
2 22514 65.0104 99.4999 0010457 199.3484 160.6541 2.13102762 16268
ASTRO-D
1 22521U 93011A 95083.13729235 .00001817 00000-0 12409-3 0 3926
2 22521 31.1110 59.3694 0057119 15.3278 344.9077 15.02077064114570
UFO F1
1 22563U 93015A 95076.53340856 -.00000227 00000-0 10000-3 0 3964
2 22563 26.1572 295.7496 0004064 303.5052 107.5402 0.99253665 11553
GPS BIIA-19
1 22581U 93017A 95081.73418427 -.00000076 00000-0 10000-3 0 4136
2 22581 55.1895 6.3124 0057791 34.5269 325.8325 2.00554360 14544
ARSENE
1 22654U 93031B 95077.71691500 -.00000090 00000-0 10000-3 0 3079
2 22654 2.4056 87.4242 2902687 206.4275 135.9422 1.42203106 5106
GPS BIIA-20
1 22657U 93032A 95078.87668498 -.00000063 00000-0 10000-3 0 4487
2 22657 55.2207 6.2734 0069813 214.4866 145.0682 2.00571084 9816
```

```
RADCAL
1 22698U 93041A 95081.77593654 .00000072 00000-0 26173-4 0 3876
2 22698 89.5391 295.0257 0092419 1.1543 358.9846 14.21339619 90161
GPS BIIA-21
1 22700U 93042A 95082.33284522 .00000023 00000-0 10000-3 0 3973
2 22700 54.3789 246.7866 0035069 341.9189 17.9245 2.00561861 12680
NOAA-13
1 22739U 93050A 95081.84340665 -.00000005 00000-0 22033-4 0 7616
2 22739 98.9847 30.6274 0010704 58.6750 301.5496 14.10926654 83260
GPS BIIA-22
1 22779U 93054A 95078.92882437 -.00000026 00000-0 10000-3 0 4471
2 22779 54.6429 305.9777 0019734 245.9781 113.8830 2.00563240 11375
Meteor 2-21
1 22782U 93055A 95082.76915299 .00000097 00000-0 74739-4 0 3887
2 22782 82.5520 344.8885 0022245 158.5123 201.6970 13.83029164 78732
UFO F2
1 22787U 93056A 95081.00235200 -.00000080 00000-0 00000+0 0 4010
2 22787 4.5729 324.6371 0003197 39.8258 246.7795 1.00275482 4289
SPOT 3
1 22823U 93061A 95081.89321929 -.00000081 00000-0 -17345-4 0 4206
2 22823 98.7432 157.0712 0001830 92.5406 267.5968 14.20020056 77044
STELLA
1 22824U 93061B 95082.23642290 -.00000032 00000-0 48634-5 0 3764
2 22824 98.6243 159.5678 0007382 112.0534 248.1431 14.27100432 77471
AO-27
1 22825U 93061C 95082.73721087 .00000022 00000-0 26806-4 0 3788
2 22825 98.6250 160.3312 0009151 106.8301 253.3878 14.27655882 77572
IO-26
1 22826U 93061D 95080.73533016 .00000016 00000-0 24010-4 0 3766
2 22826 98.6226 158.4335 0009678 114.2517 245.9674 14.27762491 77290
HEATHSAT
1 22827U 93061E 95082.72571729 .00000020 00000-0 25564-4 0 4380
2 22827 98.6227 160.3442 0010103 97.8692 262.3628 14.27883087 77587
ITAMSAT
1 22828U 93061F 95079.21061281 .00000008 00000-0 20842-4 0 3545
2 22828 98.6222 156.9642 0010868 104.9319 255.3066 14.28091113 45170
PO-28
1 22829U 93061G 95081.74323044 .00000008 00000-0 20785-4 0 3697
2 22829 98.6164 159.4845 0010961 100.2798 259.9608 14.28069360 77450
KO-25
1 22830U 93061H 95082.71521665 -.00000009 00000-0 13771-4 0 3853
2 22830 98.5248 154.6180 0012510 76.8973 283.3595 14.28082641 77596
GPS BIIA-23
1 22877U 93068A 95081.96978844 .00000006 00000-0 10000-3 0 2544
2 22877 55.2188 67.1169 0034780 290.7994 68.9056 2.00553270 10323
METEOSAT 6
1 22912U 93073B 95080.54273753 -.00000101 00000-0 10000-3 0 2671
2 22912 0.3257 268.2546 0000882 167.7185 288.1567 1.00267608 3315
HST Array
1 22920U 90037C 95081.49959856 .00007304 00000-0 55797-3 0 2962
```

```
2 22920 28.4689 217.2538 0004398 339.2906 20.7515 15.00164350 71270
Meteor 3-6
1 22969U 94003A 95082.79023109 .00000051 00000-0 10000-3 0 1553
2 22969 82.5541 218.9615 0014440 286.9210 73.0333 13.16727820 55644
TUBSAT-B
1 22970U 94003B 95078.88348142 .00000051 00000-0 10000-3 0 1456
2 22970 82.5567 221.6704 0015570 298.9136 61.0425 13.16824577 55139
ODERACS E
1 22994U 94006F 95061.81894114 .06241027 11780-4 10453-3 0 3399
2 22994 56.9620 210.9976 0005787 293.1349 67.3024 16.47718070 61334
ODERACS F
1 22995U 94006G 95055.74721848 .07840807 11908-4 80136-4 0 3792
2 22995 56.9641 238.6220 0008022 316.4992 43.6881 16.50358678 60374
GPS BIIA-24
1 23027U 94016A 95082.04645522 -.00000077 00000-0 10000-3 0 1818
2 23027 55.0492 8.1788 0061976 197.3887 162.4124 2.00550546 7638
Glonass 62
1 23043U 94021A 95082.17866414 -.00000060 00000-0 00000+0 0 1762
2 23043 64.7769 339.6597 0004420 188.8049 171.2294 2.13102848 7375
Glonass 63
1 23044U 94021B 95081.12287863 -.00000053 00000-0 00000+0 0 1618
2 23044 64.7725 339.6935 0027745 204.7874 155.1247 2.13103178 7357
Glonass 64
1 23045U 94021C 95082.70672213 -.00000063 00000-0 00000+0 0 1713
2 23045 64.7582 339.6580 0011272 32.2578 327.8547 2.13102235 7385
GOES 8
1 23051U 94022A 95082.10694124 -.00000275 00000-0 00000+0 0 2806
2 23051 0.1705 264.4289 0000223 68.3891 170.8517 1.00283644 3092
MSTI 2
1 23101U 94028A 95082.06631341 .00005388 00000-0 99204-4 0 1633
2 23101 97.1045 276.5486 0011002 195.4249 164.6667 15.49530819 49184
STRV-1A
1 23125U 94034B 95079.24282791 .00000843 00000-0 37563-3 0 1273
2 23125 7.4438 67.1768 7260848 48.0975 354.2833 2.29788217 5609
STRV-1B
1 23126U 94034C 95077.53711230 .00002313 00000-0 76125-3 0 1304
2 23126 7.4503 68.2816 7266925 46.1179 354.5338 2.29423781 5612
Nadezhda 4
1 23179U 94041A 95080.40682887 .00000025 00000-0 10362-4 0 865
2 23179 82.9445 212.9010 0035739 313.6134 46.2052 13.75664529 34407
Glonass 65
1 23203U 94050A 95081.43650115 .00000036 00000-0 00000+0 0 1200
2 23203 64.8105 219.3284 0007665 140.0495 219.9845 2.13101721 4754
Glonass 66
1 23204U 94050B 95080.73218020 .00000041 00000-0 00000+0 0 1282
2 23204 64.7954 219.3868 0015145 351.0904 8.8595 2.13102343 4731
Glonass 67
1 23205U 94050C 95082.49207163 .00000025 00000-0 00000+0 0 1185
2 23205 64.8050 219.3142 0001448 347.1145 12.8572 2.13101909 4770
DMSP B5D2-7
```

```
1 23233U 94057A 95082.33732592 .00000133 00000-0 96004-4 0 2719
2 23233 98.8899 141.1700 0013369 24.8523 335.3288 14.12588526 29034
Soyuz TM-20
1 23288U 94063A 95081.01606562 .00006386 00000-0 90015-4 0 1549
2 23288 51.6468 234.5363 0004423 284.7155 75.3320 15.58025960 26487
OKEAN 1-7
1 23317U 94066A 95081.10320161 .00000234 00000-0 32071-4 0 513
2 23317 82.5443 115.8069 0027916 110.2116 250.2137 14.73913248 23794
ELEKTRO
1 23327U 94069A 95079.77033483 -.00000119 00000-0 10000-3 0 559
2 23327 0.9552 264.4912 0006029 157.0395 110.0749 1.00270691 1442
RESURS 1-3
1 23342U 94074A 95082.78872908 -.00004338 00000-0 -72082-3 0 837
2 23342 98.0236 143.9355 0001222 78.1114 282.0171 14.69707700 20502
Glonass 68
1 23396U 94076A 95080.45855511 .00000046 00000-0 00000+0 0 658
2 23396 64.9187 99.6711 0029822 194.8705 165.0873 2.13102669 2574
Glonass 69
1 23397U 94076B 95080.63394638 .00000046 00000-0 00000+0 0 714
2 23397 64.9112 99.6821 0014726 318.2263 41.7069 2.13102484 2575
Glonass 70
1 23398U 94076C 95080.51728132 .00000046 00000-0 00000+0 0 756
2 23398 64.8966 99.6663 0004896 287.2584 72.7334 2.13102057 2580
RS-15
1 23439U 94085A 95082.29178758 -.00000039 00000-0 10000-3 0 378
2 23439 64.8192 33.9016 0168184 277.0925 81.0899 11.27526721 9834
NOAA 14
1 23455U 94089A 95082.54274042 .00000024 00000-0 37421-4 0 1080
2 23455 98.8941 25.7666 0010665 75.9360 284.3001 14.11497954 11735
ODERACS II A
1 23471U 95004C 95081.41223833 .00024586 00000-0 13866-3 0 313
2 23471 51.6495 225.8783 0015434 124.8432 235.4114 15.78868294 7448
ODERACS II B
1 23472U 95004D 95079.70695827 .00044711 00000-0 21722-3 0 366
2 23472 51.6494 233.9808 0015291 134.9605 225.2424 15.81801108 7188
ODERACS II E
1 23474U 95004F 95055.25000000 .00820333 36251-3 10285-2 0 201
2 23474 51.6420 359.4890 0014037 167.3440 136.9170 16.06823723 3499
ODERACS II F
1 23475U 95004G 95056.04967593 .00938013 11385-4 71397-3 0 152
2 23475 51.8625 355.8014 0107400 312.2362 149.5984 16.02836050 3450
Progress M-26
1 23477U 95005A 95074.02454622 -.00001116 00000-0 -80014-5 0 352
2 23477 51.6448 269.5903 0003949 254.9935 105.0015 15.57959164 4298
Cosmos 2306
1 23501U 95008A 95080.55697077 .00001154 00000-0 54155-4 0 166
2 23501 65.8460 276.6276 0036595 334.2536 25.6778 15.24415411 2906
1995008B
1 23502U 95008B 95081.98081290 .00001562 00000-0 67344-4 0 290
2 23502 65.8506 272.0246 0039749 346.3065 13.6986 15.25841221 3126
```

```
1995006D
1 23503U 95006D 95073.46571554 .54268981 90286-5 22244-1 0 263
2 23503 62.7981 262.5634 0027956 359.3849 0.6065 16.21743448 4085
1995006E
1 23504U 95006E 95083.08536605 .00800252 24543-3 30935-2 0 375
2 23504 62.7934 226.3852 0066024 23.7965 336.6278 15.83404873 5592
1995006F
1 23505U 95006F 95072.65207516 .04744362 86717-5 62500-3 0 250
2 23505 62.7538 263.4388 0037708 116.9804 244.2170 16.32562233 3990
1995006G
1 23506U 95006G 95083.20609483 .00324007 82269-5 29567-3 0 387
2 23506 62.8020 222.4897 0072826 107.3168 253.6037 16.06419425 5673
1995008C
1 23507U 95008C 95082.53668675 .00009082 00000-0 42644-3 0 161
2 23507 65.8633 270.9558 0049556 304.1435 55.4550 15.19024892 3193
1995008D
1 23508U 95008D 95076.63746171 .00028093 00000-0 93018-3 0 124
2 23508 65.8087 288.5111 0054891 341.8317 18.0278 15.29754638 2451
1995008E
1 23509U 95008E 95082.89344235 .00022150 00000-0 69333-3 0 160
2 23509 65.8233 268.5541 0058229 329.0060 30.7602 15.31446010 3270
1995008F
1 23510U 95008F 95082.89221736 .00023310 00000-0 72484-3 0 173
2 23510 65.8841 268.7048 0059300 332.7872 27.0242 15.31570229 3510
Glonass 71
1 23511U 95009A 95081.99151452 -.00000060 00000-0 00000+0 0 148
2 23511 64.7798 339.9513 0077710 87.4404 273.4933 2.10488446 331
Glonass 72
1 23512U 95009B 95081.82710798 -.00000058 00000-0 00000+0 0 197
2 23512 64.7870 339.9509 0011511 201.9465 158.0549 2.13098085 335
Glonass 73
1 23513U 95009C 95082.82399108 -.00000063 00000-0 00000+0 0 205
2 23513 64.7907 339.9042 0004694 223.1670 136.8377 2.13101764 351
1995009F
1 23516U 95009F 95080.93396784 -.00000052 00000-0 10000-3 0 129
2 23516 64.7725 339.9757 0013985 280.7044 79.1774 2.13310128 314
1995009G
1 23517U 95009G 95080.15064478 -.00000025 00000-0 36722-4 0 69
2 23517 64.7951 335.4306 5807629 296.7270 16.1075 4.23208552 580
1995009H
1 23518U 95009H 95080.62157384 .00000012 00000-0 71171-4 0 85
2 23518 64.8503 335.1382 5808239 296.7396 16.1004 4.23258526 604
Soyuz TM-21
1 23519U 95010A 95082.87610041 .00016748 00000-0 22454-3 0 195
2 23519 51.6475 225.2115 0004100 280.3977 79.5895 15.58087582 1530
1995010B
1 23520U 95010 B 95075.76122103 .21411582 00000-0 28719-3 0 158
2 23520 051.6268 260.2137 0001718 187.8642 172.3061 16.49223966000420
SFU
1 23521U 95011A 95082.85573436 .00000886 00000-0 23240-4 0 194
```

```
2 23521 28.4613 295.3155 0021503 353.9723 228.1343 15.28022657 878
GMS 5
1 23522U 95011B 95080.69916816 -.00000010 00000-0 00000+0 0 91
2 23522 1.0537 291.3364 0180272 220.0253 80.3281 1.01870882 34
1995011D
1 23524U 95011D 95077.90135417 -.00000146 00000-0 00000+0 0 26
2 23524 1.0887 289.0518 0215861 220.7321 137.7107 1.01245198 13
1995011E
1 23525U 95011E 95082.80733417 .00309746 00000-0 12506-2 0 110
2 23525 28.4550 294.4509 0018150 6.0819 354.0054 15.84147108 870
1995012A
1 23526U 95012A 95083.20230524 .00007364 00000-0 81984-2 0 58
2 23526 82.9422 268.1151 0020826 260.7849 99.0948 13.71148047 280
1995012B
1 23527U 95012B 95082.90862050 -.00048499 00000-0 -53292-1 0 90
2 23527 82.9383 268.3334 0014871 243.5529 116.4203 13.72534001 243
1995013A
1 23528U 95013A 95082.03617767 .00019254 10256-5 79561-3 0 70
2 23528 26.5124 97.5020 7535233 178.7777 185.8414 2.00488340 29
1995013B
1 23529U 95013B 95082.51633658 .00028121 10285-5 11247-2 0 50
2 23529 26.5284 96.3627 7519538 179.8531 180.8292 2.02406258 37
1995014A
1 23530U 95014A 95082.87004411 .00027767 57602-5 10000-4 0 69
2 23530 67.1469 53.5701 0123828 90.5588 271.1284 16.08983124 207
1995014B
1 23531U 95014B 95083.26607639 .02429989 58506-5 67248-3 0 79
2 23531 67.1511 52.2445 0100203 89.3677 66.5504 16.15523428 266
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

628. TS790/IC738

Newsgroup: rec.radio.amateur.space
Date: 1995-03-25 15:50:46 UTC
From: ac579@rgfn.epcc.edu
Message-ID: <1995Mar25.155046.23621@rgfn.epcc.edu>
Source record: 25328

I have a friend who is trying to decide on either
the IC738 or the TS 790 trancievers.
I like the FT 736 myself but he wants the dual band
receive function.
Whats the opinions of net?
Thanks
73, Roland

--
Roland Cowan WF4P/AAT6MC
ac579@rgfn.epcc.edu

629. AO-27 Surprise!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-03-25 16:33:24 UTC
From: n2aam@starcomm.overleaf.com
Message-ID: <D608nt.40v@starcomm.overleaf.com>
Source record: 25329

I knew the receiver on AO-27 was hot, but I never realized how hot until I was able to work through the bird using my hand held with 5 watts with the rubber antenna as an uplink.

I was on the 1538utc pass this morning. At my location in Metuchen New Jersey the bird achieved a maximum elevation of 60 degrees. While listening to the downlink using my Kenwood 811a and Klm 40cx with ARR gaasfet I transmitted using the portable. I was able to hear my signal with just a little noise. I successfully worked a station in 8 land who gave me a good report.

Now if I can hear the bird with my uhf portable I would like to see if it is possible to communicate through the satellite without the big antennas in the loop.

Congratulations to the folks at Amrad for building and operating such a nifty satellite.

Dave Marthouse n2aam

630. Newbie Question.. Had license for 1 WEEK

Newsgroup: rec.radio.amateur.space
Date: 1995-03-25 17:24:00 UTC
From: scruz@cc.weber.edu
Message-ID: <25MAR199510242819@cc.weber.edu>
Source record: 25330

I am new to all the possibilities of using a sattelite to talk. I live in Ogden, UT and even attend Weber State University, home of WeberSat. What I am curios about is whether I can use a sattelite with my HandHeld. I am using a Kenwood TH-79A. If so would anyone be willing to give me some advice, pointers, or just plain instructions for the sattelite illiterate.

Thanks
Marc
KC7JKF

631. ARLK012 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-03-25 19:10:42 UTC
From: w1aw@arrl.org
Message-ID: <$arlk012.1995@ampr.org>
Source record: 25331
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK012
ARLK012 Keplerian data

ZCZC SK37
QST de W1AW
Keplerian Bulletin 12 ARLK012
From ARRL Headquarters
Newington, CT March 25, 1995
To all radio amateurs

SB KEP ARL ARLK012
ARLK012 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-71
1 99971U 95160.19121193 .00171834 00000-0 27545-3 0 17
2 99971 51.6417 198.7841 0040351 359.5716 .5264 16.01466981 29
AO-10
1 14129U 83058B 95075.48118362 -.00000307 00000-0 10000-3 0 3416
2 14129 26.5260 277.9703 6017649 260.5240 30.8666 2.05880038 60422
RS-10/11
1 18129U 87054A 95082.16552540 .00000050 00000-0 38312-4 0 376
2 18129 82.9240 122.6600 0011320 338.6622 21.4055 13.72350011388179
UO-11
1 14781U 84021B 95079.99743355 .00000156 00000-0 34193-4 0 7838
2 14781 97.7816 86.6804 0012908 102.0579 258.2092 14.69319611590954
RS-12/13
1 21089U 91007A 95079.73000050 .00000023 00000-0 83376-5 0 7841
2 21089 82.9240 166.3729 0030900 59.8448 300.5762 13.74055091206625
AO-13
1 19216U 88051B 95077.42153742 -.00000446 00000-0 10000-4 0 235
2 19216 57.5894 198.0161 7274253 4.4299 359.3561 2.09725869 20263
UO-14
1 20437U 90005B 95082.22244091 .00000011 00000-0 21028-4 0 831
2 20437 98.5704 167.9674 0011831 88.7234 271.5303 14.29879217269465
RS-15
1 23439U 94085A 95082.29178758 -.00000039 00000-0 10000-3 0 378
2 23439 64.8192 33.9016 0168184 277.0925 81.0899 11.27526721 9834
```

```
AO-16
1 20439U 90005D 95081.77764822 .00000039 00000-0 32061-4 0 8816
2 20439 98.5820 169.0864 0012148 92.0844 268.1729 14.29933459269415
DO-17
1 20440U 90005E 95082.19445232 .00000022 00000-0 25234-4 0 8812
2 20440 98.5835 169.9242 0012239 89.9528 270.3057 14.30074095269498
WO-18
1 20441U 90005F 95081.19546693 .00000021 00000-0 24923-4 0 8852
2 20441 98.5835 168.9208 0012778 92.4206 267.8432 14.30045813269359
LO-19
1 20442U 90005G 95081.78418044 .00000018 00000-0 23744-4 0 8818
2 20442 98.5814 169.8298 0013068 90.0563 270.2117 14.30147012269452
FO-20
1 20480U 90013C 95082.80360601 -.00000031 00000-0 -45267-5 0 7785
2 20480 99.0672 187.2884 0541100 66.5072 299.1915 12.83229415239999
AO-21
1 21087U 91006A 95082.04628610 .00000094 00000-0 82657-4 0 5772
2 21087 82.9427 296.3384 0036757 27.9681 332.3439 13.74552048207890
UO-22
1 21575U 91050B 95081.73534054 .00000019 00000-0 20926-4 0 5875
2 21575 98.4049 155.1654 0007296 172.2755 187.8533 14.36965565193082
KO-23
1 22077U 92052B 95082.36538616 -.00000037 00000-0 10000-3 0 4796
2 22077 66.0813 55.4552 0011266 221.5920 138.4242 12.86290257122693
KO-25
1 22828U 93061F 95079.21061281 .00000008 00000-0 20842-4 0 3545
2 22828 98.6222 156.9642 0010868 104.9319 255.3066 14.28091113 45170
IO-26
1 22826U 93061D 95080.73533016 .00000016 00000-0 24010-4 0 3766
2 22826 98.6226 158.4335 0009678 114.2517 245.9674 14.27762491 77290
AO-27
1 22825U 93061C 95082.73721087 .00000022 00000-0 26806-4 0 3788
2 22825 98.6250 160.3312 0009151 106.8301 253.3878 14.27655882 77572
PO-28
1 22829U 93061G 95081.74323044 .00000008 00000-0 20785-4 0 3697
2 22829 98.6164 159.4845 0010961 100.2798 259.9608 14.28069360 77450
Mir
1 16609U 86017A 95082.87611463 .00004307 00000-0 62764-4 0 9773
2 16609 51.6474 225.2103 0003868 285.9770 74.0801 15.58075020519669

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
March 28, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

632. Need help with GZip

Newsgroup: rec.radio.amateur.space
Date: 1995-03-25 21:19:14 UTC
From: jimn2ete@aol.com
Message-ID: <3l21ci$gt9@newsbf02.news.aol.com>
Source record: 25332

I am having trouble with GZip. I can't seem to decompress a file that is compressed with a .z extention (or more clearer L-Z compression). I seem to follow the instructions that is in the documentation, and I wrote the directory in the SET PATH in my autoexec.bat file, is there anyone who has experience with
UNIX or with that paticullar program?? This is for satellite kep data decomp.

Jim N2ETE

633. Re: New WWW site: http://www.iea.com/~adrs

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 00:49:20 UTC
From: tvr@cnmat.CNMAT.Berkeley.EDU
Message-ID: <TVR.95Mar25164920@cnmat.CNMAT.Berkeley.EDU>
Source record: 25333
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

The ADRS Web Pages describe and give information about the ADRS, its publications and services, and contain what is now probably one of the most complete set of hyperlinks connections to other amateur radio related WWW sites and related Internet sites worldwide! You are invited to visit the ADRS WWW Pages at: http://www.iea.com/~adrs to learn more about ADRS and as the best starting point for exploring amateur radio on the Internet! To use the ADRS WWW site, you need will need an access to the Internet which permits you to use Mosaic, Netscape or a similar Web Browser which provides HTTP (Hyper Text Transfer Protocol) capability. (The new Prodigy Internet WWW Web Browser was tested and performs well.)

It's a nice start, but most of the documents are .ZIP files, which i can't read (at least, not very easily) on a Mac, and 'man -k zip' doesn't tell me how to do it on a UNIX box, either. So:

Click here now to download a series of 26k zipped text files with basic information about how to implement such a gateway!

is of no help to me. If files are to be compressed, please use a widely available or understood tools, such as the GNU software, as is done by folks with the U.S.G.S. for the FTP'able map data. Please don't assume an MS/DOS platform!
-- KD6PAG

634. KLM 22c problem

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 01:15:12 UTC
From: sonealca@aol.com
Message-ID: <3l2f70$kfb@newsbf02.news.aol.com>
Source record: 25334

I just picked up a set of KLM antennas today at a swap meet and have a VSWR problem in the 22C one of the set. I get about 3.5:1 or so which seems to say that the LH/RH switch is open. Has anyone had a failure in the KLM's before like this and is there a easy way to fix ? I will jumper around the switch and see if the VSWR drops to something like it should and will try a fix on the switch at a later date. BTW does anyone know which of the two terminals on the 22C is the one for RH cp and which is LH cp ?
Thanks in advance Steve N6CRR

635. Satellite frequency & schedule questions.

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 03:59:15 UTC
From: timothy@indy.net
Message-ID: <3l2oqj$p4@indy-backup.indy.net>
Source record: 25335

Could anyone out there post, e-mail me, or tell me where I can find satellite frequencys (especially ham sats) and the schedules (not so important). Thanks in advance - Timothy Toroni, N9VHM - timothy@indy.net

636. Re: KLM 22c problem

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 04:52:26 UTC
From: n7ryw@teleport.com
Message-ID: <3l2rua$opi@desiree.teleport.com>
Source record: 25336

In article <3l2f70$kfb@newsbf02.news.aol.com>, sonealca@aol.com said...

>I just picked up a set of KLM antennas today at a swap meet and have a
>VSWR problem in the 22C one of the set. I get about 3.5:1 or so which
>seems to say that the LH/RH switch is open. Has anyone had a failure in
>the KLM's before like this and is there a easy way to fix ? I will
jumper
>around the switch and see if the VSWR drops to something like it should
>and will try a fix on the switch at a later date. BTW does anyone know
>which of the two terminals on the 22C is the one for RH cp and which is
LH

The relay connects the center conductor of the coax to either the left or right side of the loop. Try applying 12 volts to the relay and see if the VSWR comes way down. If it does, the relay contacts *might* be bad, but also the connection to the loop can get corroded. Clean all of the connections on both loops and try again.

If it turns out that the relay is bad, it is a rather simple matter to put a better relay in a sealed box and weatherproof the connections. I did this for about $15.00. I also sealed up the loops completely with 30 year caulk, as water in them will drive the VSWR way up.
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

637. Re: 2-mtr SSB Phone on SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 07:21:24 UTC
From: n7tcf@primenet.com
Message-ID: <3l34lk$rnd@news.primenet.com>
Source record: 25337

In <3klngi$7gg@nova.umuc.edu>, KKEYSEEA@EUROPA.UMUC.EDU (Kenneth L. Keyseear) writes:
>I say this jokingly, but maybe it will start an interesting thread:
>
>
> I, WB4U, hereby volunteer for a future SAREX mission,
>intending to take aboard the STS a REAL radio capable of handling
>the massive pileups that naturally occur as a result of the
>popular SAREX missions. SAREX will transmit on 144.110 SSB and
>work stations SPLIT FREQUENCY on SSB that are transmitting in the
>range of 144.120 to 144.190. This is a style similar to that used
>by the rarest of DX stations on the HF bands.

Primarily, SAREX is public-relations and wants to appeal to the widest
possibleham audience. I too get a quesy feeling when my radio isn't in the SSB
mode,but there are a LOT more FM radios out there.
Secondly, (proper useage?) the radios taken aboard must be space-worthy,
reliable, compact, industrial grade equipment. I think they are Motorola brand.
The typical amatuer SSB gear isn't up to space travel.
I have some knowledge of this subject through my volunteer work with
Arizona State University's amatuer satellite project. You do make some good points
and perhaps you will be the one.

73 Jim n7tcf@primenet.com
or
n7tcf@kc7y.az.usa.na <- packet

638. Re: HELP! with rs-10/11

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 07:27:05 UTC
From: n7tcf@primenet.com
Message-ID: <3l3509$rnd@news.primenet.com>
Source record: 25338

In <3klbhp$5tuj@ns2-1.CC.Lehigh.EDU>, c002@Lehigh.EDU writes:
>Hello out there in Hamspace land...
>
>I just realized when reading through some sat stuff, my Hamcomm program MIGHT
>be able to get a ROBOT answer from RS-10.
>after about 2 hours running around setting up my 2m ht and a scanner for
>downlink, and finding the right antennas hopeing the computer will not be to
>bad RFI........it finnaly gets over the horizen, and bang
>nothing.....maybe my scanner is not good enought, or my keps are old <only
>2weeks>
The RS 10 robot is very picky about quality of tone, tuning and sending speed.
The computer should give consistent speed, but the tuning and tone of an
FM radio may not be good enough. And of course you must here the bird first.
Is your scanner capable of recieving CW, it would need a BFO. A typical
'police/fire' FM scanner will not hear the AM signals of CW or SSB.

Good luck and 73 Jim

639. Re: How do I handle Doppler shift?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 07:32:06 UTC
From: n7tcf@primenet.com
Message-ID: <3l359m$rnd@news.primenet.com>
Source record: 25339

In <3kop0r$i0o@nanette.pdb.sni.de>, kebsch@pdb.sni.de (Waldemar Kebsch) writes:
>In <3jpso9$s28@crchh327.bnr.ca> jwittich@b4pph107.bnr.ca (Jeffrey Wittich) writes:
>
>>Hi all. I am about ready to try a QSO through RS-10/11. When
>>working CW, do you adjust the XIT to account for shift, keeping
>>the receive constant, or do you change the RIT and keep your
>>transmit frequency constant? Or am I completely wrong and should
>>do it some other way?
>
>>Thanks, The birds are new to me. I wanna do things as properly as
>>possible.
>
>>73, Jeff.
>
>Hi Jeff and the community,
>
>(sorry for my English, but I can't resit, hi)
>
>SAT-Rule #1: Correct the Doppler shift on the higher frequency.
>
>RS-10/11, RS-15: Tune the 145MHz VFO to correct the Doppler shift.
>
>When you have got some experience via RS-10/11 then you should try RS-15
>and give me a call, hi. Few days ago I have worked some guys from the
>States with the locators "EN.." and "FN..". My locator is "JO..",
>figure it out via RS-15 (I am on 29,370..29,375MHz, USB, sorry no CW), hi.
>
>My Equipment: Groundplanes for 145MHz and 29MHz, 150W output on 145MHz.
>
>Have fun on RS-10/11 ...
>
>73 de DK3VN
>Waldemar
>--
>Waldemar Kebsch, c/o Siemens | DK3VN (QRV on 40/20/15/10 since 9/94)
>Nixdorf Informationssysteme AG | The last courtesy of a QSO is a QSL!
>33106 Paderborn, Federal Republic | Big antennas, high in the sky, are
>of Germany, kebsch.pad@sni.de | better than small ones, low! [38c]

I want to throw in my 2 cents worth here.

With narrow transponders like RS birds (40KHz) the transmit frequency should be shifted for doppler comp. This prevents the QSO from sliding across other QSOs. With wider transponders like the Oscars, the problem is less severe. I have recorded total shifts of 7KHz using RS 10.

73 Jim

640. Re: HELP! with rs-10/11

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 07:35:47 UTC
From: roger73@aol.com
Message-ID: <3l35gj$ptn@newsbf02.news.aol.com>
Source record: 25340

THE RS-12 ROBOT IS FAIRLY EASY TO HIT. I GOT IT ABOUT TWO NIGHTS AGO.
THE DOWNLINK FREQUENCY WAS 29.4543 MHZ. IT SENT OUT A CQ AND THEN
ANNOUNCED THE UPLINK FREQUENCY "QSU 21130". I ALREADY HAD THE DOWNLINK
FREQUENCY ON MY VFO A; SO ALL I HAD TO DO WAS DIAL IN THE UPLINK FREQUENCY
ON VFO B AND HIT THE "SPLIT" BUTTON. THEN I TRANSMITTED " RS12 DE N6GL
AR". THE ROBOT SENT "RPT" AFTER TWO MORE ATTEMPTS I GOT IT AND IT SENT
"N6GL DE R12 QSL NR 3139 , ETC....."

GL ES 73, ROG, N6GL

641. Re: Newbie Question.. Had license for 1 WEEK

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 07:43:02 UTC
From: n7tcf@primenet.com
Message-ID: <3l35u6$rnd@news.primenet.com>
Source record: 25341

In <25MAR199510242819@cc.weber.edu>, scruz@cc.weber.edu (Stacy Cruz) writes:
>I am new to all the possibilities of using a sattelite to talk. I live in
>Ogden, UT and even attend Weber State University, home of WeberSat. What I am
>curios about is whether I can use a sattelite with my HandHeld. I am using a
>Kenwood TH-79A. If so would anyone be willing to give me some advice,
>pointers, or just plain instructions for the sattelite illiterate.
>
>Thanks
>Marc
>KC7JKF

Welcome aboard Marc.
The satellites you can access with a handheld for voice communication are limited.
In fact, I think only AO-27 on an erratic, weekend mostly schedule is working.
Get some shareware tracking programs, learn more about the birds and save for
a Single Side Band 2 meter radio. Then you'll be able to work the RS series. The
downlink is on 10 meters and a portable shortwave reciever is good enough.

73 from Jim n7tcf@primenet.com

642. WISP divide by zero error

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 07:49:10 UTC
From: n7tcf@primenet.com
Message-ID: <3l369m$rnd@news.primenet.com>
Source record: 25342

I cannot get the map feature to operate at all. A divide by zero error warning comes on and the program closes. I have reloaded WISP several times and checked the help files carefully. I have two 386s w/coprocessors and neither will run the mapping feature.

Jim n7tcf@primenet.com
n7tcf@kc7y.az.usa.na

643. Questions about Kenwood TM-255 2M SSB rig

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 08:43:12 UTC
From: dbraun@ilx049.iil.intel.com
Message-ID: <3l39f0$aj9@itnews.intel.com>
Source record: 25343
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.space

Does anyone have a TM255 (or at least played with one)?
This is a new 2-meter all-mode rig, that sort of
superficially resembles a TS-50.

I'm wondering if it is suitable for working RS10 and maybe
AO-13. Some specific questions I had:

1- Can you put a CW filter in it?
2- Does it have a computer-control interface?

Thanks a lot,

Doug Braun (4X/N1OWU)

Email: dbraun@inside.intel.com
Intel Mail: IDC1-41
iNet: 8-435-5069 Long Distance: 011-972-4-655069
Fax: 8-435-5999 Long Distance: 011-972-4-655999
Snail Mail: US: Other:
PO Box 311 Intel Israel, Ltd.
Mendham, NJ 07945 IDC-42
Matam Scientific Center
Haifa, Israel 31015

From a CD-ROM advertisement:

"This Disc contains Hacking, Phreaking, Tone Box Information, Anarchy,
Subculture, Magic, Internet & Computer Security Secrets, Bomb Plans,
FBI & Police Net Files, Virus Code, Sick & Twisted Graphics, UFO,
Occult, even HAM RADIO Files, plus much, much more!"
^^^ ^^^^^

644. Re: New WWW site: http://www.iea.com/~adrs

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 13:05:29 UTC
From: tstader@aol.com
Message-ID: <3l3oqp$re1@newsbf02.news.aol.com>
Source record: 25346

The Macintosh StuffIt Expander tool available as a public domain peice of software can be linked within Netscape and Mosiac both to handle the uncomression of a ZIP'd archive... I use it all the time... and it works very well.

Granted.... in the this world of clones... most of them 80x86 versions... there are many assumptions made about platforms. But fourtunately the Mac software community identifies it and compensates for it.

If you need a path for accessing the StuffIt package... let us know... and I am sure someone can assist.

73 for now.... c u on the shortwaves
Terry Stader - KA8SCP
America Online Ham Radio Club Host
Macintosh Ham Radio Software List Maintainer
Internet: tstader@aol.com (e-mail only) or
tstader@si.tiac.net (binaries/files >28K)
KA8SCP@WA1PHY.#EMA.MA.USA.NOAM
ka8scp@ka8scp.ampr.org [44.56.4.82]

645. Re: WISP divide by zero error

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 16:12:06 UTC
From: rparsons@bga.com
Message-ID: <rparsons-2603951012060001@maria-7e.ip.realtime.net>
Source record: 25347

In article <3l369m$rnd@news.primenet.com>, n7tcf@primenet.com wrote:

> I cannot get the map feature to operate at all. A divide by zero error warning
> comes on and the program closes. I have reloaded WISP several times and
checked
> the help files carefully. I have two 386s w/coprocessors and neither will run
> the mapping feature.
>
> Jim n7tcf@primenet.com
> n7tcf@kc7y.az.usa.na

Check to make sure you have valid Keps for the satellite you are trying to
show on the map.

Ron W5RKN

646. Re: New WWW site: http://www.iea.com/~adrs

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 18:49:32 UTC
From: socrates@gate.net
Message-ID: <socrates-2603951349320001@198.1.1.1>
Source record: 25348
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <TVR.95Mar25164920@cnmat.CNMAT.Berkeley.EDU>,
tvr@cnmat.CNMAT.Berkeley.EDU (Tovar) wrote:

> It's a nice start, but most of the documents are .ZIP files, which i can't
> read (at least, not very easily) on a Mac, and 'man -k zip' doesn't tell me
> how to do it on a UNIX box, either. So:
>
> _Click here_ now to download a series of 26k zipped text files with
> basic information about how to implement such a gateway!
>
> is of no help to me. If files are to be compressed, please use a widely
> available or understood tools, such as the GNU software, as is done by
> folks with the U.S.G.S. for the FTP'able map data. Please don't assume
> an MS/DOS platform!
> -- KD6PAG

The Mac program "Stuffit Expander" by Aladdin will unzip dos files just fine (drag and drop). Also, "Unzip" and "Zip-it" work as well & "Bbedit" will allow reading/writing in Mac/DOS/Unix format.

All of the above are available on most Mac internet sites.
--
=>Gary
socrates@gate.net

647. Comment 03/26/95 11:12pm

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 23:12:36 UTC
From: Ken.Ernandes@227.woodybbs.com
Message-ID: <50d_9503280556@woodybbs.com>
Source record: 25344

Joe -

Check out AMSAT Bulletin # ANS-084.03

73, Ken
--
| Fidonet: Ken Ernandes 1:2619/227
| Internet: Ken.Ernandes@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

648. Re: WISP divide by zero error

Newsgroup: rec.radio.amateur.space
Date: 1995-03-26 23:32:01 UTC
From: n7ryw@teleport.com
Message-ID: <3l4th7$l5a@desiree.teleport.com>
Source record: 25350

In article <3l369m$rnd@news.primenet.com>, n7tcf@primenet.com said...

>I cannot get the map feature to operate at all. A divide by zero error warning
>comes on and the program closes.

The problem is that there is no satellite loaded into the map tracking.
To get one in, set GSC to track a satellite in the text box at the
bottom, and then double click on the text for that satellite. You will be
given some choices. Choose 'Display On Map'.

This should get the map working, and only needs to be done oncce.
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

649. Need help with GZip

Newsgroup: rec.radio.amateur.space
Date: 1995-03-27 00:00:00 UTC
From: paul.britton@satcom.mhs.oz.au
Message-ID: <332.57.118@satcom.mhs.oz.au>
Source record: 25345

Try this Jim

gzip -ad cs090305.Z this will produce the following file cs090305 if the .Z is in upper case make sure you do the same and the extension .Z must be there..

Paul

Internet: paul.britton@satcom.mhs.oz.au (Paul Britton)
Fidonet : 3:714/905
Satcom Australia Space, Satellite & Radio BBS
Sydney Australia 612-9050849 28.8k
612-9057694 28.8k
---

650. $*$*$ 30 Weak Signal Challenge (HAM Post) - Now $40 $*$*$

Newsgroup: rec.radio.amateur.space
Date: 1995-03-27 03:55:43 UTC
From: ir000411@interramp.com
Message-ID: <3l5cvv$gkj@usenet.interramp.com>
Source record: 25351
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.antenna

$*$*$ 30 Weak Signal Challenge (HAM Post) - Now $40 $*$*$

Five weeks have passed since the original posting of this challenge.
During that period, the Web page was accessed over 1000 times.
The weak signal recording has been listen to and processed by
many. Several operators using their best audio filters have been
able to copy my call. And yet, a correct identification of the calling
station has not been made. I am increasing the amount offered to $40
and will continue to escalate the prize until someone cracks the problem.

Details on the challenge can be obtained from my Web page:

http://www.webcom.com/~af9y/

If you do not have a Web Browser, you can ftp the following:

FTP ADR: ftp.webcom.com/pub/af9y/www/

Sound File: unkn422.zip This is the Zipped Wav File

Ref Files: af9ypage.zip GIFs of AF9Y Web Page (with challenge info)
fftdsp38.zip FFTDSP Demo Program
fft422.zip View of unkn422 in next release

The winner will be announce in the UseNet groups carrying this post
and my Web page.

Final Note for those trying their own signal processing techniques:

Many have asked about the WAV file format used for the
A/D recording. The format is a PC Windows standard which
contains 43, 8 bit-bytes of header (which can be thrown away)
followed by a consecutive series of 8 bit A/D data. The sample
rate was 8192 samples/sec.

Good Luck,
de Mike Cook - AF9Y

651. Re: New WWW site: http://www.iea.com/~adrs

Newsgroup: rec.radio.amateur.space
Date: 1995-03-27 15:13:57 UTC
From: n0dh@comtch.iea.com
Message-ID: <3l6knl$ql1@krel.iea.com>
Source record: 25355
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Tovar (tvr@cnmat.CNMAT.Berkeley.EDU) wrote:
: It's a nice start, but most of the documents are .ZIP files, which i can't
: read (at least, not very easily) on a Mac, and 'man -k zip' doesn't tell me
: how to do it on a UNIX box, either. So:

: _Click here_ now to download a series of 26k zipped text files with
: basic information about how to implement such a gateway!

: is of no help to me. If files are to be compressed, please use a widely
: available or understood tools, such as the GNU software, as is done by
: folks with the U.S.G.S. for the FTP'able map data. Please don't assume
: an MS/DOS platform!
: -- KD6PAG

Oh quit your whining, its not their fault you bought the wrong
computer.....On the other hand, if that "Mac-gameboy" is as useful a
computer as the died in wool users claim..you'll figure it out....if not
..well thats the breaks..you pays your money and you takes your chances.

Dave

dit dit

652. Re: Newbie Question.. Had license for 1 WEEK

Newsgroup: rec.radio.amateur.space
Date: 1995-03-27 16:21:33 UTC
From: nw2l@aol.com
Message-ID: <3l6omd$h48@newsbf02.news.aol.com>
Source record: 25353

Marc --

Congratulations and welcome to ham radio. In a separate message, I'll be sending you CQ Magazine's new ham welcome pack. To answer your specific question (Can I work a satellite with an HT?), the answer is, in theory, yes. OSCAR-27 has an FM repeater (which shares times with other modes) with an input (uplink) on the 2-meter band and an output (downlink) on 70 cm (about 435 MHz). You would need either two HTs (making sure the 70cm one is capable of receiving below 440 MHz) or a dual-bander that lets you transmit on one band while listening to another (many do). Of course, there's a lot of competition for the bird, so it may take several passes for you to get in. But it's sure fun to try!

There's a lot more info on the basics of operating amateur satellites in the CQ video, "Getting Started in Amateur Satellites." If you'd like more info, just drop me an e-mail message and I'll be happy to fill you in.

73,
Rich Moseson, NW2L
CQ Online

CQ Communications, Inc. - Publishers of: CQ-The Radio Amateur's Journal, Popular Communications, Communications Quarterly, MicroComputer Journal, Electronic Servicing and Technology, CQ Guides, Pop' Comm Guides, CQ Books and Videos.

653. Re: Satellite frequency & schedule questions.

Newsgroup: rec.radio.amateur.space
Date: 1995-03-27 16:26:21 UTC
From: nw2l@aol.com
Message-ID: <3l6ovd$h5f@newsbf02.news.aol.com>
Source record: 25354

Frequencies of amateur satellites are published in the annual "CQ Amateur Radio Almanac", "The VHF How-To Book" (both published by CQ), the "ARRL Operating Manual" (ARRL) and various AMSAT publications. Schedules vary and are updated regularly online. If you send me an e-mail message, I'll be happy to tell you how to get any of these 3 books, and how to contact AMSAT for theirs.

73,
Rich Moseson, NW2L
CQ Online

CQ Communications, Inc. - Publishers of: CQ-The Radio Amateur's Journal, Popular Communications, Communications Quarterly, MicroComputer Journal, Electronic Servicing and Technology, CQ Guides, Pop' Comm Guides, CQ Books and Videos.

654. Re: KLM 22c problem

Newsgroup: rec.radio.amateur.space
Date: 1995-03-27 17:56:50 UTC
From: zardoz@ornews.intel.com
Message-ID: <3l6u92$igg@ornews.intel.com>
Source record: 25349

In article <3l2f70$kfb@newsbf02.news.aol.com>,
SOnealCA <sonealca@aol.com> wrote:
>I just picked up a set of KLM antennas today at a swap meet and have a
>VSWR problem in the 22C one of the set. I get about 3.5:1 or so which
>seems to say that the LH/RH switch is open. Has anyone had a failure in
>the KLM's before like this and is there a easy way to fix ?

I too obtained a KLM antenna at a swap meet although mine is the smaller
2M-14C. I think it uses the same parts as the 22. After fooling with
this antenna for more than a year I can offer this advice: Remove the
relay assembly and discard it. You will be much better off. During the
times that I did get it to work I never got better than 1.5:1 and the
LH polarization mode only rarely helped reception. Others may disagree
and I welcome the responses.
Without relay and fixed at RH I can reliably receive AO-10 and AO-13 while
SWR is around 1.2:1. You will need to solder some terminals on the coax
ends from the phasing harness that went to the board. Do not shorten!
To verify RH polarization, stand behind the antenna. Observe which side of
the REAR folded element has the center lead of the phasing harness connected.
The FRONT (farther) folded element should have the coax center connected to
the element that is 90 degrees clockwise, or to the right.
If you insist on using the relay, buy a whole new assembly, PN# CS-3
which includes phasing harness for about $35. Call KLM Antenna at:

206-794-2923

I would appreciate someone sending me the element dimensions and spacing
for the 2M-22C so that I can model it and compare against my 2M-14C.
I have an old Amsat Orbit magazine with an article describing how to
add two elements to each plane of a 2M-14C. I modeled this and found
that it added slightly more than 1dbc for about another 4 feet of boom.
I slightly remember that my 2M-14C models at about 9.5dbc in stock form.
I use K6STI's MN 4.0 to model these is free space.

--
zardoz@ornews.intel.com WA7LDV Greetings and Hallucinations
I speak only for myself... I come in peace...

655. Balloon Launch April 8 - Wisconsin

Newsgroup: rec.radio.amateur.space
Date: 1995-03-27 22:29:20 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3l7e80$2c6@news.doit.wisc.edu>
Source record: 25356

The Badger Amateur Radio Society and the High Altitude Radio Project
announce
The Launch of the BARS 1 Weather Balloon

Launch Date: Saturday, April 8, 1995 (Rain dates April 9 and Easter Weekend)
Launch Time: 9:00 - 10:00 AM CDT (14:00 - 15:00 UT)
Launch Site: Hillsboro, Wisconsin (About 20 miles W. of Wisconsin Dells)

ATV transmit freq: 439.25 3 watts Color
GPS/APRS Packet TX: 441.05 2 watts 1200 baud packet
Cross-Band Repeater Output: 439.25 3 watts FM (Same as ATV output)
Cross-Band Repeater Input: Two Meters - frequency to be announced.

Note that the crossband repeater output and the ATV transmitter are on the same frequency. The ATV transmitter's carrier is FM Modulated with the voice signal. The voice and TV signals don't interfere with each other.

This flight will be BARS' entry in the 1995 University of Wisconsin Engineering Expo, a bi-annual display of student engineering prowess that is scheduled for April 21-23 on the University of Wisconsin, Madison campus.

This will be a weather balloon carrying a color TV camera, an ATV transmitter and a crossband voice repeater. The balloon will also carry a Global Positioning Receiver and a packet transmitter that sends lattitude, longitude and altitude in a format that can be used by the APRS packet program to draw a map and plot the balloon's position on it. This will be a standard ASCII packet signal and people without the APRS program can read the balloon's position directly with their regular packet gear. No connects or digipeating through the balloon will be possible.

After the flight, the payload and video tapes of the balloon signals will be displayed at the University of Wisconsin's Engineering Expo, which runs from April 21-23 (the weekend after Easter).

The winds aloft are quite vigorous at this time of the year. Typical wind speeds reach 40 to 100 miles per hour or higher. If the winds are heavy on launch day, we'll try to keep the maximum altitude down to about 50,000 ft to keep the balloon from landing in Lake Michigan. If winds are light, we'll go for 100,000 feet.

Balloon chasers are very much wanted and everybody is invited to join the chase. You don't really need any DF equipment - if you're a hunter with a good pair of boots, you may be worth your weight in gold if the balloon lands in a bad location. People who can climb trees may be just as valuable.

The launch will be announced on the Baraboo 146.88 repeater the morning of April 8th. We expect to do most of the chase-crew co-ordination using the balloon's cross band repeater.

Reply to this message for more information or email me at
djmullen@facstaff.wisc.edu
For BARS, Dave, N9LTD

656. * SpaceNews 27-Mar-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-03-27 23:44:22 UTC
From: magliaco@pilot.njin.net
Message-ID: <3l7ikm$oqp@pilot.njin.net>
Source record: 25352
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0327
* SpaceNews 27-Mar-95 *

BID: $SPC0327

=========
SpaceNews
=========

MONDAY MARCH 27, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* UOSAT-5 NEWS *
================
The OBC-186 aboard UO-22 crashed during the early morning hours of
21-Mar-95. This is the third crash of the '186 in just over a month.
While one of the crashes has been completely explained, the other two have
not. As a result, ground controllers have spent the passes over the UK
this date dumping the memory of the flight computer. It is expected that
the dump should be completed in time to begin the reload process during
the morning passes over the UK on 22-Mar-95.

Controllers will attempt to have the reload completed as soon as possible
and will provide additional information as details become available.

Doug Loughmiller, G0SYX / KO5I
UoSAT Spacecraft Operations Manager

* MIR NEWS *
============
Dr. Norman Thaggart continues to make voice contacts using the callsign
R0MIR on 145.550 MHz. QSLs for contacts with Norm are available via the
following address:

Dr. Norman Thaggart
Mail Code CB
Johnson Space Center
Houston TX 77058
U.S.A.

Norm will not be available to respond to QSL card requests for about 3
months, so please be patient.

[Info via Joe, WA2GSY]

* STS-67 WRAP-UP *
==================
Endeavour landed safely at Edwards AFB on 18-Mar-95, setting a new endurance record for the orbiter of 16/15:09:46. The orbiter passed over the California coast and a powerful sonic boom was hear (and felt) throughout the Los Angeles area. The approximate landing times:

RPV Sonic Boom: 13:41:36 PST (BOOM BOOM!)
Main Gear: 13:47:00 PST 16/15:08:47 MET
Nose Gear: 13:47:14 PST 16/15:09:01 MET
Drag Chute Deploy: 13:47:17 PST
Drag Chute Jettison: 13:47:43 PST
Wheel Stop: 13:47:59 PST 16/15:09:46 MET

[Info via Ken Ernandes, N2WWD]

* NEWS CORRECTION *
====================
MBL is the Microsat Boot Loader. It sends telemetry in a format different from the format used when Microsats are in "normal" operation. It sends packets every 2 or 3 minutes depending on a number of factors and is designed to give controllers minimal telemetry when the spacecraft is reset. It runs from code stored in an EPROM and contains loader software used to load the normal operating software.

The UNAMSAT-1 satellite will begin telemetry transmissions 20 minutes after separation. If the software survives the launch, the beacon will transmit norma telemetry, otherwise the spacecraft will be in MBL mode (as opposed to "mailbox" mode as reported in last week's issue of SpaceNews).

Thanks to Jim White, WD0E, for the correction and the background information on MBL.

* NASDA NEWS *
==============
The National Space Development Agency of Japan (NASDA) launched the third H-II Launch Vehicle test flight (H-II TF#3) from Tanegashima Space Center with the Space Flyer Unit (SFU) and Geostationary Meteorological Satellite-5 (GMS-5) at 05:01:00 JST (=UTC+9h) PM on March 18, 1995 at a launch azimuth of 97 degrees.

The flight of the first and the second stages was normal, and the guidance and control system functioned as planned. The Space Flyer Unit (SFU) was separated approximately 13 minutes 16 seconds after the launch, and GMS-5, at 27 minutes 47 seconds after the launch. All flight events of H-II TF#3 were completed.

The data from the SFU after the first revolution was received at 06:37 PM (JST) on March 18 at the Sagamihara Operation Center, ISAS. The data confirmed that the SFU was injected into the proper orbit.

NASDA also launched GMS-5 "HIMAWARI-5" at 05:01 PM (JST) on March 18, 1995 from Tanegashima Space Center. The data from the satellite after the first revolution was received at 06:25 PM on March 18 at Madrid Tracking and

Data Acquisition Station.

The Data calculation confirmed that "HIMAWARI-5" was inserted into the first transfer orbit as planned.

The first transfer orbit is as follows:

Apogee Altitude: 36669 km
Perigee Altitude: 329 km
Orbit Inclination: 25.1 degree
Period: 10 h 50 m

The command for the apogee kick motor firing will be transmitted at 09:57 on March 19 from the Tracking and Control Center at Tsukuba Space Center.

The Sagamihara Operation Center, ISAS confirmed that the SFU normally completed the solar array paddle deployment at 07:25 PM (JST) on March 18, 1995. The SFU is functioning normally after the solar array paddle deployment.

Data calculation confirmed that the SFU was placed in the designated orbit.

The orbit determination is as follows:

Apogee Altitude: 336 km
Perigee Altitude: 322 km
Orbit Inclination: 28.45 degree
Period: 1 h 31 m

The SFU was found to be functioning normally.

NASDA transmitted the apogee kick motor (AKM) firing command of "HIMAWARI-5" at 09:54 AM on March 19 (JST) from Tracking and Control Center at Tsukuba Space Center. The AKM firing and AKM adaptor separation were normal. "HIMAWARI-5" was confirmed to have been successfully moved from the transfer orbit to the drift orbit.

[Info via Yoshiro Yamada @ the Yokohama Science Center]

* THANKS! *
==========
Thanks to all who sents messages of appreciation to SpaceNews, especially:

IW1QH KT2K N2MUC N2RIF KB2MVN F5DGQ KB7OIE KE7TR

I apologize for not keeping up with all the e-mail that has been sent and delaying the release of SpaceNews each week, but my workload has increased dramatically since January, leaving little time for anything else. :-(

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

657. Re: 2-mtr SSB Phone on SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-28 18:55:14 UTC
From: durham@lobby.ti.com
Message-ID: <3l9m2i$dqj@superb.csc.ti.com>
Source record: 25357

> Secondly, (proper useage?) the radios taken aboard must be space-worthy,
>reliable, compact, industrial grade equipment. I think they are Motorola brand.
>The typical amatuer SSB gear isn't up to space travel.

Jim, the assumption that typical amateur SSB gear isn't rugged enough or
that some brand of commercial equipment is more reliable, is commonly
accepted at face value, however the temperatures in the module and the
G forces at takeoff are tolerable to the human body which has rather narrow
environmental limits. Look at the temp and G force specs for typical
Ham gear and compare them with what our bodys can tolerate.

I believe Icom, Yaesu, and Kenwood have mil-spec rated equipment that
only needs to be space certified to be included as part of the flight
system. If the radio was merely used for hobby purposes (Amateur Radio)
then certification shouldn't be required.

Ken K5MBV durham@lobby.ti.com
Amsat Member #28079

658. MacGPS, Orbitrack Software

Newsgroup: rec.radio.amateur.space
Date: 1995-03-28 20:35:14 UTC
From: miles@mail.utexas.edu
Message-ID: <miles-2803951435170001@klingon.util.utexas.edu>
Source record: 25466
Cross-posted to: sci.geo.satellite-nav,rec.radio.amateur.space

The following description of freeware for the Garmin appeared in Info-Mac Digest, volume 13, issue 036, a few days ago. I have not seen the software myself, and have no further information about it. The software can be downloaded from many of the Info-Mac mirror sites:

<description of Info-Mac follows>
The Info-Mac Archive is available at 50 public and private sites around the world. For the site list, request it by mail (address below), or try:
gopher://sumex-aim.stanford.edu/info-mac/help/mirror-list.txt
Also accessible by ftp. Help files and indexes are also in info-mac/help/.

<description of software follows>
Date: Sun, 5 Mar 1995 00:57:06 -0600
From: Paul Ross <paul@paulross.demon.co.uk>
Subject: [*] MacGPS 45 version 0.1; exchanges data with Garmin 40 or 45 GPS

MacGPS 45 version 0.1 is a freeware program to upload and download data between a Mac and a Garmin 40 or 45 Global Positioning System (GPS). Written by John Waers (jfwaers@csn.org).

Current positional data can be transfered to the Mac real time using the NMEA protocol. Almananc, waypoint, track and route data can be uploaded to the GPS or downloaded to the Mac using Garmins proprietary protocol.

Apart from John's manual I have included a Read.me file to help users with the wiring of the GPS to the Mac modem port.

Paul Ross

[Archived as /info-mac/sci/mac-gps-45-01.hqx; 67K]
===

<also in the same issue of the Info-Mac Digest>

Date: Sun, 5 Mar 1995 01:12:57 -0600
From: bekdev@innet.com (BEK Developers)
Subject: [*] orbitrack-215.hqx Satellite Tracking Application

[Archived as /info-mac/sci/orbitrack-215.hqx; 720K]
===

Miles Abernathy, N5KOB	"I urge you to dream - I did, and one
U. of TX, P. O. Box 7580	day I found myself standing on the
Austin, Texas 78713 USA	surface of the moon." - Gene Cernan

659. Re: 2-mtr SSB Phone on SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-29 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3lcbe6$sce@superb.csc.ti.com>
Source record: 25359

It isn't that typical ham
>gear can't stand the trip, it's that it's outgassing products and
>spectral compatibility with spacecraft systems are unknown.

I understand your point Gary. Your description of the problem was well
put. Heating the device under test while pulling a vacuum to cause the
outgassing should yield a sample that could be analyzed by a gas chromatograph
in a matter of minutes, thereby resolving whether the device is compatable
with the flight systems. (I am assuming that the flight systems compatablity
with common elements and compounds used in the manufacturing of electronic components
is known.) |

Ken K5MBV durham@lobby.ti.com
AMSAT #28079

660. CQ Magazine Highlights - May, 1995

Newsgroup: rec.radio.amateur.space
Date: 1995-03-29 00:00:00 UTC
From: nw2l@aol.com
Message-ID: <3lck73$st0@newsbf02.news.aol.com>
Source record: 25360

HIGHLIGHTS OF MAY, 1995 "CQ" MAGAZINE

Copyright 1995 by CQ
Communications, Inc.

Results of the 1994 CQ World-Wide WPX CW Contest highlight the May, 1995, issue of "CQ", along with a fascinating report on the 9G5TL DXpedition to Ghana for the 1994 CQ World-Wide DX Contest.

Operating a DXpedition station during a major contest is the dream of many an avid DXer and contester. But imagine doing it from a country that, just two years earlier, had considered it a crime to operate a ham radio station. "The 9G5TL Story," by Warren Hill, KF7AY, tells the exciting tale of planning and preparing for this ham radio adventure, the thrills of operating from a rare country during the biggest contest of them all, and of the long-term benefits of the operation to ham radio in Ghana.

The 1995 CQ WW WPX Contest is now history (for the uninitiated, that's short for the CQ World-Wide Worked All Prefixes Contest, in which you try to contact as many stations with as many different callsign prefixes as you can during a 48-hour period). And the results are in from the 1994 event. May's "CQ" magazine reports fully on the CW portion of the contest. Here's a brief list of the trophy winners:

Single Operator, All Band --
-- World: John Crovelli (W2GD), P40W
-- USA: Tyler Stewart, KF3P
-- Oceania: Michael Sato, AH6MZ
-- Canada: John Sluymer, XL3EJ
-- Canada, low power: Gary Caldwell, XL7NTT
-- Japan: Satoshi Hara, JH5FXP

Single Operator, Single Band --
-- World: Martin Monsalvo AZ4F (LW9EUJ)
-- World, 7 MHz: Bob Furzer, 9K2ZZ
-- World, 3.5 MHz: Pavel Vachal, OK1DXS
-- Oceania: Boyet Lorenzo, 4F3AAL
-- USA: John Yodis, K2VV

-- USA, 28 MHz: Phil Koch, K3UA
-- USA, 21 MHz: Scott Jones, WR3G

Multi-operator, Single Transmitter --
-- World: Station ZX0F (PY0FF & YU1RL, operators)
-- USA: Station WC4E (WC4E, K1ZX, G4BKI/W4,
WB4BBH, W1CW, W1YL, operators)

Multi-operator, Multi-Transmitter --
-- World: Station 9A1A (9A2OG, 9A2DQ, 9A2EU,
9A2LJ, 9A2NJ, 9A2KL, 9A2AJ, 9A3GW, 9A3TW,
9A3NR, 9A3TF, 9A3MJ, 9A4WW, F2CW, S58KW,
operators)

Contest Expdition --
-- World: Station HV4NAC (I2UIY & I2VXJ, operators)

Combined SSB/CW --
-- World: Jim Neiger, N6TJ (ZD8Z)
-- Europe: Gerard Parat, F6FGZ
-- USA: Tyler Stewart, KF3P

Club (SSB/CW) --
-- World: Northern California Contest Club
-- USA: Yankee Clipper Contest Club

The May issue of "CQ" magazine should be in subscribers'
mailboxes and on the newsstands by late April. "CQ-The
Radio Amateur's Journal" is the leading indepndent ham
radio magazine in the US. It is celebrating its 50th
anniversary in print during 1995. To contact CQ or its
authors online, send e-mail to any of the following
addresses: CQMagazine@aol.com, CQ@genie.geis.com, or
72127.745@compuserve.com.

661. Molczan sat. elements

Newsgroup: rec.radio.amateur.space
Date: 1995-03-29 00:00:00 UTC
From: rick@itp.phys.ethz.ch
Message-ID: <rick.796468349@anubis>
Source record: 25461

Hello!

I am looking for a site carrying the actuals Molczan sat.
elements.

Any pointer?

Cheers,

Rick

--
Riccardo Sibilia | http://itp.ethz.ch/~rick/ (<-- still just boring stuff)
Zschokkestr. 39 | rick@itp.ethz.ch
8037 - Zuerich | rick@stud.phys.ethz.ch
Switzerland | My opinion? Am I supposed to have one?

662. Problem with InstantTrack

Newsgroup: rec.radio.amateur.space
Date: 1995-03-29 00:00:00 UTC
From: jrybak@mesa5.Mesa.Colorado.EDU
Message-ID: <3ld7vb$4eg@mesa5.Mesa.Colorado.EDU>
Source record: 25462

I have been using InstantTrack with a 386-33MHz machine for several years with no problems. Now, I have a 75 MHz Pentium machine and InstantTrack

runs OK except on the map screen. The map is OK but the continuously updated satellite data below the map is all garbled. Has anyone else had this problem and is there a solution?

Thanks for any help you can provide.

Jim W0KSD

663. Re: 2-mtr SSB Phone on SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-29 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Mar29.154243.22540@ke4zv.atl.ga.us>
Source record: 25463

In article <3l9m2i$dqj@superb.csc.ti.com> durham@lobby.ti.com (ken) writes:
>> Secondly, (proper useage?) the radios taken aboard must be space-worthy,
>>reliable, compact, industrial grade equipment. I think they are Motorola brand.
>>The typical amatuer SSB gear isn't up to space travel.
>
>Jim, the assumption that typical amateur SSB gear isn't rugged enough or
>that some brand of commercial equipment is more reliable, is commonly
>accepted at face value, however the temperatures in the module and the
>G forces at takeoff are tolerable to the human body which has rather narrow
>environmental limits. Look at the temp and G force specs for typical
>Ham gear and compare them with what our bodys can tolerate.
>
>I believe Icom, Yaesu, and Kenwood have mil-spec rated equipment that
>only needs to be space certified to be included as part of the flight
>system. If the radio was merely used for hobby purposes (Amateur Radio)
>then certification shouldn't be required.

Certification is most definitely required. It isn't that typical ham
gear can't stand the trip, it's that it's outgassing products and
spectral compatibility with spacecraft systems are unknown. In the
very closed environment of a spacecraft cabin, outgassing products
from equipment is a critical factor to crew health. And naturally,
any spurious products, that might not matter at a terrestrial ham
shack, could cause problems for the complicated systems on the
Orbiter. This is somewhat similar to the concerns over amateur
equipment usage on commercial airliners, only very much more so.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

664. Orbital element FTP addresses

Newsgroup: rec.radio.amateur.space
Date: 1995-03-29 00:00:00 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3lckmm$1lja@news.doit.wisc.edu>
Source record: 25464

Internet FTP sites for Orbital Elements

ftp.amsat.org /amsat/keps/current
amsat.all has all hamsats plus selected others in "AMSAT" Format
nasa.all same satellites in "NASA Two Line" format

archive.afit.af.mil /pub/space

Home of the TLE.nnn files posted by T.S. Kelso, the father of
amateur satellite tracking. Includes individual files sorted by
type of satellite and a larger list made of all the little lists
added together.

kestrel.umd.edu /pub/wxsat/elements

Also WxSat & Radar GIFs, software

kilroy.jpl.nasa.gov /pub/space/elements/molczan
/pub/space/elements/satelem

This site has the Mother Of All Element Files in the
/pub/space/elements/satelem directory. Prepared by Allen
Thomson, it's 1/4 meg in the .Z compressed format and
expands to about 1/2 meg when uncompressed. It holds
elements for just under 4000 satellites! No sat names are
given, just the NORAD numbers, so you'll need a cross
reference.

Ted Molczan's Canadian Space Society's element files are in
the /pub/space/elements/molczan directory. This is a more
reasonable length file that includes elements for spy sats.

seds.lpl.arizona.edu /pub/sat/molczan C.S.S. tles w/spy sats
/pub/sat/satelem T.S. Kelso elements

This site appears to be mirroring kilroy's element directories.
If the .Z is left off the file names, seds will uncompress the
file for you before sending it. This doubles transmission time,
but if you can't decode .Z'd files, this will get the files for
you anyway.

DOS users: ftp gzip.exe from /pub/space/elements at kilroy
to uncompress these files at home.

MAC users: get ZIP-IT from any Info-Mac archive mirror.

(Dave Mullenix, N9LTD, djmullen@facstaff.wisc.edu)

665. Re: Need help with GZip

Newsgroup: rec.radio.amateur.space
Date: 1995-03-29 00:00:00 UTC
From: jimn2ete@aol.com
Message-ID: <3ld79b$58b@newsbf02.news.aol.com>
Source record: 25465

Thanks Paul for the reply. I managed to get it from another posting. All I had to do
was type GZIP -D [FILE.Z] and it did the trick (of course not in capital letters since UNIX is case sensitive. I could not use the kep data in STSPLUS because the file was so large that even the dos editor could not open it. This had over 600
KB of kep data, real huge!!!!

Jim N2ETE

666. Re: Orbitrack Software

Newsgroup: rec.radio.amateur.space
Date: 1995-03-29 07:26:57 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3lb241$cmo@paperboy.ids.net>
Source record: 25358

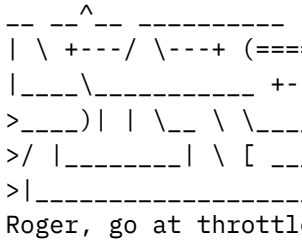
In article <miles-2803951435170001@klingon.util.utexas.edu> Miles Abernathy, miles@mail.utexas.edu writes:
><also in the same issue of the Info-Mac Digest>
>
>Date: Sun, 5 Mar 1995 01:12:57 -0600
>From: bekdev@innet.com (BEK Developers)
>Subject: [*] orbitrack-215.hqx Satellite Tracking Application
>
>[Archived as /info-mac/sci/orbitrack-215.hqx; 720K]

I've been a long time satisfied user of Orbittrack. It's an extremely reasonably priced shareware program, and the downloadable software is the complete operational version, without anything 'held back' until you pay your registration fee. The hardcopy documentation is pretty good, although a beginner may have difficulties with the more sophisticated capabilities.

The program will let you track many spacecraft at the same time (the practical limit is how cluttered you want your screen to be), lets you export text data into other programs, creates several different types of outputs and tracking solutions, and lets you use several different standard gravitational models for the Earth. A Az-El controller can be accessed via a serial cable, although it has to be a particular 'smart controller' (e.g. a particular model which has an RS-232 port).

The only major complaint I've heard about its capabilities is that it doesn't calculate squint angles or generate operation schedules, important if you're an AO-13 user.

Still, it has excellent capabilities, and I highly recommend it - it's one shareware program where I actually sent in the registration fee!

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

667. Re: Molczan sat. elements

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 00:00:00 UTC
From: smayer@cafe.glassnet.com
Message-ID: <796567593snz@cafe.glassnet.com>
Source record: 25468

In article <rick.796468349@anubis> rick@itp.phys.ethz.ch writes:

> Hello!
>
> I am looking for a site carrying the actuals Molczan sat.
> elements.
>
> Any pointer?
>
> Cheers,
>
> Rick

Hi Rick
Cant remember the name of the mailbox but the phone number from UK
is 001 416 458 5707
somewhere in canada I believe

Cheers
Steve
smayer@cafe.glassnet.com

668. RS-15: NA <-> EU works! Plus a question ..!

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 00:00:00 UTC
From: kebsch@pdb.sni.de
Message-ID: <3lebtf$4d6@nanette.pdb.sni.de>
Source record: 25469

Hi fans of the RS-15 Satellite,

during the last few days I had some QSO's with some HAM's from the US-States
(Locators ENnn and FNnn)

My Equipment:

Antenna 145 MHz: Groundplane
Antenna 29 MHz: Groundplane
Rig for 145 MHz: IC-820H plus a "150 Watt PEP output" linear
Rig for 29 MHz: IC-738

I need better antennas, but how to explain it to the best of all wifes, hi?!

In the evening (~15:00-22:00 UTC) when RS-15 covers NA and EU you may hear
me calling on 29.380 MHz or 1..5 kHz below, hi.

At last not least a simple question: Why I have never heard some HAM's from
Canada? Very often RS-15 covers a very large part of Eastern Canada and a
large part of Western Europe too!! Is RS-15 and/or the 2m band (145 MHz) not
very popular in Canada? Who has an idea???

BTW: Sometimes RS-10/11 *and* RS-15 are covering Europe at the same time.
Then I am quiet, just only listening. I have a lot of fun about
the confusion ... hi.

Have fun ..
73 de DK3VN
Waldemar
PS: If you have seen this posting or the Subject line only
in 'rec.radio.amateur.antenna' .. it was my fault! Sorry.
--
Waldemar Kebsch, c/o Siemens | DK3VN (QRV on 40/20/15/10 since 9/94)
Nixdorf Informationssysteme AG | The last courtesy of a QSO is a QSL!
33106 Paderborn, Federal Republic | Big antennas, high in the sky, are
of Germany, kebsch.pad@sni.de | better than small ones, low, hi! [40]

669. Re: Problem with InstantTrack

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3les0p$1dn@newshost.lanl.gov>
Source record: 25470

Have you done the "Pentium check" on your chip?
Instatrack actually does do some math and you may
have trouble with that "little flaw" that Intel tried
to blow off.

670. Re: 2-mtr SSB Phone on SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Mar30.182219.27518@ke4zv.atl.ga.us>
Source record: 25471

In article <NEWTNews.6885.796548472.drayegon@drayegon.america.com> drayegon@america.com writes:
>
> Certification is most definitely required.
>
>Gary the bit about certification is a smoke screen. The equipment will pass.

The certification issue is definitely not a smokescreen. It took an enormous effort to get NASA to approve the Motorola HT currently used. I expect that most any ham equipment would ultimately be Ok on the Shuttle, but you have to prove that to NASA first, and they aren't going to be easy to convince.

>The problem is two fold
>
>1.the astronauts do not have time to fool around with
>the dials and try to make ssb work they are using KISS mode equipment.
>
>2. They are attempting to reach the most people possible in the shortest period
>of time. Face it more people have FM than SSB.

No argument. The SAREX team made an excellent choice of frequencies and modes for the objective they intended to meet. Besides, can you picture NASA allowing a Zepp to be trailed behind the Shuttle to work with your TS940? :-)

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

671. Re: CQ Magazine Highlights - May, 1995

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 00:00:00 UTC
From: kthompso@WichitaKS.HMPD.COM
Message-ID: <kthompso.543.000D8501@WichitaKS.HMPD.COM>
Source record: 25472

Dont you just hate blatant commercial advertisments!

672. Re: Molczan sat. elements

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 00:00:00 UTC
From: tkreyche@zdlabs.ziff.com
Message-ID: <tkreyche-300395145226@tomkreyche.zdlabs.ziff.com>
Source record: 25473

ftp to:

kilroy.jpl.nasa.gov and look in space/elements, they have molczan

also

archive.afit.af.mil in space has many element sets

-tk

In article <rick.796468349@anubis>, rick@itp.phys.ethz.ch (Riccardo Sibilia) wrote:

> Hello!
>
> I am looking for a site carrying the actuals Molczan sat.
> elements.
>

673. Re: Molczan sat. elements

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 00:00:00 UTC
From: thomsona@netcom.com
Message-ID: <thomsonaD6A2Mt.Ktq@netcom.com>
Source record: 25474

In article <rick.796468349@anubis> rick@itp.phys.ethz.ch (Riccardo Sibilia) writes:
>Hello!
>
>I am looking for a site carrying the actuals Molczan sat.
>elements.
>
>Any pointer?
>

kilroy.jpl.nasa.gov/pub/space/elements/molczan

674. satellite qsls

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 00:00:00 UTC
From: roger73@aol.com
Message-ID: <3lfvju$e8b@newsbf02.news.aol.com>
Source record: 25475

I recently worked the robot on one of the Russian satellites and when I was about to fill out a qsl for it I suddenly realized something. I have never seen anything in QST, CQ, or the Amsat bulletins about the correct way of filling out satellite qsl cards. I know it sounds simple. I have been a ham almost 40 years and have filled out thousands of qsl cards; but never for a satellite qso before. I can think of many variations and want to know the proper way one is filled out.
In the "TO" or "RADIO" blank do I write Robot/RS-12, RS-12 Robot, etc? If I had made a qso with another station would I say W1XYZ@RS-12, W!XYZ on RS-12? For the frequency do I use just the uplink, or uplink and downlink? Does anyone print qsl cards specifically for satellite qsos?
TNX ES 73, Rog N6GL

675. Re: 2-mtr SSB Phone on SAREX

Newsgroup: rec.radio.amateur.space
Date: 1995-03-30 06:22:03 UTC
From: drayegon@america.com
Message-ID: <NEWTNews.6885.796548472.drayegon@drayegon.america.com>
Source record: 25467

Certification is most definitely required.

Gary the bit about certification is a smoke screen. The equipment will pass.
The problem is two fold

1.the astronauts do not have time to fool around with
the dials and try to make ssb work they are using KISS mode equipment.

2. They are attempting to reach the most people possible in the shortest period
of time. Face it more people have FM than SSB.

Lets kill this disagreement by saying that they are doing a really good job of
making all hams a part of their world.
73 Ray AD4RR

676. Re: Molczan sat. elements

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: garym@alsys.com
Message-ID: <D6A516.C8M@thomsoft.com>
Source record: 25476

In <rick.796468349@anubis> rick@itp.phys.ethz.ch (Riccardo Sibilia) writes:
>I am looking for a site carrying the actuals Molczan sat.
>elements.

>Any pointer?

They can be found in:

<ftp://SEDS.LPL.Arizona.EDU/pub/sat/molczan>

--GaryM

677. Re: CQ Magazine Highlights - May, 1995

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Mar31.140054.661@ke4zv.atl.ga.us>
Source record: 25477

In article <kthompso.543.000D8501@WichitaKS.HMPD.COM> kthompso@WichitaKS.HMPD.COM (Ken Thompson) writes:
>Dont you just hate blatant commercial advertisments!

We should maybe cut the CQ guy a little slack. He's a newbie on here and probably doesn't understand the culture. I actually like having magazine content lists to see if I want to bother to hunt for an issue on the newsstands. Someone is doing it for QST, and now we have CQ doing it for their rags. If you save these posts, you'll have a crude searchable database of magazines.

However, our CQ friend is *spamming* the ham groups with these posts, and that should *stop*. He should learn about *crossposting* rather than posting the same articles over and over in every group. Better still, he should restrict the postings to the rec.radio.info group where they really belong.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

678. AO-27 Activity Question

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: kbanke@qualcomm.com
Message-ID: <kbanke-310395070725@kbanke-mac.qualcomm.com>
Source record: 25478

I've tried listening a few times for the AO-27 downlink at 436.8 Mhz, but haven't heard it yet. Is this unit on continuously?. Thanks - Kerry N6IZW kbanke@qualcomm.com -

679. Re: Receptions from space..

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: I121171@relay.telecom.it
Message-ID: <3lgb5e$88g@sgi.iunet.it>
Source record: 25479

> Other than the space shuttle, what receptions are possible from
> sattelites? What frequencies should I look on , and what times are they
> most active? Any help is appreciated.
TRANCE BBS in Italy is free and devoted to space/ham/sat.
You can find help,frequencies,softwares and examples how to start receiving
signals from sats...
Anyway I can give you some help right here.. What kind of receiver you have?
What frequencies does it cover ??? HF-VHF ...
See next msg !
73.....Trance BBS (ITALY) +39-11-482751

680. Re: Molczan sat. elements

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: julian@kesteven.win-uk.net
Message-ID: <598@kesteven.win-uk.net>
Source record: 25480

In article <rick.796468349@anubis>
rick@itp.phys.ethz.ch writes:
> I am looking for a site carrying the actuals Molczan sat.
> elements.
>
> Any pointer?

Hi Rick, here's a little something I picked up a while ago, hope
it helps.

kilroy.jpl.nasa.gov /pub/space/elements/molczan
/pub/space/elements/satelem

This site has the Mother Of All Element Files in the
/pub/space/elements/satelem directory. Prepared by Allen
Thomson, it's 1/4 meg in the .Z compressed format and
expands to about 1/2 meg when uncompressed. It holds
elements for just under 4000 satellites! No sat names are
given, just the NORAD numbers, so you'll need a cross
reference.

Ted Molczan's Canadian Space Society's element files are in
the /pub/space/elements/molczan directory. This is a more
reasonable length file that includes elements for spy sats.

seds.lpl.arizona.edu /pub/sat/molczan C.S.S. tles w/spy sats
/pub/sat/satelem T.S. Kelso elements

This site appears to be mirroring kilroy's element directories.
If the .Z is left off the file names, seds will uncompress the
file for you before sending it. This doubles transmission time,
but if you can't decode .Z'd files, this will get the files for
you anyway.

DOS users: ftp gzip.exe from /pub/space/elements at kilroy
to uncompress these files at home.

MAC users: get ZIP-IT from any Info-Mac archive mirror.

681. *** SatTrack V3.1 Release Announcement ***

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <3lhtab$40d@agate.berkeley.edu>
Source record: 25481
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space,sci.geo.satellite-nav,rec.video.satellite.tvro,comp.windows.x.apps,sci.astro,de.comp.os.linux

March 31, 1995
SatTrack V3.1 has been released.

SatTrack is a satellite orbit prediction and realtime tracking program with
X Window System color graphics displays. The program has been written in
C language and runs on a number of different Unix and Linux systems with
X11R5. It not only displays in realtime where a number of satellites are but
is also capable of controlling suitable ground station equipment, like
antennas or optical telescopes, and radio communications hardware. In the
autotrack mode it switches between various satellites as they rise and set.
Predictions of passes of satellites over specified ground stations can be
run off either interactively or in batch mode.

For detailed on-line information check the new SatTrack WWW Home Page at:

http://ssl.berkeley.edu/isi_www/sattrack.html

The distribution file sattrack-3.1.tar.gz (or sattrack.V3.1.tar.gz) is also
available from:

ftp.amsat.org/amsat/software/Linux
ftp.jnvc.net/priv/kupiec/sattrack

Manfred Bester
manfred@ssl.berkeley.edu

682. Re: AO-27 Activity Question

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3lhrpv$ahv@newshost.lanl.gov>
Source record: 25482

AO-27 is on weekends when it can see the sun (power budget)and
when the mood strikes the folks who control it. We appreciate
it when it is there but it is not always there. Kinda like life
up and down. 73 maybe will see ya there de Jerry KC5EGG

683. Is RS/15 alive and well?

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: mckee@fc.hp.com
Message-ID: <3lhti4$h6v@tadpole.fc.hp.com>
Source record: 25483

I remember some traffic here a while back about RS/15. I think the thrust of it was that the published Keps were off a bit or something along those lines. Unfortunately, I have fallen into a 2M allmode radio since, and my server has expired all those messages. Could someone who remembers share the information with me?

I'll be willing to trade CO contacts for it :-)

73,

Bret N0MTA

684. ARSENE

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3li6ik$2ngt@ns3-1.CC.Lehigh.EDU>
Source record: 25484

what IS the arsene sat?
anyone have alot of info on it?

also, i need alot of info on FM sats ONLY <names, freqs, other info>

thanks

DAvid
|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

685. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-03-31 00:00:00 UTC
From: Darryl Bennett <darrylb@delphi.com>
Message-ID: <J4w7XLv.darrylb@delphi.com>
Source record: 25485

Todd Little <little@iamu.chi.dec.com> writes:

>|>What's your setup? Particularly, can you describe your antenna system?
>|>
>
>Hi Darryl,
>
>Sure, I'm using a Yaesu FT-726R, a Mirage B1016 amp, 50' of heliax,
>GAsFET preamp, and the KLM 14 element crossed yagi. It is the same
>system I use for the OSCARs such as AO-13, AO-13, FO-20, and several of
>the PACSATs.

I think I discovered part of the reason for your success; it's the heliax,
right? |-)

73's

686. Recruiting Elmers from the Internet

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: pschleck@gonix.com
Message-ID: <pschleck.796747779@gonix.com>
Source record: 25486
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

As readers of the rec.radio.amateur.* newsgroups are probably aware, I maintain a periodic information posting known as the Amateur Radio Elmers Resource Directory (aka the "Elmers List") which provides a list of net Elmers, indexed by topic, and their E-mail addresses. (For users of threaded newsreaders, this article is linked to the base article of the Directory itself).

As noted elsewhere, the Amateur Radio Elmers Resource Directory is 4 years old as of last month. In order to maintain its value to the net, I have strived to keep it accurate and up-to-date. In addition to reviewing the currency of the entire list every 2 years, I am constantly scouring the newsgroups for new Elmers to join the list.

There's always been an implicit invitation for any qualified person to join the list. However, since I've lost about 1/3 of the list due to attrition from my last biannual mass-ack (i.e., no response at their last-known E-mail addresses), felt the need to send out this explicit invitation. I'd like to replace the lost Elmers with new, motivated, quality Elmers from the net. Areas of expertise that are most desirable for the list right now include:

- Military Affiliate Radio System (MARS), particularly Army and Navy/Marine-Corps. MARS (as I currently don't have any MARS Elmers from those branches)
- Advanced homebrewing techniques (surface-mount, VLSI, DSP, spread-spectrum, etc.)
- TCP/IP Packet Radio and Gateways/Internetworking (particularly local IP coordinators and/or subnet managers/operators/leaders)
- Amateur Satellites/Space Operation (particularly Microsats and SAREX)
- Amateur-related Software for Unix/PC/Mac/Amiga/Psion/HP-95
- College Clubs and organizational guidance/strategies
- Boy Scout Amateur Radio Merit Badge Counselors
- Unix/Linux/X-Windows programming and configuration
- Amateur Radio Organizational Contacts (I am especially looking for contacts for the ARRL Field Organization, GRAPES, AMSAT, QCWA, QRP Int., NARA(?), QRZ, CSVHFS, LAMBDA, ARES, RACES, FEMA, any state OES or EMA, as well as any regional frequency coordinating body)
- Band, Mode or, Brand-specific equipment (actual manufacturer or dealer contacts would be quite welcome, as long as they reveal their affiliation and at least provide *some* free services)
- Maintainers of unique amateur-radio-related anonymous File Transfer Protocol (FTP) sites and World-Wide Web (WWW) Home Pages (as opposed to those that are substantially a rehash of, or pointers to,

existing sites).
- Maintainers of unique amateur-radio-related mailing lists
- Editors/contacts for amateur-radio-related publications

Although expertise in any other area would, of course, be welcome also.

I'd like to emphasize that participation is totally voluntary, with very minimal obligations (1 or 2 polite inquiries a month, if feedback from existing Elmers is any indication). If you find that it is too much work, you are welcome to bow out, no questions asked. In the 4 years I have managed the list, only a handful of Elmers explicitly resigned, and usually only because of severe professional or personal obligations, or their interests or expertise changed. You don't even need access to netnews, just a reliable E-mail address.

I've also attempted to seek out people on the net who I think would be good Elmers. If you've received a personal E-mail invitation from me, I urge you to give it serious consideration. The net would appreciate your volunteerism.

If you'd like to volunteer, or just discuss further what volunteering would involve or if your contribution would be desirable and fit within the Elmers List's mission and editorial policies, send me some E-mail to the Elmers list administrivia mailbox below (the default Reply-To: of this message; an autoreply daemon will respond with an acknowledgement message and I'll be in touch with you personally very soon).

--
73, Paul W. Schleck, KD3FU
elmers-request@gonix.com

Maintainer, Amateur Radio Elmers Resource Directory

687. Re: ARSENE

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3ljaho$4vq@news.onramp.net>
Source record: 25487

Jump over to ftp.amsat.org for a up to date list.
Last I read ARSENE is dead.

688. Re: ARSENE

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: slewis@pacsat.demon.co.uk
Message-ID: <858437025wnr@pacsat.demon.co.uk>
Source record: 25488

In article: <3li6ik$2ngt@ns3-1.CC.Lehigh.EDU> c002@Lehigh.EDU writes:
> Xref: demon rec.radio.amateur.space:3098
> Path:
demon.co.uk!demon!peernews.demon.co.uk!doc.news.pipex.net!pipex!howland.reston.ans.net!news.cac.psu.edu
!news.pop.psu.edu!hudson.lm.com!godot.cc.duq.edu!newsfeed.pitt.edu!dsinc!netnews.upenn.edu!Lehigh.EDU!L
ehigh.EDU!not-for-mail
> From: c002@Lehigh.EDU
> Newsgroups: rec.radio.amateur.space
> Subject: ARSENE
> Date: 31 Mar 1995 19:25:56 -0500
> Lines: 16
> Message-ID: <3li6ik$2ngt@ns3-1.CC.Lehigh.EDU>
> NNTP-Posting-Host: ns3-1.cc.lehigh.edu
>
> what IS the arsene sat?
> anyone have alot of info on it?
>
> also, i need alot of info on FM sats ONLY <names, freqs, other info>
>

Hi

Sorry but dont wsate your time - ARSENE is long dead and never really got off the ground 'excuse the pun' as its
transponders failed on launch and very shortly after entering orbit.

--
+---+
| 73 From: Simon Lewis GM4PLM - Helensburgh - Strathclyde - Scotland |
| Packet: GM4PLM @ GB7SAN.#78.GBR.EU Email: slewis@pacsat.demon.co.uk |
| AMSAT - UK Member 4282 **** SUPPORT YOUR LOCAL AMSAT GROUP **** |
+---+

689. ARLK013 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk013.1995@ampr.org>
Source record: 25489
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK013
ARLK013 Keplerian data

ZCZC SK38
QST de W1AW
Keplerian Bulletin 13 ARLK013
From ARRL Headquarters
Newington, CT April 1, 1995
To all radio amateurs

SB KEP ARL ARLK013
ARLK013 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-71
1 99971U 95160.19121193 .00171834 00000-0 27545-3 0 17
2 99971 51.6417 198.7841 0040351 359.5716 .5264 16.01466981 29
AO-10
1 14129U 83058B 95085.67894959 -.00000174 00000-0 10000-3 0 3435
2 14129 26.5113 276.3261 6015931 263.2779 28.9850 2.05881301 60630
RS-10/11
1 18129U 87054A 95089.52929469 .00000030 00000-0 16434-4 0 437
2 18129 82.9224 117.2158 0010676 317.0745 42.9581 13.72349984389180
UO-11
1 14781U 84021B 95088.03321573 .00000166 00000-0 35880-4 0 7854
2 14781 97.7818 94.3375 0013019 78.6670 281.5997 14.69322475592136
RS-12/13
1 21089U 91007A 95088.17689777 .00000053 00000-0 39834-4 0 7862
2 21089 82.9245 160.1133 0030617 37.4394 322.8883 13.74055828207785
AO-13
1 19216U 88051B 95088.38845552 -.00000561 00000-0 10000-4 0 248
2 19216 57.5609 196.0098 7276764 5.2704 359.3130 2.09725996 20491
UO-14
1 20437U 90005B 95086.77087399 .00000036 00000-0 30884-4 0 849
2 20437 98.5705 172.4449 0011911 76.9481 283.3029 14.29879980270116
RS-15
1 23439U 94085A 95087.16994341 -.00000039 00000-0 10000-3 0 384
2 23439 64.8217 26.0109 0168017 276.2293 81.9510 11.27526316 10383
```

```
AO-16
1 20439U 90005D 95086.18596375 .00000016 00000-0 23008-4 0 8829
2 20439 98.5818 173.4308 0012232 79.9117 280.3447 14.29933805270044
DO-17
1 20440U 90005E 95086.25250159 .00000032 00000-0 29128-4 0 8823
2 20440 98.5834 173.9260 0012275 78.6108 281.6448 14.30074631270072
WO-18
1 20441U 90005F 95090.22130387 .00000024 00000-0 26039-4 0 8870
2 20441 98.5825 177.8163 0012905 68.1337 292.1220 14.30046988270648
LO-19
1 20442U 90005G 95086.19183649 .00000038 00000-0 31334-4 0 8825
2 20442 98.5823 174.1776 0013228 78.1315 282.1356 14.30147720270086
FO-20
1 20480U 90013C 95087.24758390 -.00000010 00000-0 44872-4 0 7791
2 20480 99.0680 190.9050 0541071 56.4572 308.7017 12.83229560240560
AO-21
1 21087U 91006A 95088.52475186 .00000094 00000-0 82657-4 0 5791
2 21087 82.9407 291.5368 0035676 11.4372 348.7599 13.74552343208786
UO-22
1 21575U 91050B 95086.19174575 -.00000033 00000-0 33988-5 0 5889
2 21575 98.4047 159.5164 0007522 158.0820 202.0586 14.36965665193721
KO-23
1 22077U 92052B 95086.87493178 -.00000037 00000-0 10000-3 0 4801
2 22077 66.0804 46.0128 0010877 220.7519 139.2682 12.86290329123272
KO-25
1 22828U 93061F 95087.75834684 .00000029 00000-0 29061-4 0 3565
2 22828 98.6211 165.4003 0011233 82.6313 277.6143 14.28092334 46391
IO-26
1 22826U 93061D 95089.21495277 .00000014 00000-0 23313-4 0 3789
2 22826 98.6219 166.8003 0009704 89.7480 270.4809 14.27763526 78500
AO-27
1 22825U 93061C 95087.22263709 .00000018 00000-0 25097-4 0 3796
2 22825 98.6230 164.7543 0009323 95.1276 265.0965 14.27656256 78211
PO-28
1 22829U 93061G 95090.22102911 .00000023 00000-0 26730-4 0 3714
2 22829 98.6178 167.8524 0011075 76.1351 284.1058 14.28070630 78660
Mir
1 16609U 86017A 95088.52014666 .00009010 00000-0 12350-3 0 9831
2 16609 51.6467 196.9039 0004393 309.4129 50.6474 15.58185978520412

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
April 4, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

690. MAY CQ Magazine Article

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: rarland@news.epix.net
Message-ID: <3lkjj3$dau@grape.epix.net>
Source record: 25490

What? Nothing about the 2nd part of my article on QRP? Since when does some dumb contest win out over "real radio" (namely low power communications)? Remember: its wits not watts that makes the difference.

73 rich K7YHA

691. Re: AO-27 Activity Question

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3lkv9e$2df4@ns2-1.CC.Lehigh.EDU>
Source record: 25491

In article <3lhrpv$ahv@newshost.lanl.gov>, Gerald Schmitt <ggs@aerie.lanl.gov> w
rites:
>
>AO-27 is on weekends when it can see the sun (power budget)and
>when the mood strikes the folks who control it. We appreciate
>it when it is there but it is not always there. Kinda like life
>up and down. 73 maybe will see ya there de Jerry KC5EGG
>

ah hell, there goes the only times i can work it...at night.
at school the rest of the day :(all try it anywho!

DAvid

|--|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

692. Re: ARSENE

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3lkvcf$29fo@ns2-1.CC.Lehigh.EDU>
Source record: 25492

In article <3ljaho$4vq@news.onramp.net>, Bob Winingham <kc5ejk@onramp.net> write
s:
>Jump over to ftp.amsat.org for a up to date list.
>Last I read ARSENE is dead.

yeah, i just read it in the 1996 arrl handbook....oh well

DAvid
thanks anyhow
|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

693. Garmin 45 Cable Owners - A Question

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: miles@mail.utexas.edu
Message-ID: <miles-0104952134120001@slip-20-16.ots.utexas.edu>
Source record: 25493

Folks have tried to find a plug to fit the power / data socket on the Garmin 45, but without success. Perhaps the actual connector is available (for less than $30) from the original manufacturer. A long shot, I know, but perhaps.

If you have the official cable, would you please examine it closely and post if there is any manufacturer's name or logo on it? Thank you.

--

Miles Abernathy, N5KOB, University of Texas
P. O. Box 7580, Austin, Texas 78713 USA

694. Re: Problem with InstantTrack

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: Mark Moulding <mmoulding@delphi.com>
Message-ID: <xQ2ZfZq.mmoulding@delphi.com>
Source record: 25494

See if you can slow the speed of your computer down. The Software
was written at a time when the 286 and 386 were the machine of the day.
Check with a computer literate person and see if you can drop the
75 Mhz back down to 33 or there about. Unless you can get the source code
for the pgm. GL, 73, MArk

695. Re: AO-27 Activity Question

Newsgroup: rec.radio.amateur.space
Date: 1995-04-01 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3ljkoj$enu@news.mci.net>
Source record: 25495

>>>I've tried listening a few times for the AO-27 downlink at
436.8 Mhz, but
haven't heard it yet. Is this unit on continuously?. Thanks -
Kerry N6IZW
kbanke@qualcomm.com -

The bird is turned on mostly on the weekends only Kerry - try
then during the day. Do not need much gain but do need to be in
the clear.

73, Bob N3FTU

696. UNAMSAT Launch Failure

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: bob@texas.net
Message-ID: <3llcuh$hp0@empire.texas.net>
Source record: 25496

ARRL BULLETIN 31 ARLB031
FROM ARRL HEADQUARTERS
NEWINGTON CT MARCH 30, 1995
TO ALL RADIO AMATEURS

SB QST ARL ARLB031
ARLB031 2 AMATEUR SATELLITES LOST

TWO AMATEUR SATELLITES WERE LOST WHEN THEIR LAUNCH VEHICLE EXPLODED.
THE ISRAELI-BUILT GURWIN-1 TECHSAT AND THE MEXICAN UNAMSAT WERE PART
OF THE PAYLOAD OF A RUSSIAN SS-25 ROCKET ORIGINALLY BUILT TO CARRY
BALLISTIC MISSILES AND RECENTLY CONVERTED TO LAUNCH SATELLITES.
THE REUTERS NEWS AGENCY SAID THE ROCKET, WHICH WAS LAUNCHED FROM
RUSSIA'S PLESETSK COSMODROME, CAME DOWN IN THE RUSSIAN FAR EAST,
IN THE SEA OF OKHOTSK, ON MARCH 28.

BOTH SATELLITES WERE DESIGNED FOR PACKET RADIO REPEATER USE.
GURWIN-1 TECHSAT WAS BUILT AT THE TECHNION-ISRAEL INSTITUTE OF
TECHNOLOGY IN HAIFA AS A 9600-BIT/S PACKET STORE-AND-FORWARD
SATELLITE. UNAMSAT WAS ASSEMBLED BY STUDENTS AT THE UNIVERSIDAD
NACIONAL AUTONOMA DE MEXICO (UNAM) IN MEXICO CITY. IN ADDITION TO
PACKET STORE-AND-FORWARD OPERATION AT 1200 BITS PER SECOND, UNAMSAT
CARRIED A UNIQUE "METEOR RADAR" EXPERIMENT. (SEE JANUARY 1993 QST,
PAGE 97, FOR MORE INFORMATION ON UNAMSAT.)

REUTERS NOTED THAT THE 115-POUND GURWIN-1 TECHSAT WAS A PROTOTYPE
FOR COMMUNICATION SATELLITES AND "WAS TO HAVE BEEN USED BY AMATEUR
RADIO ENTHUSIASTS." REUTERS DID NOT MENTION UNAMSAT. TWO RUSSIAN
SATELLITES ALSO WERE LOST IN THE FAILED LAUNCH.

IN NOVEMBER 1993 THE FIRST TEST LAUNCH OF A CONVERTED SS-25 WAS
SUCCESSFUL, BUT WITH A LIGHTER PAYLOAD. RADIO AMATEURS,
PARTICULARLY IN EUROPE, HAVE HOPED THAT THE RUSSIAN ROCKETS WILL
PROVIDE AN INEXPENSIVE WAY TO LAUNCH AMATEUR RADIO SATELLITES.

-END-

697. The ones to listen for?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: ahall@uiuc.edu
Message-ID: <ahall-0204950113570001@ruger-7.slip.uiuc.edu>
Source record: 25497

Hello everyone out there in r.r.a.s!

I was wondering, (I'm fairly new to sat's -> just got a good program for the mac -> e-mail me if you want to know which one) what are the satellites that I should be watching for? I guess really what I'm asking is: Is there any sort of compiled list of the amateur sat's and freq's and/or interesting freq's to listen to and which sat's they belong to?

It's great to have Keplerian data and watch the sat go around the world, but I want to know where to uplink/downlink and what modes etc. etc.

I appreciate any pointers to FAQ's which answer my questions above, or any other helpful information (along with comments/suggestions).

TNX et 73's!

Allen Hall n9rzc@uiuc.edu

698. Re: S band operation on Oscar 13

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3lmr41$ol4@desiree.teleport.com>
Source record: 25498

In article <3lhq9b$pl6@newsstand.cit.cornell.edu>, fkf1@cornell.edu said...

>Somebody just dropped a nice 6 foot dish in my lap, so now I have to find
>a use for it. I've been intrigued by the S band stuff done on Oscar 13,
>but never had any gear to participate.
>
>Can someone give me the lowdown on what's required

I have been on Mode S for about two years now, and I much prefer it to B. Your six foot dish will work good with lots of link margin, but be forewarned that you will need pretty accurate pointing.

I am using a six footer myself, and I constructed my own 16 foot tower and az-el mount. I am a machinist/welder, so that project was not so difficult for me. I couldn't say the same for someone who doesn't have the same equipment.

The standard G5400 rotator does not have the power or bearings needed to properly turn a big dish, so you will need a heavy duty rotor. I am using a G-1000SDX for the azimuth and a TVRO screw-jack type unit for the elevation. I may write an article about it all one of these days, as the cost was not very high (compared to commercial units). I used a lot of old car parts for the bearings and drive.

As you can probably tell, there is quite a bit to getting this type of system to work. Getting it automated is yet another story!

In the end, I'm glad I went with the six footer. The signals are excellent, even out to 30 degrees plus of squint. It does take some work, though. Probably a long term project.

I use the Down East Microwave converter. It uses 144 mHz for the output, so a quick connection with a coax switch works great. Just don't transmit through it!!! I do use a pre-amp, from the same company.

For reference, signals are usually S-7 (or more if someone is using too much power) and the noise is down around S-2 to S-3. That's quite a margin!

Good luck!

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

699. SATTRACK PROBLEM

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: jimn2ete@aol.com
Message-ID: <3ln849$fn@newsbf02.news.aol.com>
Source record: 25499

I downloaded the Sattarck file from the AMSAT ftp, and it decompressed
fine
using gzip. Now as I decompressed it, I ended up with a .TAR extension.
Does anyone have a clue as to what to do next?

Jim N2ETE

700. rs15

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: rrm@ornews.intel.com
Message-ID: <3lmgs4$eds@ornews.intel.com>
Source record: 25500

Does anybody have the decoding information for the rs15. I've been monitoring the CW on 10m and would like to now what these packets of info mean.

The groups are sent in a set of 16 with the format following a 3-letter, 2-number group. This all begins (or ends) with thr identifier rs15.

Please Post or E-mail please the description of what these mean. I know they monitor voltages, output power, etc. Any and all comments are very much appreciated.

Thanks

Robert Miller KA7JKP

701. Comment 04/02/95 10:51pm

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: Ken.Ernandes@227.woodybbs.com
Message-ID: <532_9504040646@woodybbs.com>
Source record: 25501

Joe -

The phone # for Joe Coffield, W2DDZ is 516-266-3192.

This is in regard to the Larkfield ARC VE sessions.

73, Ken
--
| Fidonet: Ken Ernandes 1:2619/227
| Internet: Ken.Ernandes@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

702. PCTrack

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: jrybak@mesa5.Mesa.Colorado.EDU
Message-ID: <3lnuo6$kf3@mesa5.Mesa.Colorado.EDU>
Source record: 25502

I want to obtain a copy of PCTrack (version 3.0 or later). Can anyone tell
I
me how to obtain it? Thanks for any help you can provide.

73,

Jim W0KSD

703. Comment 04/02/95 1:08pm

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: Ken.Ernandes@227.woodybbs.com
Message-ID: <52b_9504030707@woodybbs.com>
Source record: 25503

Joe -

Could you make an addition to Bulletin #11 (VE Sessions):

Sponsor: Larkfield ARC
Date: 3rd Saturday
Place: Huntington Town Hall (Jackson Ave Entrance)
Contact: Joe Coffield, W2DDZ

I don't have Joe's phone number handy, but will send it to you in a
follow-up message.

73, Ken
--
| Fidonet: Ken Ernandes 1:2619/227
| Internet: Ken.Ernandes@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

704. Comment 03/26/95 11:12pm

Newsgroup: rec.radio.amateur.space
Date: 1995-04-02 00:00:00 UTC
From: Joseph.Isbell@227.woodybbs.com
Message-ID: <52c_9504030707@woodybbs.com>
Source record: 25504

```
-> Check out AMSAT Bulletin # ANS-084.03

Yeh, I noticed it last week.. CONGRATS!
Any chance you have a copy of the video?
If not, will it be aired out here?

73 Joe
--
| Fidonet: Joseph Isbell 1:2619/227
| Internet: Joseph.Isbell@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.
```

705. Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: tony@gcr1.com
Message-ID: <3lp3bl$oee@tetsuo.communique.net>
Source record: 25361

Anyone has the mods and freqs for PIIID ??
reply at: tony@gcr1.com

706. Geosync satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: jpcarlie@vub.ac.be
Message-ID: <3lpa1g$rtt@rc1.vub.ac.be>
Source record: 25362

Does anyone know where I could find the TLE's for ALL geosync satelites orbiting around the earth (I know the list is a bit long but anyway shorter than getting all sats alltogether).

Thanks
Marc Delince ONL6486 using jpcarlie account.

707. Re: Keppler data algorithms ??

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: jcw@kd4dts.radio.org
Message-ID: <1995Apr3.185442.5083@kd4dts.radio.org>
Source record: 25363

I found something on Compuswerve called EMOSAT.ZIP that demonstrate keplerian element calculations. Check that. If you can't get to it via CompuSlut, e-mail be, and I'll mail it to you.

- John, KD4DTS

Jorn Hanssen <jorn@ts.umu.se> writes:

>
>Is there anyone who can help me with algorithms for implementing Keppler data into a computer
>for calculation of orbital data of a satellite?
>
>I need these to start my final project wich is making software for steering an antenna.
>
>Could you please help me by sending an answer to this newsgroup or directly to my e_mail:
>jorn@ts.umu.se
>
>On forehand ; Thank You.
>--
>JOrN :-)

708. Re: Molczan sat. elements

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: aa005@torfree.net
Message-ID: <D6GvpI.p9@torfree.net>
Source record: 25364

Steve Mayer (smayer@cafe.glassnet.com) wrote:
: In article <rick.796468349@anubis> rick@itp.phys.ethz.ch writes:

: > Hello!
: >
: > I am looking for a site carrying the actuals Molczan sat.
: > elements.
: >

: Hi Rick
: Cant remember the name of the mailbox but the phone number from UK
: is 001 416 458 5707
: somewhere in canada I believe

The telephone number ids it as somewhere in Metro Toronto.

709. * SpaceNews 03-Apr-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3lpn2n$n5v@pilot.njin.net>
Source record: 25365
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0403
* SpaceNews 03-Apr-95 *

BID: $SPC0403

=========
SpaceNews
=========

MONDAY APRIL 3, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* LAUNCH FAILURE *
==================
Two amateur satellites were lost when their launch vehicle exploded.
The Israeli-built GURWIN-1 Techsat and the Mexican UNAMSAT were part
of the payload of a Russian SS-25 rocket originally built to carry
ballistic missiles and recently converted to launch satellites. The
Reuters News Agency said the rocket, which was launched from
Russia's Plesetsk Cosmodrome, came down in the Russian Far East, in
the Sea of Okhotsk, on March 28.

Both satellites were designed for packet radio repeater use.
GURWIN-1 Techsat was built at the Technion-Israel Institute of
Technology in Haifa as a 9600-bit/s packet store-and-forward
satellite. UNAMSAT was assembled by students at the Universidad
Nacional Autonoma de Mexico (UNAM) in Mexico City. In addition to
packet store-and-forward operation at 1200 bits per second, UNAMSAT
carried a unique "meteor radar" experiment.

Reuters noted that the 115-pound GURWIN-1 Techsat was a prototype
for communication satellites and "was to have been used by amateur
radio enthusiasts." Reuters did not mention UNAMSAT. Two Russian
satellites also were lost in the failed launch.

In November 1993 the first test launch of a converted SS-25 was
successful, but with a lighter payload. Radio amateurs,
particularly in Europe, have hoped that the Russian rockets will
provide an inexpensive way to launch amateur radio satellites.

[Info via ARRL]

* SOFTWARE ANNOUNCEMENT *
=========================

March 31, 1995
SatTrack V3.1 has been released.

SatTrack is a satellite orbit prediction and realtime tracking program with X Window System color graphics displays. The program has been written in C language and runs on a number of different Unix and Linux systems with X11R5. It not only displays in realtime where a number of satellites are but is also capable of controlling suitable ground station equipment, like antennas or optical telescopes, and radio communications hardware. In the autotrack mode it switches between various satellites as they rise and set. Predictions of passes of satellites over specified ground stations can be run off either interactively or in batch mode.

For detailed on-line information check the new SatTrack WWW Home Page at

http://ssl.berkeley.edu/isi_www/sattrack.html

The distribution file sattrack-3.1.tar.gz (or sattrack.V3.1.tar.gz) is also available from:

ftp.amsat.org/amsat/software/Linux
ftp.jnvc.net/priv/kupiec/sattrack

[Info via Manfred Bester (manfred@ssl.berkeley.edu)]

* MIR NEWS *
============
Miles, WF1F, reports that he had a nice chat with Astronaut Norman E. Thagard on the Mir space station on 31-Mar-95. Norman is trying to get on the air as much as possible to chat with people, but there are a lot of stations calling him out of turn. This is causing lots of interference. Miles suggests that stations wanting to talk with Norman should wait until he is done talking to the specific station after which he will make the announcement "CQ". Astronaut Norman is not a "Contester". He likes to chat with each station for a 3 to 5 minutes before going on to the next station. Please respect his chosen QSO format.

Norman said the Russian crew is not keeping any type of call log, but if you talk with Norman, he is keeping a log and will try to send you a response card. Note, however, that he will not be sending cards until after he returns to earth with his log book.

Norman Thagard's QSL address is as follows:

NASA
Lyndon B. Johnson Space Center
Norman E. Thagard
Mail code CB
Houston, Texas 77058

The Mir PMS packet station is working again, but some of the TNC parameters are incorrectly set. One of the bad parameters is the TX-Delay. This is preventing most stations from reliably connecting, unless conditions are ideal. Dave Larsen N6JLH, is currently working with Norman Thagard to fine

tune the PMS parameters. It is requested that stations not try to access
the PMS Packet until all of the parameters on the Mir PMS have been properly
adjusted. The work should be completed by April 7th.

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any
of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

710. RE: Ham-Space Digest V95 #92

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: Jim.Hansen@stpete.honeywell.COM
Message-ID: <2F8259FA@vax-flcgr.stpete.honeywell.com>
Source record: 25366

Sorry to hear that you got stuck with a MAC!
Oh well, I guess you will just have to try and make the best of it.

A Good places to find the information you are looking for (sat's and there
frequencies) is the following FTP site:

ftp.cs.buffalo.edu

The file to look for is "faq_satellite" which is found in the "ham-radio"
sub-directory within the "pub" directory.

The following FTP site also has allot of information plus software (even for
a MAC, in addition to others)
ftp.amsat.org

Useful WWW sites are:

http://www.acs.oakland.edu/barc/arrl.html

http://www.amsat.org/amsat/AmsatHome.html

>Date: Sun, 02 Apr 1995 01:13:57 -0600
>From: ahall@uiuc.edu (Allen Hall)
>Subject: The ones to listen for?
>
>Hello everyone out there in r.r.a.s!
>
>I was wondering, (I'm fairly new to sat's -> just got a good program for
>the mac -> e-mail me if you want to know which one) what are the
>satellites that I should be watching for? I guess really what I'm asking
>is: Is there any sort of compiled list of the amateur sat's and freq's
>and/or interesting freq's to listen to and which sat's they belong to?
>
>It's great to have Keplerian data and watch the sat go around the world,
>but I want to know where to uplink/downlink and what modes etc. etc.
>
>I appreciate any pointers to FAQ's which answer my questions above, or any
>other helpful information (along with comments/suggestions).
>
>TNX et 73's!
>
>Allen Hall n9rzc@uiuc.edu
>

711. Re: SATTRACK PROBLEM

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: ab5sm@netcom.com
Message-ID: <ab5smD6FMrp.Bwo@netcom.com>
Source record: 25505

JimN2ETE (jimn2ete@aol.com) wrote:
: I downloaded the Sattarck file from the AMSAT ftp, and it decompressed
: fine
: using gzip. Now as I decompressed it, I ended up with a .TAR extension.
: Does anyone have a clue as to what to do next?

: Jim N2ETE

yes .. sattrack is for unix machine .. the command to untar the file is

tar -xvf [filename]

--

lee - ab5sm Ham Distribution Net ab5sm@netcom.com
P.O. Box 50003 ab5sm@txnp.uscourts.gov
Dallas, Tx 75250-0003

Ham Distribution Net BBS - (214) 226-1181 - Login: Guest;guest

--

712. subscribe

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: wb5otd@ionet.net
Message-ID: <3lns1o$ol8@ionews.ionet.net>
Source record: 25506

```
subscribe wb5otd@ionet.net
```

713. Re: satellite qsls

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: kebsch@pdb.sni.de
Message-ID: <3lo9i1$59r@nanette.pdb.sni.de>
Source record: 25507

In <3lfvju$e8b@newsbf02.news.aol.com> roger73@aol.com (Roger73) writes:

Hello Roger,

let me answere your questions and please excuse my broken English, hi.

>I recently worked the robot on one of the Russian satellites and when I
>was about to fill out a qsl for it I suddenly realized something. I have
>never seen anything in QST, CQ, or the Amsat bulletins about the correct
>way of filling out satellite qsl cards. I know it sounds simple. I have
>been a ham almost 40 years and have filled out thousands of qsl cards; but
>never for a satellite qso before. I can think of many variations and want
>to know the proper way one is filled out.

QSL'ng Robot QSO's

Make a remark on the QSL card like: QSO-Nr.: <QSO-Number>
The QSO-Number is the number which the robot has given to you at the end
of your QSO. The callsign is the name of the satellite: RS10, RS12, RS15.
Send the QSL-card to the Radio Sport Federation, Box 88, Moscow, Russia or
via the (ARRL-) Bureau. Up- and Downlink frequencies .. see below.

>I had made a qso with another station would I say W1XYZ@RS-12, W!XYZ on
>RS-12? For the frequency do I use just the uplink, or uplink and
>downlink? Does anyone print qsl cards specifically for satellite qsos?
>TNX ES 73, Rog N6GL

QSL'ng QSO's with real HAM's, hi.

1. Make a remark on the QSL-card like: via <Satellite>
(i.e.: "via RS-10/11", or "via RS-12/13" or "via RS-15")
2. Note **both** frequencies (Uplink and Downlink) on your card.
For RS-10/11 and RS-15: Up: 145MHz, Down 29MHz.
For RS-12/13: Up: 21MHz, Down: 29MHz.
I am pretty sure you don't have special boxes/fields on your QSL-card
for the uplink and downlink frequencies, so note it in this way:

```
------+---------+----
| QRG/MHz |
------+---------+----
| 145 | write the uplink in the upper half of the box.
| ----- | make a little line in the middle
| 29 | write the downlink in the lower part of the box.
------+---------+----
```

And last not least: Think about a re-design of your next QSL-card, hi.
Think about fields/boxes: "via Satellite". "Uplink" and "Downlink".

Have fun via the RS's ..

73 de DK3VN
Waldemar
--
Waldemar Kebsch, c/o Siemens | DK3VN (QRV on 40/20/15/10 since 9/94)
Nixdorf Informationssysteme AG | The last courtesy of a QSO is a QSL!
33106 Paderborn, Federal Republic | Big antennas, high in the sky, are
of Germany, kebsch.pad@sni.de | better than small ones, low, hi! [41]

714. Re: HELP! with rs-10/11

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: kebsch@pdb.sni.de
Message-ID: <3loa8u$5tb@nanette.pdb.sni.de>
Source record: 25508

In <3klbhp$5tuj@ns2-1.CC.Lehigh.EDU> c002@Lehigh.EDU writes:

>Hello out there in Hamspace land...

> [.. deleted ..]

>#2. what IS cw? i tx cw from hamcomm by holding the ptt down...is that right?
^^^^^^^^^^^
What is CW?????
A very difficult question!
Let me try: YOU CAN'T EAT IT! :-) :-) :-)

David, have fun ...
73 de DK3VN
Waldemar
--
Waldemar Kebsch, c/o Siemens | DK3VN (QRV on 40/20/15/10 since 9/94)
Nixdorf Informationssysteme AG | The last courtesy of a QSO is a QSL!
33106 Paderborn, Federal Republic | Big antennas, high in the sky, are
of Germany, kebsch.pad@sni.de | better than small ones, low, hi! [41]

715. Keppler data algorithms

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: Jorn Hanssen <jorn@ts.umu.se>
Message-ID: <3lolvr$4hm@kitten.umu.se>
Source record: 25509

Is there anyone who can help me with algorithms for implementing Keppler data into a computer
for calculation of orbital data of a satellite?

I need these to start my final project wich is making software for steering an antenna.

On forehand ; Thank You.
--
JOrN :-)

716. Keppler data algorithms ??

Newsgroup: rec.radio.amateur.space
Date: 1995-04-03 00:00:00 UTC
From: Jorn Hanssen <jorn@ts.umu.se>
Message-ID: <3loo2r$95r@kitten.umu.se>
Source record: 25510

Is there anyone who can help me with algorithms for implementing Keppler data into a computer
for calculation of orbital data of a satellite?

I need these to start my final project wich is making software for steering an antenna.

Could you please help me by sending an answer to this newsgroup or directly to my e_mail: jorn@ts.umu.se

On forehand ; Thank You.
--
JOrN :-)

717. Re: Geosync satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: drted@ix.netcom.com
Message-ID: <3lr5t5$b70@ixnews4.ix.netcom.com>
Source record: 25367

In <3lpa1g$rtt@rc1.vub.ac.be> jpcarlie@vub.ac.be (Carlier Jean-Pol)
writes:

>
>Does anyone know where I could find the TLE's for ALL geosync satelites
>orbiting around the earth (I know the list is a bit long but anyway
shorter
>than getting all sats alltogether).
>
>Thanks
>Marc Delince ONL6486 using jpcarlie account.
>
>

go to <archive.afit.af.mil> pub/space and download "tvro.tle".
--
Bye... Ted..
Deep in the Heart of the Armpits of Houston, Texas...

718. Re: ARSENE

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: icesb@iroe.fi.cnr.it
Message-ID: <icesb.70.2F8148A9@iroe.fi.cnr.it>
Source record: 25368

In article <3li6ik$2ngt@ns3-1.CC.Lehigh.EDU> c002@Lehigh.EDU writes:
>From: c002@Lehigh.EDU
>Subject: ARSENE
>Date: 31 Mar 1995 19:25:56 -0500

>what IS the arsene sat?
>anyone have alot of info on it?

>also, i need alot of info on FM sats ONLY <names, freqs, other info>

>thanks

>DAvid
>|---|
>| David Roseman | c002@lehigh.edu |
>| SysOp of NODE 3 BBS | The Flying HAm - BBS |
>| Running OBV/2 Software | TechnoMage - BBS |
>| | N3SQE/SVARC - Ham |
>| HAmmy in IRC | N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet |
>|------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----|

I remember that mode B transponder fault but mode S transponder was OK. Realy
I don't know if it's active. (ARSENE was assigned A024).

Lapo Pieri IK5NAX internet: icesb@iroe.fi.cnr.it
@IROE-CNR (Italy) lpieri@nyx.cs.du.edu
Phone: +39 55 4235276 (IROE) packet: ik5nax@IW5CZJ.ITOS.IT.EU
+39 55 410209 (home) [TCP/IP] 44.134.208.174
---

719. Re: SATTRACK PROBLEM

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: dtiller@rmc.edu
Message-ID: <3lrgit$2es@gnd0.rmc.edu>
Source record: 25369

JimN2ETE (jimn2ete@aol.com) wrote:
: I downloaded the Sattarck file from the AMSAT ftp, and it decompressed
: fine
: using gzip. Now as I decompressed it, I ended up with a .TAR extension.
: Does anyone have a clue as to what to do next?

Sattrack runs on unix boxes primarily, where there's a program called
'tar' (Tape ARchive) that is similar to a no-compression zip. It just
groups files together into one big file for ease of handling. There's
a GNU tar for PC's on prep.ai.mit.edu (I think) that is either an .exe
file or can be compiled into one. I don't know if Sattrack can be compiled
with Borland C or Microsoft C.

--
David Tiller | Network Administrator | Voice: (804) 752-3710 |
dtiller@rmc.edu | n2kau/4 | Randolph-Macon College| Fax: (804) 752-7231 |
Don't let your SKS get | P.O. Box 5005 | ICBM: 37d 42' 43.75" N |
"Tainted with Defilement!" | Ashland, Va 23005 | 77d 31' 32.19" W |

720. UHF repeater for sale

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: pirulo@netcom.com
Message-ID: <piruloD6Io9q.5xr@netcom.com>
Source record: 25370

```
--
**************************************************************************
* PIRULO | KD6TOW *
* Address: pirulo@netcom.com | Home BBS: N6YN.SOCAL.CA.Us *
* TCP/IP : pirulo@192.100.81.113 | Los Angeles, California, U.S.A. *
**************************************************************************
```

721. Satellite awars

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: I121171@relay.telecom.it
Message-ID: <3lqp4f$b5h@sgi.iunet.it>
Source record: 25371

Anyone knows if exist satellite awards available to SWL also ???

722. Re: Satellite frequency & schedule questions.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: I121171@relay.telecom.it
Message-ID: <3lqp77$b5h@sgi.iunet.it>
Source record: 25372

Try on TRANCE BBS (ITALY) +39-11-482751 devoted to Space/HAM/SWL

They have the bulletin with all satellite frequencies. GD luck

723. re: The ones to listen for?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: lhalliday@creo.bc.CA
Message-ID: <9503047970.AA797012975@mail.creo.bc.ca>
Source record: 25373

Allen asks:

> I was wondering, (I'm fairly new to sat's -> just got a good program
> for the mac -> e-mail me if you want to know which one) what are the
> satellites that I should be watching for? I guess really what I'm
> asking is: Is there any sort of compiled list of the amateur sat's
> and freq's and/or interesting freq's to listen to and which sat's
> they belong to?

(A new Mac tracking program? Do tell...)

If you haven't already found it, you can get all kinds of information
on amateur radio satellites from:

ftp.amsat.org

or

http://www.amsat.org/amsat/AmsatHome.html

If you have HF receive capability, try listening for RS-10 and RS-15
on 10 meters. You'll hear the CW beacons, and CW and SSB
conversations. Look for beacons around 29.35 MHz, and downlink
activity from 29.35 to 29.40 MHz. You can hear RS-12's downlink and
beacons on similar frequencies, but unlike RS-10 and RS-15's 2m Mode A
uplinks, RS-12 uses Mode K, with an uplink on 15m.

If you have 2m receive capability you can hear various low-orbit
satellites (is Dove back on the air?). Tune down to 136 MHz and you
can hear weather satellites.

I hear weather satellites (albeit not very well) on a Realistic Pro-43
scanner, and receive RS-10 and RS-15 with an FRG-7 hooked up to some
wire strung in the trees, so you do *not* need advanced equipment to
get started.

Buy/beg/borrow/steal a copy of the Satellite Experimenter's Handbook.
Join AMSAT (who publish a wealth of introductory material). Have fun.

73 from Burnaby,
laura VE7LDH

724. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: little@iamu.chi.dec.com
Message-ID: <3lq7e2$hqm@jac.zko.dec.com>
Source record: 25374

In article <J4w7XLv.darrylb@delphi.com>, Darryl Bennett <darrylb@delphi.com> writes:
|>Todd Little <little@iamu.chi.dec.com> writes:
|>
|>>|>What's your setup? Particularly, can you describe your antenna system?
|>>|>
|>>
|>>Hi Darryl,
|>>
|>>Sure, I'm using a Yaesu FT-726R, a Mirage B1016 amp, 50' of heliax,
|>>GAsFET preamp, and the KLM 14 element crossed yagi. It is the same
|>>system I use for the OSCARs such as AO-13, AO-13, FO-20, and several of
|>>the PACSATs.
|>
|>
|>I think I discovered part of the reason for your success; it's the heliax,
|>right? |-)

That's correct. The heliax twists the signal around so that it bends
over the horizon better. ;-)

--
73, Member of AMSAT, ARRL, Palatine RACES, and the Arlington
Todd Communications League. Weather spotter and sponsor of the Hunting
N9MWB Ridge Elementary School Radio Club. See you on 160-1296 and OSCAR.

725. Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.796958751@eel>
Source record: 25375

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated several times weekly. Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated weekly) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

726. Two-Line Orbital Element Sets (TLE578)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.796958865@eel>
Source record: 25376

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #578 -
Alouette 1
1 00424U 62049A 95089.20552842 .00000128 00000-0 13994-3 0 902
2 00424 80.4626 2.8051 0024146 95.8566 264.5325 13.67837619621502
ATS 1
1 02608U 66110A 95090.49022563 -.00000091 00000-0 10000-3 0 9258
2 02608 14.6243 357.4710 0009671 56.3295 303.7330 1.00314281 20414
ATS 3
1 03029U 67111A 95091.48336263 -.00000123 00000-0 10000-3 0 3477
2 03029 14.7930 4.5035 0008996 278.1677 335.3420 1.00272416100326
Cosmos 398
1 04966U 71016A 95092.49891218 .00222710 83327-5 27469-3 0 7954
2 04966 51.4192 209.4244 0691400 191.6851 166.7319 14.68965783813973
Starlette
1 07646U 75010A 95093.22315811 -.00000123 00000-0 14499-4 0 8756
2 07646 49.8262 88.8271 0206241 214.0823 144.6681 13.82188602 17978
LAGEOS
1 08820U 76039A 95089.66772574 -.00000004 00000-0 10000-3 0 943
2 08820 109.8303 233.6978 0044144 223.5744 136.1232 6.38664341185447
ETS-2
1 09852U 77014A 95085.35229150 -.00000181 00000-0 10000-3 0 207
2 09852 12.6185 38.1548 0001978 46.1056 313.9100 0.99996160 13151
GOES 2
1 10061U 77048A 95090.38801012 .00000072 00000-0 10000-3 0 5102
2 10061 11.6832 42.2905 0012874 99.9645 17.5310 1.00160454 9992
IUE
1 10637U 78012A 95093.12555508 -.00000240 00000-0 10000-3 0 1209
2 10637 35.0717 90.1976 1322865 44.3825 48.7770 1.00246813 15517
GPS BI-01
1 10684U 78020A 95091.01430480 -.00000065 00000-0 10000-3 0 3462
2 10684 64.8012 36.9755 0060654 162.9468 197.2459 1.98069648110633
```

```
GPS BI-02
1 10893U 78047A 95087.44065699 .00000007 00000-0 10000-3 0 1543
2 10893 63.3610 275.3279 0221606 14.0348 346.5221 2.01627158123803
GOES 3
1 10953U 78062A 95091.64549647 .00000059 00000-0 10000-3 0 4702
2 10953 10.6567 45.0386 0003138 102.2994 99.7005 1.00286483 14617
SeaSat 1
1 10967U 78064A 95089.86658860 -.00000026 00000-0 36087-4 0 3852
2 10967 107.9980 335.4493 0001705 252.3833 107.7116 14.38022385877572
GPS BI-03
1 11054U 78093A 95089.02672883 -.00000011 00000-0 10000-3 0 2748
2 11054 63.0598 273.3074 0044713 176.8670 183.1496 1.93505236120047
Nimbus 7
1 11080U 78098A 95090.66293898 -.00000097 00000-0 -49702-4 0 4894
2 11080 99.0140 327.9449 0009768 79.7499 280.4751 13.83713366829836
GPS BI-04
1 11141U 78112A 95091.08360962 -.00000064 00000-0 10000-3 0 9664
2 11141 64.8008 38.6800 0048754 26.7156 333.4906 1.92894876 9333
GPS BI-05
1 11690U 80011A 95091.10587650 -.00000061 00000-0 10000-3 0 8983
2 11690 65.1353 38.6260 0145599 195.0243 164.4937 2.00562592125311
GPS BI-06
1 11783U 80032A 95091.50830749 -.00000016 00000-0 10000-3 0 660
2 11783 62.5059 268.5379 0217105 29.4698 331.7088 2.03456472109826
GOES 5
1 12472U 81049A 95088.83275091 -.00000288 00000-0 10000-3 0 8478
2 12472 7.3746 54.9112 0005370 14.6437 345.4288 1.00304184 8639
Cosmos 1383
1 13301U 82066A 95092.06895875 .00000048 00000-0 39346-4 0 3932
2 13301 82.9296 97.9666 0028746 21.5350 338.6997 13.68064697636923
LandSat 4
1 13367U 82072A 95092.22444469 .00000271 00000-0 70018-4 0 6536
2 13367 98.1362 149.8852 0008284 77.4707 282.7386 14.57151138676159
DMSP B5D2-1
1 13736U 82118A 95093.01751551 .00000096 00000-0 59012-4 0 6938
2 13736 98.6297 283.4021 0007487 232.9897 127.0598 14.25722395638200
IRAS
1 13777U 83004A 95092.52183967 .00000148 00000-0 13227-3 0 9177
2 13777 98.9650 282.4040 0011766 232.7244 127.2860 13.99222657291609
Cosmos 1447
1 13916U 83021A 95092.22842857 .00000002 00000-0 -13432-4 0 4903
2 13916 82.9478 157.9314 0036875 305.9857 53.7878 13.74323484603035
TDRS 1
1 13969U 83026B 95083.72115618 -.00000199 00000-0 10000-3 0 4026
2 13969 8.2134 48.1526 0001934 237.4889 239.4402 1.00259584 16861
GOES 6
1 14050U 83041A 95090.33473211 .00000028 00000-0 10000-3 0 3711
2 14050 6.1946 58.0195 0005273 343.9698 138.3657 1.00305320101745
OSCAR 10
1 14129U 83058B 95085.67894959 -.00000174 00000-0 10000-3 0 3435
```

```
2 14129 26.5113 276.3261 6015931 263.2779 28.9850 2.05881301 60630
LandSat 5
1 14780U 84021A 95091.16194059 .00000087 00000-0 29260-4 0 2210
2 14780 98.1196 149.5351 0006045 87.7179 272.4712 14.57155221589413
UoSat 2
1 14781U 84021B 95092.05109433 .00000272 00000-0 53761-4 0 7867
2 14781 97.7817 98.1661 0013050 66.5015 293.7556 14.69325663592722
GPS BI-09
1 15039U 84059A 95089.11845548 -.00000079 00000-0 10000-3 0 2816
2 15039 64.4653 33.1399 0082426 16.0664 344.1725 1.92302315 78873
Cosmos 1574
1 15055U 84062A 95092.39902609 .00000025 00000-0 97388-5 0 6915
2 15055 82.9550 211.7433 0028459 128.8247 231.5452 13.73619520540332
GPS BI-10
1 15271U 84097A 95090.29909051 -.00000019 00000-0 10000-3 0 9313
2 15271 62.1974 268.8526 0155120 353.3562 6.4180 2.00595197 76364
Cosmos 1602
1 15331U 84105A 95091.25946429 .00000470 00000-0 52685-4 0 3788
2 15331 82.5353 167.9528 0019849 337.3944 22.6392 14.84594316567257
NOAA 9
1 15427U 84123A 95092.86468744 .00000056 00000-0 53684-4 0 1970
2 15427 99.0050 151.1076 0015802 119.3593 240.9161 14.13695254531273
GPS BI-11
1 16129U 85093A 95090.18186286 -.00000073 00000-0 10000-3 0 6438
2 16129 65.1368 36.1106 0153268 87.4984 274.2193 1.89368037 13515
Mir
1 16609U 86017A 95092.23988229 .00005590 00000-0 79002-4 0 9858
2 16609 51.6478 178.2523 0004752 324.3311 35.7361 15.58238899521122
SPOT 1
1 16613U 86019A 95091.45159719 .00000090 00000-0 62356-4 0 7966
2 16613 98.6563 164.4914 0001286 91.3891 268.7422 14.20051248157475
Cosmos 1766
1 16881U 86055A 95091.43522204 .00000410 00000-0 46745-4 0 2936
2 16881 82.5166 225.6541 0019757 2.4673 357.6632 14.83602299468194
EGP
1 16908U 86061A 95092.84968640 -.00000083 00000-0 10000-3 0 9878
2 16908 50.0101 273.8633 0011077 329.9453 30.0745 12.44411932 61452
NOAA 10
1 16969U 86073A 95092.88403123 .00000058 00000-0 42807-4 0 1067
2 16969 98.5084 98.0418 0012476 199.7208 160.3488 14.24929433443757
MOS-1
1 17527U 87018A 95093.19662504 .00000044 00000-0 65047-4 0 1913
2 17527 98.9977 160.2732 0000611 117.6078 242.5149 13.94921005413371
GOES 7
1 17561U 87022A 95093.25612299 .00000081 00000-0 10000-3 0 3190
2 17561 2.1746 73.1078 0003621 338.7321 94.5923 1.00273530 12889
Kvant-1
1 17845U 87030A 95091.91920436 .00022128 00000-0 29259-3 0 2012
2 17845 51.6465 179.8652 0004804 327.6103 32.3652 15.58245542455433
DMSP B5D2-3
```

```
1 18123U 87053A 95092.91918777 .00000099 00000-0 73265-4 0 8952
2 18123 98.7818 285.2474 0015332 73.3814 286.9047 14.15397497402079
RS-10/11
1 18129U 87054A 95093.10181517 .00000055 00000-0 43722-4 0 460
2 18129 82.9225 114.5746 0010557 306.6978 53.3200 13.72350548389670
Meteor 2-16
1 18312U 87068A 95089.72700362 .00000077 00000-0 56070-4 0 3846
2 18312 82.5579 344.6075 0013878 32.8216 327.3801 13.84053551384690
Meteor 2-17
1 18820U 88005A 95092.84566664 .00000064 00000-0 43258-4 0 5813
2 18820 82.5413 38.1768 0018310 85.0514 275.2731 13.84734524362440
DMSP B5D2-4
1 18822U 88006A 95092.52473981 .00000052 00000-0 41346-4 0 9053
2 18822 98.4119 300.0611 0005515 211.0592 149.0273 14.23147912371755
Glonass 34
1 19163U 88043A 95092.01449165 .00000029 00000-0 10000-3 0 9791
2 19163 65.1101 100.7227 0006264 145.2509 214.8234 2.13102609 52813
Glonass 36
1 19165U 88043C 95090.19371275 .00000041 00000-0 10000-3 0 3794
2 19165 65.0832 100.7600 0000538 19.1782 340.8631 2.13102093 53392
METEOSAT 3
1 19215U 88051A 95093.18084104 -.00000284 00000-0 10000-3 0 1049
2 19215 2.3504 70.3104 0000702 36.9706 79.9674 1.00279622 12823
AO-13
1 19216U 88051B 95088.38845552 -.00000561 00000-0 10000-4 0 248
2 19216 57.5609 196.0098 7276764 5.2704 359.3130 2.09725996 20491
OKEAN 1
1 19274U 88056A 95091.66131329 .00000365 00000-0 42536-4 0 9937
2 19274 82.5151 325.7618 0020484 135.6110 224.6724 14.82319058363813
Meteor 3-2
1 19336U 88064A 95089.57719191 .00000051 00000-0 10000-3 0 3814
2 19336 82.5409 121.0508 0015485 269.0503 90.8849 13.16972421320950
Glonass 39
1 19503U 88085C 95084.59021291 -.00000066 00000-0 10000-3 0 2701
2 19503 65.7102 339.8640 0007099 171.4056 188.6337 2.13101919 50764
NOAA 11
1 19531U 88089A 95092.89346605 .00000056 00000-0 55263-4 0 108
2 19531 99.1931 94.2271 0012841 41.8816 318.3325 14.13044953336126
TDRS 2
1 19548U 88091B 95092.52884528 .00000087 00000-0 10000-3 0 1104
2 19548 1.5881 75.2232 0002797 341.2180 153.4833 1.00283654 11106
Glonass 40
1 19749U 89001A 95090.26005129 .00000040 00000-0 10000-3 0 4843
2 19749 65.0516 100.3368 0005398 248.8277 111.1641 2.13101292 48399
Glonass 41
1 19750U 89001B 95093.13127840 .00000028 00000-0 10000-3 0 4003
2 19750 65.0700 100.3122 0007699 263.1003 96.8220 2.13102180 48475
GPS BII-01
1 19802U 89013A 95091.40469359 .00000027 00000-0 10000-3 0 382
2 19802 55.1872 128.2660 0027803 183.4545 176.6130 2.00572978 44838
```

```
Akebono
1 19822U 89016A 95091.83364027 .00015736 00000-0 90741-3 0 4679
2 19822 75.0916 18.8217 3783150 77.7789 321.3266 7.84283026131829
Meteor 2-18
1 19851U 89018A 95090.01087048 .00000042 00000-0 24017-4 0 3821
2 19851 82.5160 275.2314 0014861 137.0262 223.2065 13.84386661307379
MOP-1
1 19876U 89020B 95085.68804920 -.00000096 00000-0 10000-3 0 1053
2 19876 1.0511 71.1022 0000378 280.5405 71.7977 1.00270755 2182
TDRS 3
1 19883U 89021B 95087.96458912 -.00000291 00000-0 10000-3 0 574
2 19883 0.0544 88.3460 0001755 269.8204 134.0353 1.00270021194648
GPS BII-02
1 20061U 89044A 95088.25644541 -.00000044 00000-0 10000-3 0 472
2 20061 54.5001 304.7575 0140046 213.8184 145.2917 2.00563880 42512
Nadezhda 1
1 20103U 89050A 95092.94247824 .00000048 00000-0 35491-4 0 3445
2 20103 82.9564 74.0821 0036634 200.8295 159.1357 13.73851898288093
GPS BII-03
1 20185U 89064A 95084.10933009 .00000013 00000-0 10000-3 0 735
2 20185 55.0301 129.1787 0262632 133.3483 228.9368 2.00549131 41001
GMS 4
1 20217U 89070A 95092.39216865 -.00000295 00000-0 10000-3 0 1758
2 20217 0.8817 75.5800 0000617 97.8578 298.2309 1.00276165 20992
INTERCOSMOS 24
1 20261U 89080A 95093.22512070 .00000142 00000-0 42322-4 0 3988
2 20261 82.5937 192.3520 1242049 324.3738 28.0235 12.47235082250934
GPS BII-04
1 20302U 89085A 95092.11595077 -.00000027 00000-0 10000-3 0 497
2 20302 53.4109 244.6780 0009334 194.5119 165.4153 2.00554167 39963
Meteor 3-3
1 20305U 89086A 95092.86033798 .00000044 00000-0 10000-3 0 2827
2 20305 82.5446 69.7075 0005772 314.1308 45.9822 13.04421293260665
COBE
1 20322U 89089A 95089.08762865 -.00000057 00000-0 -86688-5 0 1072
2 20322 98.9618 106.2949 0008964 189.7607 170.3380 14.03450152274491
Kvant-2
1 20335U 89093A 95091.91920436 .00022128 00000-0 29259-3 0 2213
2 20335 51.6465 179.8652 0004804 327.6103 32.3652 15.58245542304197
GPS BII-05
1 20361U 89097A 95092.13049558 -.00000029 00000-0 10000-3 0 9069
2 20361 55.7154 70.8050 0076508 120.2472 240.4963 2.00561627 29441
SPOT 2
1 20436U 90005A 95091.43528582 -.00000044 00000-0 00000+0 0 9156
2 20436 98.7421 166.4842 0001417 118.4756 241.6598 14.20018697269004
UO-14
1 20437U 90005B 95091.17935261 .00000028 00000-0 27802-4 0 857
2 20437 98.5703 176.7834 0011962 65.4427 294.8003 14.29880574270747
UO-15
1 20438U 90005C 95090.27101214 .00000011 00000-0 21216-4 0 8821
```

```
2 20438 98.5687 174.5121 0011030 71.3560 288.8816 14.29201910270515
PACSAT
1 20439U 90005D 95090.24441026 .00000008 00000-0 19944-4 0 8839
2 20439 98.5815 177.4299 0012230 68.7541 291.4945 14.29934187270623
DO-17
1 20440U 90005E 95090.73034615 .00000033 00000-0 29618-4 0 8834
2 20440 98.5829 178.3395 0012332 66.0524 294.1955 14.30075354270717
WO-18
1 20441U 90005F 95090.22130387 .00000024 00000-0 26039-4 0 8870
2 20441 98.5825 177.8163 0012905 68.1337 292.1220 14.30046988270648
LO-19
1 20442U 90005G 95090.24967570 .00000028 00000-0 27826-4 0 8830
2 20442 98.5819 178.1780 0013284 67.2115 293.0461 14.30148255270665
GPS BII-06
1 20452U 90008A 95091.03298879 -.00000005 00000-0 10000-3 0 171
2 20452 54.0260 184.8052 0057590 80.8323 279.8547 2.00568785 37924
MOS-1B
1 20478U 90013A 95091.73629560 .00000091 00000-0 10000-3 0 7628
2 20478 98.9984 163.1049 0000346 39.3218 320.7969 13.94918521182878
DEBUT
1 20479U 90013B 95090.20992760 -.00000070 00000-0 -88828-4 0 8821
2 20479 99.0675 193.4569 0540971 49.3715 315.3151 12.83328208240958
FO-20
1 20480U 90013C 95091.30171262 -.00000042 00000-0 -26640-4 0 7801
2 20480 99.0686 194.2047 0541067 47.2790 317.2571 12.83229114241087
MOS-1B R/B
1 20491U 90013D 95091.93357838 .00000163 00000-0 37820-3 0 1196
2 20491 99.0312 246.9465 0469158 250.3759 104.6131 13.02997940244260
LACE
1 20496U 90015A 95092.54238537 .00002763 00000-0 89703-4 0 5207
2 20496 43.1011 202.0135 0009087 66.4384 293.7412 15.34335509285956
Nadezhda 2
1 20508U 90017A 95092.81407852 .00000039 00000-0 25497-4 0 3427
2 20508 82.9553 208.7522 0044985 152.6244 207.7295 13.73491337255307
OKEAN 2
1 20510U 90018A 95091.98324317 .00000299 00000-0 37738-4 0 3937
2 20510 82.5194 276.6164 0018720 330.6350 29.3824 14.78470723274339
INTELSAT-6
1 20523U 90021A 95087.27890046 -.00000268 00000-0 10000-3 0 4973
2 20523 0.0163 3.2262 0000198 349.1298 258.7520 1.00269503 11415
GPS BII-07
1 20533U 90025A 95092.93714960 -.00000056 00000-0 10000-3 0 305
2 20533 54.8470 305.1743 0048950 79.0859 281.4930 2.00560958 36731
PegSat
1 20546U 90028A 95092.01295800 .00006432 00000-0 13742-3 0 7775
2 20546 94.1102 101.1652 0064939 270.1643 89.2101 15.42649457276739
HST
1 20580U 90037B 95091.10850207 .00000749 00000-0 59237-4 0 6077
2 20580 28.4710 186.2149 0005121 220.1159 139.9030 14.90843774 72392
MACSAT 2
```

```
1 20608U 90043B 95090.19690304 .00000345 00000-0 56732-4 0 830
2 20608 89.9317 177.1558 0105185 166.8543 193.5475 14.64816733261299
Glonass 44
1 20619U 90045A 95090.62884463 -.00000055 00000-0 10000-3 0 1773
2 20619 65.3208 339.1377 0024963 208.6181 151.2993 2.13102467 37856
Glonass 45
1 20620U 90045B 95088.87058422 -.00000056 00000-0 10000-3 0 1846
2 20620 65.3228 339.1804 0007835 46.4539 313.6625 2.13102446 37852
Glonass 46
1 20621U 90045C 95091.75223340 -.00000056 00000-0 10000-3 0 7858
2 20621 65.3261 339.1064 0014417 192.4664 167.5583 2.13101561 37916
Kristall
1 20635U 90048A 95091.91920436 .00022128 00000-0 29259-3 0 148
2 20635 51.6465 179.8652 0004804 327.6103 32.3652 15.58245542275210
ROSAT
1 20638U 90049A 95093.22812350 .00000195 00000-0 31762-4 0 4038
2 20638 52.9889 124.4771 0012253 218.4083 141.6030 15.07137077265812
Meteor 2-19
1 20670U 90057A 95090.20623589 -.00000059 00000-0 -66076-4 0 8831
2 20670 82.5481 340.5077 0017790 61.5419 298.7530 13.84164079240329
CRRES
1 20712U 90065A 95092.18386469 .00000080 00000-0 24584-3 0 706
2 20712 18.0081 69.4767 7180901 47.4346 354.0284 2.35386132 32694
GPS BII-08
1 20724U 90068A 95090.26528656 .00000034 00000-0 10000-3 0 8902
2 20724 54.8150 126.4991 0116752 171.3925 188.8861 2.00559875 32547
Feng Yun1-2
1 20788U 90081A 95093.21150208 -.00000027 00000-0 10000-4 0 3122
2 20788 98.8155 108.8042 0013816 283.3925 76.6699 14.01348149234330
Meteor 2-20
1 20826U 90086A 95090.04338931 .00000024 00000-0 86652-5 0 8936
2 20826 82.5220 277.7348 0013370 330.9675 29.0735 13.83604149227426
GPS BII-09
1 20830U 90088A 95090.31390826 -.00000032 00000-0 10000-3 0 8992
2 20830 55.6514 68.8611 0064361 101.1699 259.5402 2.00569415 33182
GPS BIIA-10
1 20959U 90103A 95089.22227109 .00000040 00000-0 10000-3 0 8429
2 20959 55.0156 128.5008 0095451 228.6870 130.5665 2.00555757 31758
DMSP B5D2-5
1 20978U 90105A 95092.61911046 .00000141 00000-0 65891-4 0 1434
2 20978 98.6448 161.0863 0080073 32.9513 327.6624 14.32530464226498
Glonass 47
1 21006U 90110A 95090.37105262 .00000038 00000-0 10000-3 0 7475
2 21006 65.0282 99.6954 0059538 188.2520 171.6927 2.13102749 33550
Glonass 48
1 21007U 90110B 95091.49749843 .00000030 00000-0 10000-3 0 8809
2 21007 65.0490 99.7408 0033457 181.8506 178.1559 2.13101266 33569
Glonass 49
1 21008U 90110C 95091.38742494 .00000031 00000-0 00000+0 0 520
2 21008 65.0299 99.6825 0011361 277.2025 82.6979 2.13098994 33552
```

```
AO-21
1 21087U 91006A 95092.01875255 .00000094 00000-0 82657-4 0 5803
2 21087 82.9412 288.9514 0035578 1.4534 358.6713 13.74552757209266
RS-12/13
1 21089U 91007A 95092.18189019 .00000021 00000-0 61846-5 0 7877
2 21089 82.9247 157.1452 0030369 26.8619 333.4103 13.74055549208338
MOP-2
1 21140U 91015B 95093.08513542 -.00000021 00000-0 10000-3 0 9277
2 21140 0.1491 98.4421 0002411 323.4608 159.3066 1.00280158 17189
Nadezhda 3
1 21152U 91019A 95092.93137674 .00000066 00000-0 53569-4 0 340
2 21152 82.9220 112.6280 0043108 128.4402 232.0638 13.73517136203177
Glonass 50
1 21216U 91025A 95090.38938040 -.00000055 00000-0 10000-3 0 3952
2 21216 65.0537 338.8144 0008725 204.1255 155.8856 2.13102926 31066
Glonass 51
1 21217U 91025B 95089.98847525 -.00000055 00000-0 10000-3 0 8050
2 21217 65.0493 338.8177 0010656 243.1301 116.8168 2.13101443 31049
Glonass 52
1 21218U 91025C 95089.63171320 -.00000055 00000-0 10000-3 0 2814
2 21218 65.0221 338.8373 0007173 286.8285 73.1372 2.13102520 31041
GRO
1 21225U 91027B 95092.12786972 .00003662 00000-0 76247-4 0 2066
2 21225 28.4595 24.2779 0003047 245.8640 114.1640 15.42386269101578
Meteor 3-4
1 21232U 91030A 95093.11417427 .00000051 00000-0 10000-3 0 7927
2 21232 82.5437 324.6291 0012793 176.9612 183.1577 13.16467155189506
NOAA 12
1 21263U 91032A 95092.92622060 .00000085 00000-0 57242-4 0 4296
2 21263 98.5913 118.9033 0013760 113.0672 247.1957 14.22503835201723
OKEAN 3
1 21397U 91039A 95092.23371367 .00000324 00000-0 43212-4 0 931
2 21397 82.5260 189.2206 0024203 39.9792 320.3204 14.76352798206155
GPS BIIA-11
1 21552U 91047A 95090.49003496 -.00000036 00000-0 10000-6 0 8394
2 21552 55.9564 66.5266 0064095 242.7480 116.5776 2.00570677 27379
ERS-1
1 21574U 91050A 95091.90322056 .00000028 00000-0 26625-4 0 1251
2 21574 98.5544 167.2819 0001170 89.9209 270.2107 14.32242753194136
UO-22
1 21575U 91050B 95090.23036069 .00000067 00000-0 37026-4 0 5897
2 21575 98.4042 163.4585 0007586 146.0600 214.1069 14.36967427194303
ORBCOMM-X
1 21576U 91050C 95090.21621923 .00000063 00000-0 36117-4 0 6847
2 21576 98.4017 161.9551 0004036 148.3840 211.7587 14.36372280194215
TUBSAT-A
1 21577U 91050D 95090.21785226 .00000013 00000-0 18851-4 0 5833
2 21577 98.4017 162.4660 0006627 148.3546 211.8037 14.36477156194246
SARA
1 21578U 91050E 95091.69114366 .00000281 00000-0 10493-3 0 7830
```

```
2 21578 98.4152 168.8308 0005491 139.8385 220.3213 14.38973213194697
TDRS 4
1 21639U 91054B 95088.20947306 .00000057 00000-0 10000-3 0 8750
2 21639 0.0149 280.1053 0002810 87.1229 79.9496 1.00268840107434
Meteor 3-5
1 21655U 91056A 95092.00807473 .00000051 00000-0 10000-3 0 7903
2 21655 82.5497 272.7531 0012899 192.3500 167.7311 13.16838323174479
UARS
1 21701U 91063B 95092.91437803 .00000000 00000-0 21140-4 0 6618
2 21701 56.9865 78.2037 0005324 104.4939 255.6684 14.96364487194308
DMSP B5D2-6
1 21798U 91082A 95092.88768689 .00000059 00000-0 54787-4 0 7865
2 21798 98.9623 104.4618 0013910 40.5898 319.6310 14.13874493172566
Glonass 53
1 21853U 92005A 95093.12838799 .00000027 00000-0 10000-3 0 9890
2 21853 64.9740 99.2862 0008261 186.4365 173.5886 2.13102262 24729
Glonass 54
1 21854U 92005B 95092.48029025 .00000027 00000-0 00000+0 0 1081
2 21854 64.9806 99.3130 0016256 8.9035 351.1491 2.13103550 24690
Glonass 55
1 21855U 92005C 95091.13582116 .00000032 00000-0 00000+0 0 1028
2 21855 64.9762 99.3633 0007961 220.4561 139.5153 2.13101957 24656
JERS-1
1 21867U 92007A 95092.72842489 -.00000046 00000-0 10000-5 0 5488
2 21867 97.7243 170.3117 0000475 182.7323 177.4390 14.98635357171742
GPS BIIA-12
1 21890U 92009A 95092.44966673 -.00000023 00000-0 10000-3 0 6368
2 21890 53.9789 244.8513 0056958 176.6996 183.2941 2.00547724 22785
GPS BIIA-13
1 21930U 92019A 95091.15855181 -.00000094 00000-0 10000-3 0 6146
2 21930 55.6851 6.3291 0039743 174.3626 185.6852 2.00566241 21681
EUVE
1 21987U 92031A 95088.78328680 .00002120 00000-0 88549-4 0 3957
2 21987 28.4312 296.3663 0010094 217.3579 142.6765 15.19177466155865
SAMPEX
1 22012U 92038A 95089.41434091 .00001936 00000-0 16757-3 0 6171
2 22012 81.6698 228.8298 0118041 184.2447 175.7781 14.91351590148930
GPS BIIA-14
1 22014U 92039A 95092.19977737 -.00000001 00000-0 10000-3 0 5292
2 22014 54.8611 186.2174 0080142 314.6786 44.6934 2.00548108 13546
Glonass 56
1 22056U 92047A 95090.09723570 -.00000055 00000-0 00000+0 0 163
2 22056 64.8942 338.9587 0004768 292.1229 67.8823 2.13103045 20729
Glonass 57
1 22057U 92047B 95092.26926248 -.00000058 00000-0 00000+0 0 176
2 22057 64.9033 338.9021 0008334 329.3556 30.6537 2.13102435 20748
Glonass 58
1 22058U 92047C 95087.04768118 -.00000061 00000-0 10000-3 0 64
2 22058 64.8992 339.0995 0009399 273.5197 86.4199 2.13102885 20682
TOPEX
```

```
1 22076U 92052A 95091.84228445 -.00000038 00000-0 10000-3 0 8643
2 22076 66.0402 51.4423 0007692 269.9442 90.0692 12.80931042123468
KO-23
1 22077U 92052B 95091.22897709 -.00000037 00000-0 10000-3 0 4815
2 22077 66.0786 36.8946 0010716 218.2868 141.7379 12.86290159123831
S80/T
1 22078U 92052C 95090.31857994 -.00000037 00000-0 10000-3 0 4783
2 22078 66.0780 37.7784 0011121 212.2923 147.7412 12.86574256123795
GPS BIIA-15
1 22108U 92058A 95092.65746501 -.00000020 00000-0 10000-3 0 5472
2 22108 54.1979 245.6071 0111648 148.2237 212.4193 2.00563972 18738
FREJA
1 22161U 92064A 95092.52091147 -.00000012 00000-0 40157-4 0 4997
2 22161 62.9961 280.3775 0804202 340.3160 16.8384 13.21827274120046
LAGEOS II
1 22195U 92070B 95092.13028723 -.00000009 00000-0 10000-3 0 3907
2 22195 52.6575 271.0683 0138469 243.4287 115.2020 6.47294045 57654
GPS BIIA-16
1 22231U 92079A 95086.35830973 -.00000048 00000-0 10000-3 0 5154
2 22231 54.6837 187.6447 0036025 284.1266 75.4711 2.00568702 17189
GPS BIIA-17
1 22275U 92089A 95088.50109479 -.00000028 00000-0 10000-3 0 5420
2 22275 54.6474 185.0761 0052598 254.5765 104.8525 2.00555559 16638
TDRS 5
1 22314U 93003B 95084.11622106 -.00000305 00000-0 10000-3 0 4934
2 22314 1.6990 72.8626 0002343 267.4183 198.0074 1.00271014 8073
GPS BIIA-18
1 22446U 93007A 95092.56097817 -.00000057 00000-0 10000-3 0 5224
2 22446 54.5003 305.4427 0081532 352.3228 7.5688 2.00549764 15700
Glonass 59
1 22512U 93010A 95091.25268221 .00000031 00000-0 10000-3 0 6914
2 22512 64.9911 99.2074 0008862 193.3617 166.6414 2.13102018 16259
Glonass 60
1 22513U 93010B 95092.13069421 .00000027 00000-0 00000+0 0 7320
2 22513 64.9876 99.1919 0007106 214.2523 145.7272 2.13102506 16461
Glonass 61
1 22514U 93010C 95090.07800932 .00000041 00000-0 00000+0 0 7339
2 22514 65.0148 99.2461 0010522 199.3137 160.6800 2.13102678 16428
ASTRO-D
1 22521U 93011A 95093.10509572 .00002338 00000-0 16119-3 0 3958
2 22521 31.1069 355.8755 0057267 114.3146 246.3487 15.02129263116079
UFO F1
1 22563U 93015A 95084.22610804 -.00000241 00000-0 10000-3 0 3980
2 22563 26.1488 295.6187 0004718 301.1813 338.7100 0.99252144 11622
GPS BIIA-19
1 22581U 93017A 95091.20779989 -.00000095 00000-0 10000-3 0 4155
2 22581 55.1879 5.9364 0057475 34.5485 325.8407 2.00553211 14732
ARSENE
1 22654U 93031B 95088.26292353 -.00000121 00000-0 10000-3 0 3080
2 22654 2.4269 87.0575 2902125 207.2118 134.6696 1.42203032 5252
```

```
GPS BIIA-20
1 22657U 93032A 95091.83943488 -.00000093 00000-0 10000-3 0 4510
2 22657 55.2208 5.7557 0069532 214.9339 144.6345 2.00569933 10073
RADCAL
1 22698U 93041A 95090.08315902 .00000077 00000-0 28660-4 0 3898
2 22698 89.5391 294.5909 0091502 334.2652 25.4000 14.21340469 91346
GPS BIIA-21
1 22700U 93042A 95091.30728744 -.00000032 00000-0 10000-3 0 4005
2 22700 54.3735 246.4227 0035106 342.0320 17.8010 2.00562024 12861
NOAA-13
1 22739U 93050A 95092.33876367 .00000000 00000-0 25259-4 0 7689
2 22739 98.9857 41.1237 0010621 30.4284 329.7506 14.10928051 84746
GPS BIIA-22
1 22779U 93054A 95090.89470018 -.00000056 00000-0 10000-3 0 4517
2 22779 54.6368 305.4826 0019475 244.0920 115.7549 2.00564001 11615
Meteor 2-21
1 22782U 93055A 95091.74004532 .00000114 00000-0 90482-4 0 3900
2 22782 82.5520 337.7825 0023009 132.9441 227.3643 13.83030345 79977
UFO F2
1 22787U 93056A 95092.31978619 -.00000081 00000-0 00000+0 0 4071
2 22787 4.5618 324.7162 0003428 49.1601 2.9144 1.00275743 4402
SPOT 3
1 22823U 93061A 95092.18057321 -.00000150 00000-0 -49763-4 0 4231
2 22823 98.7435 167.2383 0001847 88.7582 271.3826 14.20016068 78500
STELLA
1 22824U 93061B 95090.71997850 -.00000063 00000-0 -77635-5 0 3781
2 22824 98.6233 167.9296 0007266 86.2252 273.9750 14.27100409 78687
AO-27
1 22825U 93061C 95091.70805972 .00000028 00000-0 29226-4 0 3809
2 22825 98.6218 169.1778 0009425 82.5274 277.6974 14.27656997 78858
IO-26
1 22826U 93061D 95089.21495277 .00000014 00000-0 23313-4 0 3789
2 22826 98.6219 166.8003 0009704 89.7480 270.4809 14.27763526 78500
HEATHSAT
1 22827U 93061E 95091.69513486 .00000024 00000-0 27364-4 0 4409
2 22827 98.6217 169.1936 0010215 72.4246 287.8048 14.27884651 78867
ITAMSAT
1 22828U 93061F 95092.17233543 .00000051 00000-0 38269-4 0 3570
2 22828 98.6206 169.7555 0011183 69.9445 290.2940 14.28093382 47023
PO-28
1 22829U 93061G 95090.22102911 .00000023 00000-0 26730-4 0 3714
2 22829 98.6178 167.8524 0011075 76.1351 284.1058 14.28070630 78660
KO-25
1 22830U 93061H 95091.68339508 .00000012 00000-0 22176-4 0 3876
2 22830 98.5233 163.3677 0012491 53.0488 307.1830 14.28083561 78875
GPS BIIA-23
1 22877U 93068A 95084.96131939 .00000003 00000-0 10000-3 0 2551
2 22877 55.2079 66.9377 0020655 292.7670 66.9291 2.00552825 10389
METEOSAT 6
1 22912U 93073B 95093.10555556 -.00000097 00000-0 10000-3 0 2754
```

```
2 22912 0.2613 270.2527 0000176 238.0094 70.8043 1.00271343 3438
HST Array
1 22920U 90037C 95093.27428466 .00009051 00000-0 69032-3 0 3025
2 22920 28.4703 140.4838 0003536 98.9912 261.0915 15.00387936 73044
Meteor 3-6
1 22969U 94003A 95090.84474203 .00000051 00000-0 10000-3 0 1575
2 22969 82.5546 213.2788 0014437 267.7914 92.1558 13.16727530 56709
TUBSAT-B
1 22970U 94003B 95092.25602233 .00000051 00000-0 10000-3 0 1480
2 22970 82.5556 212.2314 0015244 263.9920 95.9441 13.16824509 56894
GPS BIIA-24
1 23027U 94016A 95091.02146707 -.00000096 00000-0 10000-3 0 1830
2 23027 55.0526 7.8110 0061920 197.3403 162.4662 2.00551022 7811
Glonass 62
1 23043U 94021A 95092.97165440 -.00000059 00000-0 00000+0 0 1816
2 23043 64.7771 339.2810 0004136 185.0117 175.0398 2.13102876 7605
Glonass 63
1 23044U 94021B 95091.91586237 -.00000058 00000-0 00000+0 0 1641
2 23044 64.7698 339.3194 0027688 204.1564 155.7682 2.13102962 7580
Glonass 64
1 23045U 94021C 95093.03046801 -.00000059 00000-0 00000+0 0 1747
2 23045 64.7570 339.2975 0011355 32.6272 327.4988 2.13102316 7603
GOES 8
1 23051U 94022A 95091.56713158 -.00000270 00000-0 00000+0 0 2866
2 23051 0.1476 264.6603 0000196 95.0505 319.2854 1.00280406 3183
MSTI 2
1 23101U 94028A 95092.07540736 .00007414 00000-0 13492-3 0 1706
2 23101 97.1036 286.4075 0012890 159.2934 200.8793 15.49703147 50735
STRV-1A
1 23125U 94034B 95085.33426754 -.00002163 00000-0 -83649-3 0 1296
2 23125 7.4188 64.9539 7260183 52.8117 353.3818 2.29793140 5744
STRV-1B
1 23126U 94034C 95088.86784933 .00001458 00000-0 43289-3 0 1317
2 23126 7.4595 63.4854 7267838 55.5205 353.0513 2.29443841 5876
Nadezhda 4
1 23179U 94041A 95092.77144201 .00000036 00000-0 21367-4 0 893
2 23179 82.9465 203.7401 0035138 278.3644 81.3530 13.75665107 36100
Glonass 65
1 23203U 94050A 95090.35243742 -.00000019 00000-0 00000+0 0 1230
2 23203 64.8037 219.0281 0007643 141.1423 218.8800 2.13101669 4942
Glonass 66
1 23204U 94050B 95090.11736291 -.00000022 00000-0 00000+0 0 1325
2 23204 64.7963 219.0715 0015378 349.3239 10.6083 2.13102187 4939
Glonass 67
1 23205U 94050C 95092.34652935 .00000002 00000-0 00000+0 0 1210
2 23205 64.8035 218.9817 0001448 331.6393 28.3301 2.13101975 4988
DMSP B5D2-7
1 23233U 94057A 95092.82035573 .00000103 00000-0 79465-4 0 2853
2 23233 98.8873 151.5674 0012836 356.5971 3.5108 14.12591405 30511
Soyuz TM-20
```

```
1 23288U 94063A 95081.01606562 .00006386 00000-0 90015-4 0 1549
2 23288 51.6468 234.5363 0004423 284.7155 75.3320 15.58025960 26487
OKEAN 1-7
1 23317U 94066A 95090.47177376 .00000020 00000-0 -35960-6 0 539
2 23317 82.5443 107.1901 0028159 80.3136 280.1252 14.73913168 25177
ELEKTRO
1 23327U 94069A 95089.85144609 -.00000125 00000-0 10000-3 0 560
2 23327 0.9350 264.6723 0006048 168.2917 137.7108 1.00269963 1541
RESURS 1-3
1 23342U 94074A 95091.23080271 .00000243 00000-0 48835-4 0 896
2 23342 98.0240 152.2356 0001256 66.7873 293.3465 14.69719461 21748
Glonass 68
1 23396U 94076A 95091.25152096 .00000031 00000-0 00000+0 0 694
2 23396 64.9208 99.3043 0028435 194.8328 165.1130 2.13102390 2807
Glonass 69
1 23397U 94076B 95090.48837566 .00000037 00000-0 00000+0 0 743
2 23397 64.9105 99.3478 0015199 320.4149 39.4978 2.13102619 2781
Glonass 70
1 23398U 94076C 95092.24875373 .00000027 00000-0 00000+0 0 781
2 23398 64.8994 99.2692 0005152 284.2907 75.6772 2.13101955 2833
RS-15
1 23439U 94085A 95091.24985731 -.00000039 00000-0 10000-3 0 392
2 23439 64.8214 19.4134 0167963 275.5873 82.5917 11.27526144 10847
NOAA 14
1 23455U 94089A 95092.75032342 .00000005 00000-0 27170-4 0 1213
2 23455 98.8954 35.8861 0010705 49.8498 310.3610 14.11500122 13173
ODERACS II A
1 23471U 95004C 95092.48609327 .00024981 00000-0 13654-3 0 424
2 23471 51.6488 168.5864 0014556 163.8162 196.3011 15.79570130 9195
ODERACS II B
1 23472U 95004D 95092.90459148 .00045171 00000-0 20506-3 0 457
2 23472 51.6553 165.3575 0013361 188.9143 171.0286 15.83288067 9276
1995006G
1 23506U 95006G 95093.26450745 .00571084 83944-5 31819-3 0 629
2 23506 62.7918 182.3541 0055266 106.3274 254.3963 16.15163462 7297
1995008C
1 23507U 95008C 95092.47714446 .00017458 00000-0 80455-3 0 228
2 23507 65.8316 239.9463 0046604 296.5065 63.1295 15.19405502 4706
1995008D
1 23508U 95008D 95092.32344554 .00028862 00000-0 93033-3 0 151
2 23508 65.8119 238.7576 0053894 332.1815 27.6446 15.30653068 4853
1995008E
1 23509U 95008E 95093.07822024 .00032926 00000-0 10003-2 0 249
2 23509 65.8063 236.1468 0058051 327.4178 31.9645 15.32247171 4836
1995008F
1 23510U 95008F 95091.50971015 .00042600 00000-0 13104-2 0 269
2 23510 65.8504 241.2958 0047387 330.3515 29.3927 15.32324605 4839
Glonass 71
1 23511U 95009A 95092.79585532 -.00000059 00000-0 00000+0 0 247
2 23511 64.7838 339.5630 0006869 331.6441 28.3915 2.13102212 563
```

```
Glonass 72
1 23512U 95009B 95093.08937572 -.00000059 00000-0 00000+0 0 257
2 23512 64.7906 339.5621 0011270 201.3215 158.6967 2.13102787 576
Glonass 73
1 23513U 95009C 95089.86290570 -.00000057 00000-0 00000+0 0 224
2 23513 64.7919 339.6561 0004662 221.8909 138.1297 2.13102564 504
1995009F
1 23516U 95009F 95091.71667819 -.00000058 00000-0 10000-3 0 178
2 23516 64.7873 339.5895 0012813 280.9675 78.9307 2.13307281 548
1995009G
1 23517U 95009G 95093.14667580 -.00000010 00000-0 75540-4 0 105
2 23517 64.7993 330.5422 5805429 296.2180 16.2658 4.23211006 1130
1995009H
1 23518U 95009H 95091.72597406 .00000078 00000-0 11670-3 0 114
2 23518 64.8657 330.9706 5807216 296.2840 16.2417 4.23261005 1077
Soyuz TM-21
1 23519U 95010A 95091.91920436 .00022128 00000-0 29259-3 0 281
2 23519 51.6465 179.8652 0004804 327.6103 32.3652 15.58245542 2942
SFU
1 23521U 95011A 95091.43645698 .00006834 00000-0 23254-3 0 236
2 23521 28.4498 236.9134 0019973 89.2762 271.0654 15.28127677 2183
GMS 5
1 23522U 95011B 95091.21061389 -.00000116 00000-0 00000+0 0 173
2 23522 1.0556 293.6205 0006900 303.8455 187.0641 1.00366790 13
1995011D
1 23524U 95011D 95090.73644879 .00000031 00000-0 10000-4 0 61
2 23524 1.0615 288.8318 0215934 221.2041 135.7395 1.01247164 149
1995011E
1 23525U 95011E 95093.28933850 .00817678 27933-3 17956-2 0 363
2 23525 28.4760 216.3220 0015106 131.3259 228.1138 15.96716444 2542
1995012A
1 23526U 95012A 95092.25099925 .00007366 00000-0 81984-2 0 97
2 23526 82.9280 261.4485 0020087 232.5121 127.4102 13.71171409 1521
1995012B
1 23527U 95012B 95089.10460569 .00000024 00000-0 10000-4 0 125
2 23527 82.9359 263.7591 0015305 227.4841 132.5020 13.72624837 1098
1995013A
1 23528U 95013A 95091.40998656 -.00000299 00000-0 00000+0 0 192
2 23528 0.0799 67.9543 0058398 208.4760 6.0590 1.00012272 40
1995013B
1 23529U 95013B 95091.86144344 .00015516 -30484-7 66665-3 0 186
2 23529 26.5594 93.3168 7515252 184.9809 157.1840 2.02799985 221
1995014A
1 23530U 95014A 95093.00992600 .00500379 56849-5 20712-3 0 306
2 23530 67.1465 19.3254 0150481 59.5505 302.0441 16.01614014 1836
1995014B
1 23531U 95014B 95086.19291859 .25635769 64237-5 22696-3 0 196
2 23531 67.1365 42.1022 0025171 80.8209 280.0470 16.49712247 743
1995015A
1 23533U 95015A 95093.19399833 .00000235 00000-0 15061-3 0 174
```

```
2 23533 98.8313 96.6243 0005981 224.6200 135.4491 14.12677429 1369
1995015B
1 23534U 95015B 95090.99741696 .00001112 00000-0 62138-3 0 80
2 23534 98.8285 94.4575 0003067 126.0091 234.1416 14.12869644 1050
1995015C
1 23535U 95015C 95090.99840193 -.00000025 00000-0 10000-4 0 33
2 23535 98.8303 94.4605 0003057 136.6217 223.5700 14.12676496 1051
1995016A
1 23536U 95016A 95090.15678313 -.00000175 00000-0 00000+0 0 58
2 23536 2.6699 335.9851 5257297 191.6320 258.8413 1.88158390 55
1995016B
1 23537U 95016B 95092.99215196 -.00000151 00000-0 10000-3 0 104
2 23537 0.3552 350.5927 0548261 177.1553 44.6081 1.08262425 107
1995016D
1 23539U 95016D 95091.03657706 .00000267 00000-0 10000-3 0 58
2 23539 7.1572 349.3029 7284505 180.4220 355.1222 2.28610924 86
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

727. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3lqje7$7sp@news.onramp.net>
Source record: 25377

The selected Phase 3D frequencies are as follows:

UPLINKS

BAND	DIGITAL (MHZ)	ANALOG (MHZ)	CENTER (MHz)
15M	N/A	21.210 - 21.250	21.230
2M	145.800 - 145.840	145.840 - 145.990	145.915
70CM	435.300 - 435.550	435.550 - 435.800	435.675
23CM(1)	1269.000 - 1269.250	1269.250 - 1269.500	1269.375
23CM(2)	1268.075 - 1268.325	1268.325 - 1268.575	1268.450
13CM(1)	2400.100 - 2400.350	2400.350 - 2400.600	2400.475
13CM(2)	2446.200 - 2446.450	2446.450 - 2446.700	2446.575
6CM	5668.350 - 5668.550	5668.550 - 5668.800	5668.675

DOWNLINKS

BAND	DIGITAL (MHz)	ANALOG (MHz)	CENTER (MHz)
10M	29.330 MHz +/-5 KHz (To be used for digitized voice bulletins)		
2M	145.955 - 145.990	145.805 - 145.955	145.880
70CM	435.900 - 436.200	435.475 - 435.725	435.600
13CM	2400.650 - 2400.950	2400.225 - 2400.475	2400.350
3CM	10451.450 -10451.750	10451.025 -10451.275	10451.150
1.5CM	24048.450 -24048.750	24048.025 -24048.275	24048.150

All downlink passbands are inverted from the uplink passbands.

BEACONS:

BAND	Beacon-1	Beacon-2
2M	N/A	N/A
70CM	435.450	435.850
13CM	2400.200	2400.600
3CM	10451.000	10451.400
1.5CM	24048.000	24048.400

Note: The absence of a 2M beacon is due to strictly to characteristics of the IF matrix and the limited bandwidth available on that band. Studies are underway with the intent of providing a 2M beacon but it is not clear, at this time, that this effort will be successful. The beacons on the other bands are for various purposes including providing spacecraft engineering data to the command stations. All beacons can be modulated with 400 bits per second BPSK and possibly other formats.

728. Sat. Freq. Help!

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: QXBJ74A@prodigy.com
Message-ID: <3lrvi6$k2k@usenetp1.news.prodigy.com>
Source record: 25378

I am new to the ham world, and am trying to possibly connect with the sattelites. I was wondering if someone would either post the UPLINK and DOWNLINK frequencies, or show me where they are on either WWW or FTP.

Thanks
Marc Taylor
KC7JKF

729. Re: PCTrack

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: johnsotc@sd2.af.mil
Message-ID: <3ls2od$b8k@blackbird.afit.af.mil>
Source record: 25379

In article <3lnuo6$kf3@mesa5.Mesa.Colorado.EDU>, jrybak@mesa5.Mesa.Colorado.EDU (James P. Rybak) writes:
|> I want to obtain a copy of PCTrack (version 3.0 or later). Can anyone tell
|> I
|> me how to obtain it? Thanks for any help you can provide.
|>
|> 73,
|>
|> Jim W0KSD

It is available at:
oak.oakland.edu in SimTel/msdos/satelite as
pctrk304.zip (564592 bytes)
or

via WWW it is in:
http://www.acs.oakland.edu/oak/SimTel/msdos/satelite.html

or

you can get it directly from me (I'm the author).

I also have some other satellite tracking and analysis
software available (The Satellite Visualization Tool and the Satellite
Prediction Tool).

Email me at 71371.1257@compuserve.com for details.

Tom Johnson

730. Re: Garmin 45 Cable Owners - A Question

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: miles@mail.utexas.edu
Message-ID: <miles-0404951431420001@klingon.util.utexas.edu>
Source record: 25380

In article <miles-0104952134120001@slip-20-16.ots.utexas.edu>,
miles@mail.utexas.edu (Miles Abernathy) wrote:

> Folks have tried to find a plug to fit the power / data socket on the
> Garmin 45, but without success. Perhaps the actual connector is available
> (for less than $30) from the original manufacturer. A long shot, I know,
> but perhaps.
>
> If you have the official cable, would you please examine it closely and
> post if there is any manufacturer's name or logo on it? Thank you.

<reposted from sci.geo.satellite-nav>
From: ranecurl@engin.umich.edu (Rane Curl)
Newsgroups: sci.geo.satellite-nav
Subject: Garmin 40 power/data cable - homemade.
Date: 2 Apr 1995 20:23:22 GMT
Organization: University of Michigan Engineering, Ann Arbor

I have made a power/data connector for a Garmin 40 as follows:

1. Removed sockets from RS-274-001 4-pin mike connectors and drilled
out holes (1/8"). Drilled 5/64" hole for center post. Wrapped
connector body with two turns of tape for snug fit into GPS, and
cut out tape at key location.

2. Soldered D-Sub socket pins on cable wires (could have crimped).
Slipped heat-shrink tubing on socket pins, inserted them in connector
body and "fixed" in place with pieces of same heat-shrink tubing
pushed in from end to press socket pins outward (bolt-circle of
Garmin pins is larger than that of RS-274-001 holes).

3. Inserted connector into Garmin body and pushed socket-pins down onto
Garmin pins. Applied epoxy resin (ca. 2 drops) to each visible end of
socket pins (too much could run too far down and ooze out end).

After epoxy set, tightened cable clamp to cable. New connector fits
snugly into socket in GPS and good electrical connection is made.

I plan on interfacing to a Mac Powerbook. The Powerbook power supply
adapter provides 7.8 volts max, which is OK for use with Garmin 40. I plan
on making a power/data junction box out of a sacrificed LocalTalk
connector box and its MiniDIN-8 connector. For operation from 12 volts,
either a Powerbook Auto DC-DC adapter can be used (when using the
computer), or just a regulated DC-DC 6-volt auto adapter, like the
RS-270-1560 or RS-270-1563.

I observed that with the 7.8 volt (Powerbook) power supply the Garmin-40 Test window (brought up by turning on with Enter depressed) showed 5.9 volt power, so there is an internal regulator.

I'd like to acknowledge suggestions from riecksra and mellerso, which helped me make my design.

Rane L. Curl
ranecurl@engin.umich.edu

Miles Abernathy, N5KOB	"I urge you to dream - I did, and one
U. of TX, P. O. Box 7580	day I found myself standing on the
Austin, Texas 78713 USA	surface of the moon." - Gene Cernan

731. Doppler Freq Control - DSP2232/TrackBox/FT736

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: randyh@gvgadg.gvg.tek.com
Message-ID: <3ls7br$ngk@gv-gate.gvg.tek.com>
Source record: 25381

I am in the process of interfacing my DSP-2232 /
TAPR TrackBox / FT-736 for use on the digital satellites.

What is the best way to control the frequency of the FT-736
to correct for doppler, for both the 1200 & 9600 baud
satellites?

I know that the DSP can output mic up/down control. The
TrackBox can use serial and/or mic up/down control. Just
wondering what others have found to work the best.

Randy
WA2AGE

732. Re: Sat. Freq. Help!

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: jimkd0av@aol.com
Message-ID: <3lsbur$45s@newsbf02.news.aol.com>
Source record: 25382

>I am new to the ham world, and am trying to possibly connect with the
>sattelites. I was wondering if someone would either post the UPLINK and
>DOWNLINK frequencies, or show me where they are on either WWW or FTP.

Amateur Radio Satellite Frequencies (as of January 1995)

Designation
Frequencies Transponder/ Mode
Beacon
AO-10
Downlinks 145.810 B B
145.825-.975 T B
145.987 B B (Usually off)
Uplinks 435.027-.179 T B

RS-10
Downlinks 29.357 B A
29.360-.400 T A
29.403 B (Robot) A

Uplinks 145.860-.900 T T

RS-12
Downlinks 29.408 B K
29.410-.450 T K
29.454 B (Robot) K

Uplinks 21.210-.250 T K

RS-15
Downlinks 29.352 B A
29.354-.394 T A

Uplinks 145.858-.898 T T

AO-13
Downlinks 145.812 B B
145.825-.975 T B
145.985 B B (Usually off)
2400.664 B S
2400.711-.749 T S
Uplinks 435.423-.573 T B/S
435.601-.637 T B/S

AO-16
Downlinks 437.02625 T/B J Dig. (1200b SSB) (secondary)
437.05130 T/B J Dig. (1200b Rai. Cos SSB)

(pri)
2401.14280 B 1200 bps SSB (Usually off)
Uplinks 145.900 T 1200 bps AFSK FM Digital
145.920 T 1200 bps AFSK FM Digital
145.940 T 1200 bps AFSK FM Digital
145.960 T 1200 bps AFSK FM Digital

DO-17
Downlinks 145.82438 B 1200 bps AFSK FM or Dig Voice
145.82516 B 1200 bps AFSK FM or Dig Voice
2401.22050 B 1200 bps BPSK(usually off)
Uplinks None

WO-18
Downlink 437.10200 B 1200 bps BPSK, J Dig (Telem,
Image)
Uplink None

LO-19
Downlinks 437.125 T/B J Digital (secondary)
437.127 B CW
437.154 T/B J Digital (primary)
Uplinks 145.840 T 1200 bps AFSK FM Digital
145.860 T 1200 bps AFSK FM Digital
145.880 T 1200 bps AFSK FM Digital
145.900 T 1200 bps AFSK FM Digital

FO-20
Downlinks 435.795 B J Analog
435.800-.900 T J Analog

Uplinks 145.900-6.00 T J Analog

UO-22
Downlink 435.120 T 9600 bps FM Digital
Uplinks 145.900 T 9600 bps FM Digital
145.975 T 9600 bps FM Digital

KO-23 (KITSAT-A)
Downlink 435.175 T 9600 bps FM Digital
Uplinks 145.850 T 9600 bps FM Digital
145.900 T 9600 bps FM Digital

Mir
Downlink 145.55 T/Robot (Packet mailbox. Alternates
with simplex FM voice QSOs
occasionally)

KO-25 (KITSAT-B)
Downlink 435.175/436.500 MHz 9600 bps FSK FM Digital
Uplink 145.870/145.980 MHz 9600 bps FSK FM Digital

AO-26 (ITAMSAT)
Downlink 435.867 MHz 1200 bps PSK Digital
Uplinks 145.875 MHz 1200 bps FM Digital
145.900 MHz 1200 bps FM Digital
145.925 MHz 1200 bps FM Digital
145.950 MHz 1200 bps FM Digital

AMRAD (AO-27)
Downlink 436.900 MHz FM Voice
Uplink 145.850 MHz FM Voice

733. Please help a new guy

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: djohnson@acpub.duke.edu
Message-ID: <3lskkv$45r@news.duke.edu>
Source record: 25383

Hi people-on-satellites-via-ham radio! I have never before been really interested in the hamsats, but think I would like to try the one(s) on 10 & 12m. I think this is Oscar 11/12 (or 10/11?). Can someone kindly tell me:

(1) Is there a good reference for a newcomer, especially with regard to operation on these particular bird(s) (there are some good libraries close by :-),

and

(2) what is a good program to use for telling me when the passes over my location occur? (I know I can get keps from ARRL server and I have a computer, but it's an old PC-XT/8088, running DOS 3.1).

Oh yea, also,

(3) is there any good reference for using the keps, interpreting them into the usable-information form? (Guess you can tell I haven't gotten my "feet wet" yet ;-)

Tally-ho!

Dave Johnson, WA4NID
email: djohnson@acpub.duke.edu
--
David W. Johnson Power is no substitute for skill
Amateur Extra WA4NID QRP ARCI 6546
email: djohnson@acpub.duke.edu G-QRP 4864
packet WA4NID@KB4WGA.NC.USA.NA NorCal 355

734. DOS satellite tracking program?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: tkreyche@zdlabs.ziff.com
Message-ID: <tkreyche-040495152231@tomkreyche.zdlabs.ziff.com>
Source record: 25384

I'm going to be vacationing on the road for about six weeks and have to leave my Mac and Windows NT machines home. I wish to do some visual satellite tracking. The only portable computer I can borrow runs only DOS, sigh. Does anyone know of any DOS based satellite tracking programs?

Thanks, Tom Kreyche KG6YJ

735. Re: Ham-Space Digest V95 #80

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: ce6fyn@ce6fyn.radio.CL
Message-ID: <35@ce6fyn.radio.cl>
Source record: 25385

.

736. Sattrack for Dos

Newsgroup: rec.radio.amateur.space
Date: 1995-04-04 00:00:00 UTC
From: ke4qiz@theborg.mlb.fl.us
Message-ID: <ke4qiz.1hpw@theborg.mlb.fl.us>
Source record: 25386

Sattrak 280 is made for dos. It runs very well on my 80286 with the
math-co-processor. Hope this helps.

SEE YOU DOWN THE LOG,
73 DE KE4QIZ
BRUCE

737. Re: CQ Magazine Highlights - May, 1995

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: faunt@netcom2.netcom.com
Message-ID: <FAUNT.95Apr4175330@netcom2.netcom.com>
Source record: 25387

I sent email to him, explaining most of this, and he seemed to have gotten the idea that he needs to fine tune his postings, so that he's not spamming the rec.radio groups. I find his postings useful, in fact.
I don't hate blatant ads, if they give useful information, appropriate to the venue.
73, doug

738. Re: DOS satellite tracking program?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: johnsotc@sd2.af.mil
Message-ID: <3lu0ug$7do@blackbird.afit.af.mil>
Source record: 25388

In article <tkreyche-040495152231@tomkreyche.zdlabs.ziff.com>, tkreyche@zdlabs.ziff.com (Tom Kreyche) writes:
|> I'm going to be vacationing on the road for about six weeks and have to
|> leave my Mac and Windows NT machines home. I wish to do some visual
|> satellite tracking. The only portable computer I can borrow runs only DOS,
|> sigh. Does anyone know of any DOS based satellite tracking programs?
|>
|> Thanks, Tom Kreyche KG6YJ

PC-Track 3.0 is DOS based, uses VGA for display, and is available at:
oak.oakland.edu in SimTel/msdos/satelite as
pctrk304.zip (564592 bytes)
or

via WWW it is in:
http://www.acs.oakland.edu/oak/SimTel/msdos/satelite.html

Tom Johnson

739. Returned mail

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: Mailer-Daemon@moe.iris.COM
Message-ID: <9504051536.AA7772@moe.iris.com>
Source record: 25389

```
---- message ----

User chris diamond not listed in public Name & Address Book

---- message ----
Content-Type: Message/rfc822
Content-Description: RFC822

To: Ham-Space <Ham-Space@UCSD.EDU>
bcc: chris diamond <chris_diamond.iris@iris.com>
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Date: 5 Apr 95 4:30:29 EDT
Subject: Ham-Space Digest V95 #93
MIME-Version: 1.0
Content-Type: Text/Plain

Ham-Space Digest Wed, 5 Apr 95 Volume 95 : Issue 93

Today's Topics:
ARSENE
Geosync satelites
Ham-Space Digest V95 #80
Ham-Space Digest V95 #92
Keppler data algorithms ??
PCTrack
Phase IIID freqs and mode ?
Sat. Freq. Help!
The ones to listen for?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: Tue, 4 Apr 1995 13:24:58 GMT
From: icesb@iroe.fi.cnr.it (Lapo Pieri)
Subject: ARSENE

In article <3li6ik$2ngt@ns3-1.CC.Lehigh.EDU> c002@Lehigh.EDU writes:
>From: c002@Lehigh.EDU
```

>Subject: ARSENE
>Date: 31 Mar 1995 19:25:56 -0500

>what IS the arsene sat?
>anyone have alot of info on it?

>also, i need alot of info on FM sats ONLY <names, freqs, other info>

>thanks

>DAvid
>|---|
>| David Roseman | c002@lehigh.edu |
>| SysOp of NODE 3 BBS | The Flying HAm - BBS |
>| Running OBV/2 Software | TechnoMage - BBS |
>| | N3SQE/SVARC - Ham |
>| HAmmy in IRC | N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet |
>|------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----|

I remember that mode B transponder fault but mode S transponder was OK. Realy
I don't know if it's active. (ARSENE was assigned A024).

Lapo Pieri IK5NAX internet: icesb@iroe.fi.cnr.it
@IROE-CNR (Italy) lpieri@nyx.cs.du.edu
Phone: +39 55 4235276 (IROE) packet: ik5nax@IW5CZJ.ITOS.IT.EU
+39 55 410209 (home) [TCP/IP] 44.134.208.174

Date: 3 Apr 1995 17:08:00 GMT
From: jpcarlie@vub.ac.be (Carlier Jean-Pol)
Subject: Geosync satelites

Does anyone know where I could find the TLE's for ALL geosync satelites
orbiting around the earth (I know the list is a bit long but anyway shorter
than getting all sats alltogether).

Thanks
Marc Delince ONL6486 using jpcarlie account.

Date: 4 Apr 95 23:43:42 GMT
From: ce6fyn@ce6fyn.radio.CL (Juan Carlos Hoyuela)
Subject: Ham-Space Digest V95 #80

.

Date: 3 Apr 95 20:49:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: Ham-Space Digest V95 #92

Sorry to hear that you got stuck with a MAC!
Oh well, I guess you will just have to try and make the best of it.

A Good places to find the information you are looking for (sat's and there
frequencies) is the following FTP site:

ftp.cs.buffalo.edu

The file to look for is "faq_satellite" which is found in the "ham-radio"
sub-directory within the "pub" directory.

The following FTP site also has allot of information plus software (even for
a MAC, in addition to others)
ftp.amsat.org

Useful WWW sites are:

http://www.acs.oakland.edu/barc/arrl.html

http://www.amsat.org/amsat/AmsatHome.html

>Date: Sun, 02 Apr 1995 01:13:57 -0600
>From: ahall@uiuc.edu (Allen Hall)
>Subject: The ones to listen for?
>
>Hello everyone out there in r.r.a.s!
>
>I was wondering, (I'm fairly new to sat's -> just got a good program for
>the mac -> e-mail me if you want to know which one) what are the
>satellites that I should be watching for? I guess really what I'm asking
>is: Is there any sort of compiled list of the amateur sat's and freq's
>and/or interesting freq's to listen to and which sat's they belong to?
>
>It's great to have Keplerian data and watch the sat go around the world,
>but I want to know where to uplink/downlink and what modes etc. etc.
>
>I appreciate any pointers to FAQ's which answer my questions above, or any
>other helpful information (along with comments/suggestions).
>
>TNX et 73's!
>
>Allen Hall n9rzc@uiuc.edu
>

Date: Mon, 3 Apr 1995 18:54:42 GMT
From: jcw@kd4dts.radio.org (John C. Wren)
Subject: Keppler data algorithms ??

I found something on Compuswerve called EMOSAT.ZIP that demonstrate keplerian
element calculations. Check that. If you can't get to it via CompuSlut,
e-mail be, and I'll mail it to you.

- John, KD4DTS

Jorn Hanssen <jorn@ts.umu.se> writes:

>
>Is there anyone who can help me with algorithms for implementing Keppler data
into a computer
>for calculation of orbital data of a satellite?
>
>I need these to start my final project wich is making software for steering an
antenna.
>
>Could you please help me by sending an answer to this newsgroup or directly to
my e_mail:
>jorn@ts.umu.se
>
>On forehand ; Thank You.
>--
>JOrN :-)

Date: 2 Apr 1995 22:49:10 -0600
From: jrybak@mesa5.Mesa.Colorado.EDU (James P. Rybak)
Subject: PCTrack

I want to obtain a copy of PCTrack (version 3.0 or later). Can anyone tell
I
me how to obtain it? Thanks for any help you can provide.

73,

Jim W0KSD

Date: Mon, 03 Apr 95 14:19:07 GMT
From: tony@gcr1.com (Tony Salvador)
Subject: Phase IIID freqs and mode ?

Anyone has the mods and freqs for PIIID ??
reply at: tony@gcr1.com

Date: 4 Apr 1995 17:27:34 GMT
From: QXBJ74A@prodigy.com (Marc Taylor)
Subject: Sat. Freq. Help!

I am new to the ham world, and am trying to possibly connect with the
sattelites. I was wondering if someone would either post the UPLINK and
DOWNLINK frequencies, or show me where they are on either WWW or FTP.

Thanks
Marc Taylor
KC7JKF

Date: 4 Apr 95 17:29:35 GMT
From: lhalliday@creo.bc.CA
Subject: The ones to listen for?

Allen asks:

> I was wondering, (I'm fairly new to sat's -> just got a good program
> for the mac -> e-mail me if you want to know which one) what are the
> satellites that I should be watching for? I guess really what I'm
> asking is: Is there any sort of compiled list of the amateur sat's
> and freq's and/or interesting freq's to listen to and which sat's
> they belong to?

(A new Mac tracking program? Do tell...)

If you haven't already found it, you can get all kinds of information
on amateur radio satellites from:

ftp.amsat.org

or

http://www.amsat.org/amsat/AmsatHome.html

If you have HF receive capability, try listening for RS-10 and RS-15
on 10 meters. You'll hear the CW beacons, and CW and SSB
conversations. Look for beacons around 29.35 MHz, and downlink
activity from 29.35 to 29.40 MHz. You can hear RS-12's downlink and
beacons on similar frequencies, but unlike RS-10 and RS-15's 2m Mode A
uplinks, RS-12 uses Mode K, with an uplink on 15m.

If you have 2m receive capability you can hear various low-orbit
satellites (is Dove back on the air?). Tune down to 136 MHz and you
can hear weather satellites.

I hear weather satellites (albeit not very well) on a Realistic Pro-43
scanner, and receive RS-10 and RS-15 with an FRG-7 hooked up to some
wire strung in the trees, so you do *not* need advanced equipment to
get started.

Buy/beg/borrow/steal a copy of the Satellite Experimenter's Handbook.
Join AMSAT (who publish a wealth of introductory material). Have fun.

73 from Burnaby,
laura VE7LDH

End of Ham-Space Digest V95 #93
****

---- message ------

740. Re: Sat. Freq. Help!

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1147464126A@128.220.101.100>
Source record: 25390

In Article <3lsbur$45s@newsbf02.news.aol.com>, jimkd0av@aol.com (JimKD0AV)
wrote:
occasionally)
>
>KO-25 (KITSAT-B)
> Downlink 435.175/436.500 MHz 9600 bps FSK FM Digital
> Uplink 145.870/145.980 MHz 9600 bps FSK FM Digital
>
My recent experience shows that the 145.980 uplink channel on KO-25 is not
functional at this time .... anyone else out there that can confirm this?

73

Art -- AA3GU
Art.Jeyes@jhuapl.edu

741. PacComm Sprint-2 with WISP?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1147467063B@128.220.101.100>
Source record: 25391

If anyone out there has any experience with the PacComm Spint-2 TNC
I would like to get some feedback on how well it performs. I am also
interested in hearing from anyone that has interfaced one of these
with WISP.

Thanks.....
73
Art -- AA3GU
Art.jeyes@jhuapl.edu

742. Re: Sat. Freq. Help!

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0504951133350001@edwin-b2.ip.realtime.net>
Source record: 25392

In article <art.jeyes.1147464126A@128.220.101.100>, art.jeyes@jhuapl.edu
(Art Jeyes) wrote:

> In Article <3lsbur$45s@newsbf02.news.aol.com>, jimkd0av@aol.com (JimKD0AV)
> wrote:
> occasionally)
> >
> >KO-25 (KITSAT-B)
> > Downlink 435.175/436.500 MHz 9600 bps FSK FM Digital
> > Uplink 145.870/145.980 MHz 9600 bps FSK FM Digital
> >
> My recent experience shows that the 145.980 uplink channel on KO-25 is not
> functional at this time .... anyone else out there that can confirm this?
>
> 73
>
> Art -- AA3GU
> Art.Jeyes@jhuapl.edu

That is correct. The 145.870 is the only one active now.

Ron W5RKN

743. Poem Called SPACE...

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: swt@aloha.net
Message-ID: <3luu6v$n98@nuhou.aloha.net>
Source record: 25393

The SAREX Program inspired me to write this poem. It was after a VERY successful mission and the kids where just going crazy on campus, telling there parents that they talked to the space shuttle.
Lots of press coverage did not hold a cnadle to the energy that the kids had.... Hopefully we can keep this
energy going !!!!

Enjoy !

SPACE...

In the travels of my life, I have enjoyed walking the quiet
sands of Time, and seeing the beauty of crystal clear water
as it slowly builds to a wave,then to a horizon,
then to a world of oceans.....

I have heard the sounds of Canadian geese as they
navigate to the warmer regions of our world flying only by
instinct and god's gift of flight....

I have spoken in quiet words to those that could not speak,
and I have listened to their sounds, that only the soul can
hear...

But I have never seen a sight like that of a child's face
when the only sounds are stars from the distance galaxies above
and the glowing of planets smiling down on earth...

Alas, I have found a way in my life to show others
the vision of what I see.... and to help them hear those
sounds that only the mind can understand....

I have had the chance to see this child look into the
vast depths of space and ask only one thing......

Can you teach me ?

12-JULY-1993

An inspiration to us all, this vision of a child
as they look into the heavens.May we never forget
that teaching is in fact the extension of the spirit
to go beyond that which do not understand .....

Steve W. Teegarden

744. ARLS005 SAREX frequency changes

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls005.1995@ampr.org>
Source record: 25394
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS005
ARLS005 SAREX frequency changes

ZCZC AS84
QST de W1AW
Space Bulletin 005 ARLS005
From ARRL Headquarters
Newington, CT April 5, 1995
To all radio amateurs

SB SPACE ARL ARLS005
ARLS005 SAREX frequency changes

Space Shuttle flight STS-71, to be launched in June, is the first to feature a docking between the Shuttle and the Russian Mir space station. Special Shuttle Amateur Radio EXperiment (SAREX) voice frequencies will be used.

The special frequencies are: Downlink: 145.84 MHz worldwide; and Uplinks: 144.45 and 144.47 MHz worldwide .

SAREX and Mir Amateur Radio stations normally share the same downlink frequency, which would cause interference on the STS-71 mission. Because of this and lessons learned from using particular frequencies during previous SAREX missions, the SAREX Working Group has made these changes for STS-71. The new frequencies were chosen after much deliberation to minimize interference between SAREX, Mir, and terrestrial stations.

Most SAREX operations are split frequency, with a downlink (astronauts transmitting to Earth stations) and an uplink (Earth stations transmitting to astronauts). Listen to the downlink and transmit only when the shuttle is in range and astronauts are on the air.

Mir operations are simplex and remain on 145.55 MHz.

Before transmitting, listen to the SAREX uplink to avoid interfering with others, and listen for the astronauts' instructions about frequencies they're using. They won't favor a specific uplink, and your ability to work them will be ''the luck of the draw.''

If these special SAREX frequencies prove acceptable, they will be used for future docking missions. If you have comments, send them to AMSAT's Frank Bauer, KA3HDO, at his Callbook address, or to the ARRL Educational Activities Department.

Please note that there is a strong chance that STS-70 will fly
before STS-71; if so, STS-70 will use the regular SAREX frequencies.
NNNN
/EX

745. Re: HELP! with rs-10/11

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3lv3tu$k7s@ns4-1.CC.Lehigh.EDU>
Source record: 25395

>>#2. what IS cw? i tx cw from hamcomm by holding the ptt down...is that right?
> ^^^^^^^^^^^
>What is CW?????
>A very difficult question!
>Let me try: YOU CAN'T EAT IT! :-) :-) :-)
>
>David, have fun ...
>73 de DK3VN
>Waldemar

if you DON"T help, shad UP!

DAvid

gezz, the manner of some people
|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

746. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3lv43u$2cuv@ns4-1.CC.Lehigh.EDU>
Source record: 25396

```
> BAND DIGITAL (MHZ) ANALOG (MHZ) CENTER (MHz)
> ------ ------------ ------------ ------------

now, just to make sure...
3d will be a geosync sat? so a yagi pointed in one place is good enough?

and as above....alalog...will that be such as SSB/FM/CW??

thanks

DAvid
|-------------------------------------------------------------------------|
| David Roseman | c002@lehigh.edu |
| SysOp of NODE 3 BBS | The Flying HAm - BBS |
| Running OBV/2 Software | TechnoMage - BBS |
| | N3SQE/SVARC - Ham |
| HAmmy in IRC | N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet |
|------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----|
```

747. Comment 04/05/95 7:39pm

Newsgroup: rec.radio.amateur.space
Date: 1995-04-05 00:00:00 UTC
From: Ken.Ernandes@227.woodybbs.com
Message-ID: <542_9504062248@woodybbs.com>
Source record: 25397

Joe -

Thanx for including Larkfield ARC on the VE sessions. I must have given
you Joe Coffield's call wrong; it's W2DDZ (not W2DOZ). Would appreciate
it if you could correct this at your convenience.

73, Ken
--
| Fidonet: Ken Ernandes 1:2619/227
| Internet: Ken.Ernandes@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

748. Ans Bulletins and Keps??

Newsgroup: rec.radio.amateur.space
Date: 1995-04-06 00:00:00 UTC
From: H14763@ptnnfs01.ESkom.co.ZA
Message-ID: <58A915E4919@ptnnfs01.eskom.co.za>
Source record: 25398

Can someone please e-mail (to my return address) any info on how to subscribe to the mailing lists that carry the ANS bulletins and the Keps sent out in packet format by Ray Hoad.

I am already subscribed under my other e-mail address, but cant remember how to do it ;-) I am moving my Internet operation over to my new address, to reduce my costs on the first one, this one being provided free by my employer. 8-))

Many thanks

Best regards

Brian Ellse
E-Mail: H14763@ptnnfs01.eskom.co.za Telephone: xx27-31-7011201
OR Tele Fax: xx27-31-7018315
briane@goofy.iacess.za
P-Mail: h14763/PTNNFS01
Packet: ZR5DTS@ZS0WTE.KZN.ZAF.AF

749. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-06 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3m06i1$gef@news.onramp.net>
Source record: 25399

```
will that be such as SSB/FM/CW??
SSB/FM/CW are analog

3d will be a geosync sat?
Right !!! Over the South Pole :-)
```

750. Need Inmarsat-C Frequency allocations.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-06 00:00:00 UTC
From: wave@mindspring.com
Message-ID: <3m13jv$3on@henri.mindspring.com>
Source record: 25400

I need some info on the inmarsat-c frequency allocations. Please Help.

Pieter Ibelings
ac4op

751. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-06 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3m12fr$aqf@newshost.lanl.gov>
Source record: 25401

P3D will NOT be a geosync. If it was only part of the world could use it. P3D will have a molinya orbit much like but hopefully better than AO-10 and AO-13. The orbit paln that I saw indicated a progression so that one day North America could contact Europe and the next NA to Asia next Asia to Europe and so on. Preliminary keps are available so you can have a look at the coverages. 73 de Jerry KC5EGG

752. satellite frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-04-06 00:00:00 UTC
From: I121171@relay.telecom.it
Message-ID: <3m0lad$nas@sgi.iunet.it>
Source record: 25402

```
DOES ANYONE HAVE FREQUENCIES LIST FOR ALL KIND OF SATELLITES ???
================================================================
TRANCE BBS (ITALY) +39-11-482751

THANKS
```

753. Re: Please help a new guy

Newsgroup: rec.radio.amateur.space
Date: 1995-04-06 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3m1ba9$eob@desiree.teleport.com>
Source record: 25403

In article <3lskkv$45r@news.duke.edu>, djohnson@acpub.duke.edu said...
>
>Hi people-on-satellites-via-ham radio! I have never before been
>really interested in the hamsats, but think I would like to try
>the one(s) on 10 & 12m. I think this is Oscar 11/12 (or 10/11?).

It is called RS-12/13, and was built in Russia.
For your other questions (and many more you will no doubt have), I
recommend the Satellite Experimenters Handbook. This is a must have for
anyone contemplating satellite operation. It is available from the usual
mail order outlets if you don't have a local one.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

754. Re: satellite frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-04-07 00:00:00 UTC
From: billbldc@aol.com
Message-ID: <3m4c1d$h1m@newsbf02.news.aol.com>
Source record: 25404

In response to your question about satellite frequencies, two suggestions, and several questions of my own, about the Mir/Soyuz/Progress/Shuttle:
1) an issue of "Popular Communications" magazine, in the last month or two, had a two- or three-page list of satellite frequencies
2) another source of satellite frequencies I've been using is the new "Satellites Times" bimonthly magazine put out by Grove, in the column on launches

For the Mir, several questions:
1) has anyone *heard* any of the non-SAREX Mir/Soyuz/Progress frequencies mentioned in this listing or in other listings? (I've been trying off and on for the last several weeks and haven't heard any of the ones I've checked)
2) does anyone know what frequency/cies the cosmonauts use during EVAs?
3) " " " " " the Mir and Shuttle used
in their recent close approach and/or will use in the upcoming docking?
I've seen references to a "VHF" frequency in NASA news releases, etc. Is it the 143.625 voice frequency Mir has used in the past?
Thanks in advance for any help, suggestions.
--Bill Black, Washington, D.C., "BILLBLDC@AOL.COM"

755. WWV

Newsgroup: rec.radio.amateur.space
Date: 1995-04-07 00:00:00 UTC
From: ulrich.heuberger@hiof.no
Message-ID: <ulrich.heuberger.5.2F853102@hiof.no>
Source record: 25405

Is there current WWV-data on Internet? Pse Info. 73 de LA�CX

756. satellite frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-04-07 00:00:00 UTC
From: I121171@relay.telecom.it
Message-ID: <3m2rpt$4m7@sgi.iunet.it>
Source record: 25406

ANY NEW DATA FOR THE FOLLOWING FREQUENCIES ?????

**********+

COMMON SATELLITE FREQUENCIES LISTINGS
MAY 1993 UPDATE

00965:TRANSIT 5BN 5 136.650 NAVIGATION.
02608:ATS-1 135.555,135.575,135.600 COMMUNICATION.
135.625,135.645,137.350 COMMUNICATION.
03029:ATS-3 137.37,137.350 COMMUNICATION.
04320:AO-5 29.450,144.05 AMATEUR *1.
06236:AO-6 29.450 AMATEUR *1.
06909:OSCAR 20 149.9875,399.9680 NAVIGATION.
07530:AO-7 29.502,145.975,435.100 AMATEUR *1.
08366:GOES 1 136.380 WEATHER.
10061:GOES 2 136.380 WEATHER.
10637:IUE 136.860 EXPLORER.
10703:AO-8 29.402,435.095 AMATEUR *1.
10953:GEOS 3 136.380 WEATHER.
11054:GPS-03 1227.600 NAVIGATION.
12458:NOVA I 149.9875,399.9680 NAVIGATION.
12544:METEOSAT 2 137.078 WEATHER.
12553:NOAA 7 137.620 WEATHER *1.
13010:MARECS-A 137.170 GEOSTATIONARY.
13362:NOVA III 149.9875,399.9680 NAVIGATION.
13367:LANDSAT 4 137.860 EARTH RESOURCES.
13386:MARECS-B2 137.170 GEOSTATIONARY.
13923:NOAA 8 137.500 WEATHER *1.
14129:AO-10 145.810,145.989,436.020 AMATEUR.
436.040 AMATEUR.
14189:GPS-08 1227.600 NAVIGATION.
14372:COSMOS 1500 137.400,466.500 OCEANOGRAPHIC.
14781:UO-11 145.825 AMATEUR.
15039:GPS-09 1227.600 NAVIGATION.
15271:GPS-10 1227.600 NAVIGATION.
15427:NOAA 9 137.620,137.770 WEATHER.
15936:OSCAR 30 149.9875,399.9680 NAVIGATION.
16129:GPS-11 1227.600 NAVIGATION.
16609:MIR 121.125,121.750,130.165 SPACE STATION.
139.205,143.625,145.500 SPACE STATION.
145.550,145.900,231.000 SPACE STATION.
233.000,247.000,249.000 SPACE STATION.
417.000,463.000 SPACE STATION.
16969:NOAA 10 137.500,136.770 WEATHER.

17066:COSMOS 1791 150.000,400.00 NAVIGATION.
17070:POLAR BEAR 149.9875,399.9680 NAVIGATION.
18122:RS 10/11 29.357,29.403,145.857 AMATEUR.
(COSMOS 1861) 145.903,29.403,29.453 AMATEUR.
145.907,145.953 AMATEUR.
18312:METEOR 2-16 137.400 WEATHER.
18361:OSCAR 27 149.9875,399.9680 NAVIGATION.
18362:OSCAR 29 149.9875,399.9680 NAVIGATION.
18820:METEOR 2-17 137.300 WEATHER.
19070:OSCAR 23 149.9875,399.9680 NAVIGATION.
19071:OSCAR 32 149.9875,399.9680 NAVIGATION.
19215:METEOSAT 3 137.080 WEATHER.
19216:AO-13 145.8125,145.975,435.650 AMATEUR.
435.675,145.950,145.955 AMATEUR.
19223:NOVA II 149.9875,399.9680 NAVIGATION.
19336:METEOR 3-2 137.850 WEATHER.
19419:OSCAR 25 149.9875,399.9680 NAVIGATION.
19420:OSCAR 31 149.9875,399.9680 NAGIGATION.
19531:NOAA 11 137.620,137.770 WEATHER.
19802:GPS BII-01 1227.600 NAVIGATION.
19826:COSMOS 2004 149.940,399.840 NAVIGATION *1.
19851:METEOR 2-18 137.300 WEATHER.
20045:COSMOS 2006 149.970,399.920 NAVIGATION *1.
20061:GPS BII-02 1227.600 NAVIGATION.
20185:GPS BII-03 1227.600 NAVIGATION.
20302:GPS BII-04 1227.600 NAVIGATION.
20305:METEOR 3-3 137.850 WEATHER.
20361:GPS BII-05 1227.600 NAVIGATION.
20437:UO-14 435.070 AMATEUR.
20438:UO-15 435.120 AMATEUR.
20439:PO-16 PACSAT 437.025,437.050 AMATEUR.
20440:DO-17 DOVE 145.825 AMATEUR.
20441:WO-18 WEBERSAT 437.075,437.105 AMATEUR.
20442:LO-19 LUSAT 437.155,437.125 AMATEUR.
20452:GPS BII-06 1227.600 NAVIGATION.
20480:FO-20 435.910,435.795 AMATEUR.
20508:NADEZHDA 2 150.000,400.00 NAVIGATION.
20577:COSMOS 2074 149.910,399.760 NAVIGATION *1.
20670:METEOR 2-19 137.850 WEATHER.
20724:GPS BII-08 1227.600 NAVIGATION.
20788:FENGYUN 1B 137.795 WEATHER.
20826:METEOR 2-20 137.850 WETHER.
20830:GPS BII-09 1227.600 NAVIGATION.
20959:GPS BII-10 1227.600 NAVIGATION.
21087:AO-21 145.985,145.825,145.950 AMATEUR.
145.8375,145.800 AMATEUR.
21089:COSMOS 2123 150.000,400.00 NAVIGATION.
21089:RS 12/13 29.408,29.454,145.915 AMATEUR.
145.960,29.458,29.504 AMATEUR.
145.865,145.910 AMATEUR.

21130:COSMOS 2135 149.970,399.920 NAVIGATION *1.
21152:NADEZHDA 3 150.000 NAVIGATION.
21230:COSMOS 2142 150.030,400.080 NAVIGATION.
21232:METEOR 3-4 137.300 WEATHER.
21263:NOAA 12 137.500,136.770 WEATHER.
21552:GPS BII-11 1227.600 NAVIGATION.
21575:UO-22 435.120 AMATEUR.
21578:SARA 145.955 ??.
21655:METEOR 3-5 137.850 WEATHER.
21666:COSMOS 2154 149.940,399.840 NAVIGATION *1.
21796:COSMOS 2173 149.970,399.920 NAVIGATION.
21798:DMSP B5D2-6 137.500,136.770 WEATHER (MILITARY).
21875:COSMOS 2180 149.940,399.840 NAVIGATION.
21890:GPS BII-12 1227.6 NAVIGATION.
21902:COSMOS 2181 150.000,400.000 NAVIGATION.
21930:GPS BII-13 1227.6 NAVIGATION.
21937:COSMOS 2184 149.910,399.760 NAVIGATION.
21975:COSMOS 2190 149.940,399.840 NAVIGATION.
21980:COSMOS 2191 150.000,400.000 NAVIGATION.
22006:COSMOS 2195 149.970,399.920 NAVIGATION.
22014:GPS BII-14 1227.6 NAVIGATION.
22077:KITSAT A 435.175 AMATEUR.
22078:SSO/T 137-139 ??.
22108:GPS BII-15 1227.6 NAVIGATION.
22161:FREJA 400.550 AURORA RESEARCH.
22207:COSMOS 2218 149.940,399.840 NAVIGATION.
22231:GPS BII-16 1227.6 NAVIGATION.
22275:GPS BII-17 1227.6 NAVIGATION.
22319:SOYUZ TM-16 121.125,121.750,130.167 MANNED FLIGHT.
139.208,143.625,231.000 MANNED FLIGHT.
233.000,247.000,249.000 MANNED FLIGHT.
417.000,463.000 MANNED FLIGHT.
22446:GPS BII-18 1227.6 NAVIGATION.
22487:COSMOS 2233 150.030,400.080 NAVIGATION.
ARSENE 145.975,2446.540 AMATEUR.
22490:SCD-1 401.620,401.650 WEATHER.
22530:PROGRESS TM-16 166.000,165.000,922.755 SUPPLYSHIP

*1 No longer transmitting. Kept for reference.

NOTE: Here are some FLTSATCOM Frequencies reported to be in use. These
frequencies are either DATA or VOICE or both.

244.0950 261.6500 262.2500 269.0700
248.9000 261.6750 262.3000 269.4750
249.5500 261.7000 262.4750 269.5500
250.4500 250.5500 259.7000 261.9000
262.5500 269.8000 261.4500 261.9500
262.9500 269.9500 261.4750 262.1000
263.6250 288.0000 261.5250 262.2250
264.9000 295.0750 261.6000

757. Re: Please help a new guy

Newsgroup: rec.radio.amateur.space
Date: 1995-04-07 00:00:00 UTC
From: drayegon@america.com
Message-ID: <NEWTNews.5072.797272365.drayegon@drayegon.america.com>
Source record: 25407

Dave your best bet is to join amsat check there web page at

http://www.amsat.org

also look in Lib for sattelite antholgy

758. Re: DOS satellite tracking program?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-07 00:00:00 UTC
From: drayegon@america.com
Message-ID: <NEWTNews.1456.797272535.drayegon@drayegon.america.com>
Source record: 25408

I Does anyone know of any DOS based satellite tracking programs?
>
> Thanks, Tom Kreyche KG6YJ

Tom use Insta Track avail from amsat.org

it is dos and basically the standard for the rest.
73 Ray AD4RR

759. Re: instanttrack

Newsgroup: rec.radio.amateur.space
Date: 1995-04-08 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3m748n$jv3@news.onramp.net>
Source record: 25261

You must order it for about $50 from AMSAT
Updates are available at Amsat.org

BOB KC5EJK Dallas

760. STS 59

Newsgroup: rec.radio.amateur.space
Date: 1995-04-08 00:00:00 UTC
From: ericksco@mhd.moorhead.msus.edu
Message-ID: <3m5g30$qqc@urvile.MSUS.EDU>
Source record: 25409

Could anyone tell me the address to the Radio Club in charge of QSL'ing
STS 59?
All I have is Orange Park Amateur Radio Club somewhere in Florida.

Any help you could give would be GREATLY Appricated
Thanks
Cory ericksco@mhd1.moorhead.msus.edu

761. instanttrack

Newsgroup: rec.radio.amateur.space
Date: 1995-04-08 00:00:00 UTC
From: jim4897@athena.athenet.net
Message-ID: <3m6vvc$f0k@athena.athenet.net>
Source record: 25410

Where is it? It's not at amsat.org.

762. Mir, Soyuz frequencies - was Re: satellite frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3m7b6i$iqr@paperboy.ids.net>
Source record: 25262

In article <3m4c1d$h1m@newsbf02.news.aol.com> BILLBLDC, billbldc@aol.com writes:
>
>For the Mir, several questions:
>1) has anyone *heard* any of the non-SAREX Mir/Soyuz/Progress frequencies
>mentioned in this listing or in other listings? (I've been trying off and
>on for the last several weeks and haven't heard any of the ones I've
>checked)
>2) does anyone know what frequency/cies the cosmonauts use during EVAs?
>3) " " " " " the Mir and Shuttle used
>in their recent close approach and/or will use in the upcoming docking?

Check out my article on shuttle-Mir communications, scheduled for the June issue of "Monitoring Times".

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

```
__ __^__ __________
| \ +---/ \---+ (=========
|____\__________ +---\_____/---+ //
>____)| | \__ \ \______//___
>/ |________| \ [ _____\
>|____________________\ \_______/
```

Roger, go at throttle up CHR$(32) the final frontier

763. Balloon Launch Postponed

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: djmullen@facstaff.wisc.edu
Message-ID: <3m7qc8$n1i@news.doit.wisc.edu>
Source record: 25263

The April 8 flight of the BARS-1 ham balloon was scrubbed due to weather.

The Badger Amateur Radio Society and the High Altitude Radio Project
announce the new date for the launch of the BARS 1 Weather Balloon

Launch Date: Saturday, April 15, 1995 (Rain dates: early May)
Launch Time: 9:00 - 10:00 AM CDT (14:00 - 15:00 UT)
Launch Site: Hillsboro, Wisconsin (About 20 miles W. of Wisconsin Dells)

ATV transmit freq: 439.25 3 watts Color
GPS/APRS Packet TX: 441.05 2 watts 1200 baud packet
Cross-Band Repeater Output: 439.25 3 watts FM (Same as ATV output)
Cross-Band Repeater Input: 144.325 Vertical polarization
Expected Radio Range: 270-380 mile radius from balloon's location

Note that the crossband repeater output and the ATV transmitter are on the
same frequency. The ATV transmitter's carrier is FM Modulated with the
voice signal. The voice and TV signals don't interfere with each other.

This flight will be BARS' entry in the 1995 University of Wisconsin
Engineering Expo, a bi-annual display of student engineering prowess that
is scheduled for April 21-23 on the University of Wisconsin, Madison campus.
The payload and video tapes of the flight will be displayed at the expo.

The launch will be announced on the Baraboo 146.88 repeater. Chase crew
coordination will be on the balloon's cross band repeater.

For info: N9LTD@WD9ESU.EN53IE.WI.USA.NOAM or djmullen@facstaff.wisc.edu

764. OS/2 Sat tracker under dev.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: anilsson@yarrow.wt.uwa.edu.au
Message-ID: <3m8k4c$aeb@styx.uwa.edu.au>
Source record: 25264

Hi All,

I am currently writing a native OS/2 satellite tracker and would like some feedback on what people would like in it.(assuming anyone here uses os/2) Just send me a piece of email with a list a features you would like and/or any comments. I am mostly interested in the user interface and the way the windows are arranged.

Andrew Nilsson, VK6JBL
anilsson@yarrow.wt.com.au

765. Re: OS/2 Sat tracker under dev.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: kamer@ibm.net
Message-ID: <3m8sea$1ncj@news-s01.ny.us.ibm.net>
Source record: 25265

Very interested that you are considering working on a satellite tracking program under OS/2. Here in Illinois I and a group of people are dedicated to OS/2 as an OS. As I ham I would welcome further development in this area and would be happy to collaborate on any programming efforts.

I find that STSPLUS offers a great deal of what I am looking for in a satellite tracking program, but would like to see multiple satellite tracking (e.g. multiple windows to track individual birds). If emphasis is on packet, WISP seems to have it all, except for better scalability on the graphics maps.

Am interested in your progress, and would be happly to supply detailed information on a wish list.

73 de Harry Kamer, WB9ZAI

766. Two-Line Orbital Element Sets (TLE582)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.797428798@eel>
Source record: 25266

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #582 -
Alouette 1
1 00424U 62049A 95093.22857819 .00000128 00000-0 13994-3 0 912
2 00424 80.4623 358.8366 0024310 86.2401 274.1519 13.67838067622058
ATS 1
1 02608U 66110A 95090.49022563 -.00000091 00000-0 10000-3 0 9258
2 02608 14.6243 357.4710 0009671 56.3295 303.7330 1.00314281 20414
ATS 3
1 03029U 67111A 95096.22121786 -.00000115 00000-0 10000-3 0 3499
2 03029 14.7971 4.4468 0009005 277.0326 246.8326 1.00272524100377
Cosmos 398
1 04966U 71016A 95095.42267394 .00192549 82898-5 23576-3 0 8002
2 04966 51.4172 196.4437 0686210 201.5533 155.5199 14.70239192814403
Starlette
1 07646U 75010A 95093.22315811 -.00000123 00000-0 14499-4 0 8756
2 07646 49.8262 88.8271 0206241 214.0823 144.6681 13.82188602 17978
LAGEOS
1 08820U 76039A 95094.05228653 .00000011 00000-0 10000-3 0 954
2 08820 109.8337 235.2010 0044025 223.1773 136.5258 6.38664386185727
ETS-2
1 09852U 77014A 95085.35229150 -.00000181 00000-0 10000-3 0 207
2 09852 12.6185 38.1548 0001978 46.1056 313.9100 0.99996160 13151
GOES 2
1 10061U 77048A 95096.46881924 .00000071 00000-0 10000-3 0 5139
2 10061 11.6937 42.2185 0013313 100.0390 50.1965 1.00163013 10050
IUE
1 10637U 78012A 95095.11741403 -.00000229 00000-0 10000-3 0 1219
2 10637 35.0750 90.1655 1323007 44.4353 47.5979 1.00246218 15533
GPS BI-01
1 10684U 78020A 95095.05329635 -.00000038 00000-0 10000-3 0 3470
2 10684 64.8039 36.8562 0060795 162.4905 197.6796 1.98069342110712
```

```
GPS BI-02
1 10893U 78047A 95087.44065699 .00000007 00000-0 10000-3 0 1543
2 10893 63.3610 275.3279 0221606 14.0348 346.5221 2.01627158123803
GOES 3
1 10953U 78062A 95096.51447233 .00000068 00000-0 10000-3 0 4723
2 10953 10.6651 44.9864 0003421 102.3490 57.6080 1.00288387 14663
SeaSat 1
1 10967U 78064A 95094.17952480 .00000001 00000-0 44835-4 0 3860
2 10967 107.9980 344.3724 0001697 257.5703 102.5247 14.38023711878192
GPS BI-03
1 11054U 78093A 95089.02672883 -.00000011 00000-0 10000-3 0 2748
2 11054 63.0598 273.3074 0044713 176.8670 183.1496 1.93505236120047
Nimbus 7
1 11080U 78098A 95095.14605191 -.00000073 00000-0 -27984-4 0 4909
2 11080 99.0141 332.2427 0009807 69.5250 290.6949 13.83713270830454
GPS BI-04
1 11141U 78112A 95093.15730954 -.00000049 00000-0 10000-3 0 9670
2 11141 64.7993 38.6262 0048467 26.5502 333.6783 1.92894819 9377
GPS BI-05
1 11690U 80011A 95096.09192515 -.00000031 00000-0 10000-3 0 8996
2 11690 65.1388 38.4762 0145628 195.1894 164.3882 2.00562696125414
GPS BI-06
1 11783U 80032A 95093.47432518 -.00000002 00000-0 10000-3 0 676
2 11783 62.5139 268.4705 0216937 29.3264 331.8248 2.03455558109864
GOES 5
1 12472U 81049A 95093.81726086 -.00000280 00000-0 10000-3 0 8480
2 12472 7.3864 54.8760 0005426 13.8464 346.1550 1.00302481 8684
Cosmos 1383
1 13301U 82066A 95096.45715885 .00000023 00000-0 96197-5 0 3943
2 13301 82.9292 94.7480 0028416 9.8826 350.2879 13.68064678637524
LandSat 4
1 13367U 82072A 95096.68785636 -.00000040 00000-0 11253-5 0 6558
2 13367 98.1365 154.2459 0008170 63.2957 296.9077 14.57149471676802
DMSP B5D2-1
1 13736U 82118A 95095.19308702 .00000121 00000-0 69168-4 0 6959
2 13736 98.6300 285.5439 0007511 226.0801 133.9760 14.25723306638512
IRAS
1 13777U 83004A 95096.52625178 .00000301 00000-0 23759-3 0 9213
2 13777 98.9652 286.3236 0011638 221.1594 138.8692 13.99226847292167
Cosmos 1447
1 13916U 83021A 95092.22842857 .00000002 00000-0 -13432-4 0 4903
2 13916 82.9478 157.9314 0036875 305.9857 53.7878 13.74323484603035
TDRS 1
1 13969U 83026B 95089.95977424 -.00000282 00000-0 10000-3 0 4032
2 13969 8.2067 48.1194 0111657 103.7278 106.3734 1.00277616 16921
GOES 6
1 14050U 83041A 95095.28715251 .00000033 00000-0 10000-3 0 3742
2 14050 6.2041 57.9689 0005633 347.0454 123.6837 1.00306579101792
OSCAR 10
1 14129U 83058B 95085.67894959 -.00000174 00000-0 10000-3 0 3435
```

```
2 14129 26.5113 276.3261 6015931 263.2779 28.9850 2.05881301 60630
LandSat 5
1 14780U 84021A 95094.18331424 .00000092 00000-0 30263-4 0 2226
2 14780 98.1141 152.4770 0005747 78.2693 281.9150 14.57155980589856
UoSat 2
1 14781U 84021B 95096.54566372 .00000192 00000-0 40212-4 0 7873
2 14781 97.7818 102.4491 0012932 53.4439 306.7954 14.69327573593388
GPS BI-09
1 15039U 84059A 95089.11845548 -.00000079 00000-0 10000-3 0 2816
2 15039 64.4653 33.1399 0082426 16.0664 344.1725 1.92302315 78873
Cosmos 1574
1 15055U 84062A 95096.76951569 .00000027 00000-0 12296-4 0 6926
2 15055 82.9556 208.5215 0028761 117.0517 243.3581 13.73619636540934
GPS BI-10
1 15271U 84097A 95094.78570739 .00000009 00000-0 10000-3 0 9327
2 15271 62.1977 268.7061 0155018 353.4157 6.3596 2.00595273 76452
Cosmos 1602
1 15331U 84105A 95095.64046138 .00000366 00000-0 40402-4 0 3792
2 15331 82.5350 163.8518 0019289 322.4802 37.5071 14.84596882567905
NOAA 9
1 15427U 84123A 95096.75736141 .00000073 00000-0 62435-4 0 2032
2 15427 99.0036 155.0277 0015891 108.9961 251.2930 14.13696541531824
GPS BI-11
1 16129U 85093A 95095.99071845 -.00000037 00000-0 10000-3 0 6447
2 16129 65.1396 35.9567 0153293 87.4520 274.2914 1.89368050 13626
Mir
1 16609U 86017A 95096.21604412 .00004056 00000-0 59056-4 0 9885
2 16609 51.6454 158.3104 0005042 345.6081 14.4767 15.58276512521749
SPOT 1
1 16613U 86019A 95094.83367058 .00000090 00000-0 62356-4 0 7979
2 16613 98.6540 167.8010 0001858 65.7564 294.3804 14.20051326157950
Cosmos 1766
1 16881U 86055A 95095.81914430 .00000279 00000-0 30899-4 0 2945
2 16881 82.5169 221.5460 0019288 348.2715 11.8041 14.83604111468849
EGP
1 16908U 86061A 95092.84968640 -.00000083 00000-0 10000-3 0 9878
2 16908 50.0101 273.8633 0011077 329.9453 30.0745 12.44411932 61452
NOAA 10
1 16969U 86073A 95096.74607639 .00000027 00000-0 29898-4 0 1133
2 16969 98.5093 101.7869 0012536 187.9308 172.1674 14.24929706444309
MOS-1
1 17527U 87018A 95093.19662504 .00000044 00000-0 65047-4 0 1913
2 17527 98.9977 160.2732 0000611 117.6078 242.5149 13.94921005413371
GOES 7
1 17561U 87022A 95096.56621438 .00000084 00000-0 10000-3 0 3285
2 17561 2.1822 73.0914 0003572 343.1097 205.1617 1.00274901 12914
Kvant-1
1 17845U 87030A 95095.95950535 .00007724 00000-0 10648-3 0 2043
2 17845 51.6454 159.6055 0005306 343.1985 16.7915 15.58273141456067
DMSP B5D2-3
```

```
1 18123U 87053A 95096.73650619 .00000036 00000-0 41002-4 0 9017
2 18123 98.7786 289.0041 0015293 63.6550 296.6192 14.15397693402617
RS-10/11
1 18129U 87054A 95093.10181517 .00000055 00000-0 43722-4 0 460
2 18129 82.9225 114.5746 0010557 306.6978 53.3200 13.72350548389670
Meteor 2-16
1 18312U 87068A 95094.20911692 .00000068 00000-0 47867-4 0 3850
2 18312 82.5572 341.0533 0013505 21.0290 339.1423 13.84053952385318
Meteor 2-17
1 18820U 88005A 95095.88044859 .00000049 00000-0 29928-4 0 5841
2 18820 82.5420 35.7639 0018437 77.1515 283.1697 13.84734607362868
DMSP B5D2-4
1 18822U 88006A 95095.05578678 .00000051 00000-0 40762-4 0 9075
2 18822 98.4116 302.4792 0005526 202.5372 157.5562 14.23148396372114
Glonass 34
1 19163U 88043A 95094.83002443 .00000038 00000-0 10000-3 0 9809
2 19163 65.1085 100.6276 0005859 146.8978 213.1588 2.13102611 52876
Glonass 36
1 19165U 88043C 95095.35554674 .00000043 00000-0 10000-3 0 3807
2 19165 65.0787 100.6158 0005467 125.9230 234.1013 2.13102121 53502
METEOSAT 3
1 19215U 88051A 95096.15768162 -.00000281 00000-0 10000-3 0 1061
2 19215 2.3567 70.2934 0000712 36.1605 75.4697 1.00278592 12857
AO-13
1 19216U 88051B 95088.38845552 -.00000561 00000-0 10000-4 0 248
2 19216 57.5609 196.0098 7276764 5.2704 359.3130 2.09725996 20491
OKEAN 1
1 19274U 88056A 95096.11654873 .00000259 00000-0 29341-4 0 9948
2 19274 82.5151 321.5933 0020980 121.6612 238.6647 14.82320915364476
Meteor 3-2
1 19336U 88064A 95094.05953094 .00000051 00000-0 10000-3 0 3826
2 19336 82.5389 117.8757 0015134 257.1956 102.7432 13.16972401321542
Glonass 39
1 19503U 88085C 95084.59021291 -.00000066 00000-0 10000-3 0 2701
2 19503 65.7102 339.8640 0007099 171.4056 188.6337 2.13101919 50764
NOAA 11
1 19531U 88089A 95096.71710590 .00000029 00000-0 40457-4 0 166
2 19531 99.1922 98.1528 0012628 31.9378 328.2558 14.13045251336669
TDRS 2
1 19548U 88091B 95096.52364943 .00000093 00000-0 10000-3 0 1121
2 19548 1.5974 75.1077 0003512 349.7374 147.3248 1.00285281 11143
Glonass 40
1 19749U 89001A 95090.26005129 .00000040 00000-0 10000-3 0 4843
2 19749 65.0516 100.3368 0005398 248.8277 111.1641 2.13101292 48399
Glonass 41
1 19750U 89001B 95095.94686290 .00000049 00000-0 10000-3 0 4017
2 19750 65.0654 100.2150 0005084 232.7317 127.2158 2.13101779 48538
GPS BII-01
1 19802U 89013A 95091.40469359 .00000027 00000-0 10000-3 0 382
2 19802 55.1872 128.2660 0027803 183.4545 176.6130 2.00572978 44838
```

```
Akebono
1 19822U 89016A 95096.80667015 .00015675 00000-0 89247-3 0 4710
2 19822 75.0968 15.9885 3782932 74.0885 323.7933 7.84447350132212
Meteor 2-18
1 19851U 89018A 95094.49191426 .00000055 00000-0 35416-4 0 3833
2 19851 82.5151 271.6555 0015164 124.9995 235.2587 13.84387181307999
MOP-1
1 19876U 89020B 95085.68804920 -.00000096 00000-0 10000-3 0 1053
2 19876 1.0511 71.1022 0000378 280.5405 71.7977 1.00270755 2182
TDRS 3
1 19883U 89021B 95087.96458912 -.00000291 00000-0 10000-3 0 574
2 19883 0.0544 88.3460 0001755 269.8204 134.0353 1.00270021194648
GPS BII-02
1 20061U 89044A 95093.24224323 -.00000055 00000-0 10000-3 0 482
2 20061 54.4964 304.5513 0140175 213.7673 145.3477 2.00563849 42612
Nadezhda 1
1 20103U 89050A 95096.80243516 .00000012 00000-0 -36488-5 0 3505
2 20103 82.9574 71.2352 0036846 189.9059 170.1376 13.73851701288628
GPS BII-03
1 20185U 89064A 95094.08160855 .00000014 00000-0 10000-3 0 746
2 20185 54.9797 128.7409 0271615 133.5489 228.8955 2.00548989 41206
GMS 4
1 20217U 89070A 95094.76623843 -.00000291 00000-0 10000-3 0 1777
2 20217 0.8870 75.4132 0000568 104.8034 68.4864 1.00275172 21013
INTERCOSMOS 24
1 20261U 89080A 95093.22512070 .00000142 00000-0 42322-4 0 3988
2 20261 82.5937 192.3520 1242049 324.3738 28.0235 12.47235082250934
GPS BII-04
1 20302U 89085A 95096.60336596 -.00000003 00000-0 10000-3 0 500
2 20302 53.4084 244.4974 0008700 194.8600 165.0886 2.00554332 40057
Meteor 3-3
1 20305U 89086A 95096.84880960 .00000044 00000-0 10000-3 0 2853
2 20305 82.5503 66.9541 0006391 304.6941 55.3581 13.04425599261189
COBE
1 20322U 89089A 95093.50775831 -.00000181 00000-0 -87338-4 0 1082
2 20322 98.9624 110.6500 0008989 177.0157 183.1062 14.03447888275118
Kvant-2
1 20335U 89093A 95095.95950650 .00007724 00000-0 10648-3 0 2231
2 20335 51.6454 159.6055 0005306 343.1985 16.7980 15.58273141304823
GPS BII-05
1 20361U 89097A 95095.12201151 -.00000008 00000-0 10000-3 0 9089
2 20361 55.7154 70.6912 0076110 119.9621 240.7840 2.00561812 29506
SPOT 2
1 20436U 90005A 95094.88788617 -.00000044 00000-0 00000+0 0 9166
2 20436 98.7403 169.8919 0001045 115.9841 244.1495 14.20018965269495
UO-14
1 20437U 90005B 95095.23794911 .00000030 00000-0 28335-4 0 869
2 20437 98.5699 180.7769 0011942 54.4028 305.8264 14.29881206271326
UO-15
1 20438U 90005C 95094.75158954 .00000018 00000-0 24314-4 0 8831
```

```
2 20438 98.5680 178.9140 0011083 58.4774 301.7487 14.29202531271158
PACSAT
1 20439U 90005D 95094.72269235 .00000029 00000-0 28232-4 0 8840
2 20439 98.5811 181.8428 0012213 56.7174 303.5178 14.29935037271261
DO-17
1 20440U 90005E 95094.78838970 .00000021 00000-0 24916-4 0 8843
2 20440 98.5826 182.3396 0012328 55.4096 304.8247 14.30075839271296
WO-18
1 20441U 90005F 95094.27942780 .00000020 00000-0 24453-4 0 8882
2 20441 98.5822 181.8161 0012921 57.2157 303.0267 14.30047501271225
LO-19
1 20442U 90005G 95094.72728842 .00000032 00000-0 29121-4 0 8840
2 20442 98.5817 182.5925 0013254 55.1775 305.0657 14.30148957271300
GPS BII-06
1 20452U 90008A 95094.02436745 -.00000005 00000-0 10000-3 0 180
2 20452 54.0291 184.6837 0057129 81.0043 279.6930 2.00569520 37985
MOS-1B
1 20478U 90013A 95096.68553013 .00000091 00000-0 10000-3 0 7648
2 20478 98.9963 167.9301 0000445 73.5310 286.5898 13.94918198183568
DEBUT
1 20479U 90013B 95094.26372487 -.00000052 00000-0 -48556-4 0 8834
2 20479 99.0678 196.7565 0541009 40.2133 323.7707 12.83328174241470
FO-20
1 20480U 90013C 95095.82359934 -.00000060 00000-0 -65309-4 0 7812
2 20480 99.0679 197.8825 0541080 37.0650 326.6572 12.83228886241663
MOS-1B R/B
1 20491U 90013D 95094.92822924 -.00000032 00000-0 84394-5 0 1209
2 20491 99.0323 249.4602 0469232 243.3220 111.9066 13.02996502244655
LACE
1 20496U 90015A 95095.60200553 .00001537 00000-0 53673-4 0 5221
2 20496 43.1031 184.5819 0008844 88.1114 272.0724 15.34343274286420
Nadezhda 2
1 20508U 90017A 95096.74789642 .00000032 00000-0 17426-4 0 3485
2 20508 82.9555 205.8515 0045297 141.8637 218.5739 13.73491369255849
OKEAN 2
1 20510U 90018A 95096.45004890 .00000249 00000-0 31019-4 0 3947
2 20510 82.5195 272.4648 0018456 315.9146 44.0580 14.78472751274994
INTELSAT-6
1 20523U 90021A 95087.27890046 -.00000268 00000-0 10000-3 0 4973
2 20523 0.0163 3.2262 0000198 349.1298 258.7520 1.00269503 11415
GPS BII-07
1 20533U 90025A 95095.92866244 -.00000040 00000-0 10000-3 0 314
2 20533 54.8589 305.0589 0049262 80.2480 280.3065 2.00560318 36793
PegSat
1 20546U 90028A 95094.54280936 .00005699 00000-0 12171-3 0 7789
2 20546 94.1100 102.5942 0064983 260.2804 99.1088 15.42677055277125
HST
1 20580U 90037B 95094.25493610 .00000781 00000-0 62357-4 0 6081
2 20580 28.4702 165.9898 0005676 254.4152 105.5807 14.90847806 72869
MACSAT 2
```

```
1 20608U 90043B 95094.22743451 .00000274 00000-0 44328-4 0 840
2 20608 89.9323 177.1248 0106100 152.6754 208.0077 14.64818320261886
Glonass 44
1 20619U 90045A 95090.62884463 -.00000055 00000-0 10000-3 0 1773
2 20619 65.3208 339.1377 0024963 208.6181 151.2993 2.13102467 37856
Glonass 45
1 20620U 90045B 95094.03246099 -.00000059 00000-0 10000-3 0 1854
2 20620 65.3216 339.0036 0008076 45.3765 314.7457 2.13102462 37967
Glonass 46
1 20621U 90045C 95091.75223340 -.00000056 00000-0 10000-3 0 7858
2 20621 65.3261 339.1064 0014417 192.4664 167.5583 2.13101561 37916
Kristall
1 20635U 90048A 95095.95950650 .00007724 00000-0 10648-3 0 166
2 20635 51.6454 159.6055 0005306 343.1985 16.7980 15.58273141275845
ROSAT
1 20638U 90049A 95093.22812350 .00000195 00000-0 31762-4 0 4038
2 20638 52.9889 124.4771 0012253 218.4083 141.6030 15.07137077265812
Meteor 2-19
1 20670U 90057A 95094.68799227 -.00000013 00000-0 -25396-4 0 8841
2 20670 82.5483 336.9494 0017749 49.8663 310.4054 13.84164096240947
CRRES
1 20712U 90065A 95093.45818463 .00000064 00000-0 23578-3 0 716
2 20712 18.0088 68.9744 7180441 48.3842 353.8674 2.35386440 32726
GPS BII-08
1 20724U 90068A 95095.25111683 .00000016 00000-0 10000-3 0 8915
2 20724 54.8159 126.2977 0116568 171.6278 188.6288 2.00560071 32649
Feng Yun1-2
1 20788U 90081A 95096.71005281 -.00000027 00000-0 10000-4 0 3197
2 20788 98.8152 112.1849 0013740 273.2025 86.7509 14.01301848234826
Meteor 2-20
1 20826U 90086A 95094.52695378 .00000069 00000-0 49316-4 0 8949
2 20826 82.5217 274.1647 0012822 317.6472 42.3702 13.83605028228041
GPS BII-09
1 20830U 90088A 95094.30242578 -.00000018 00000-0 10000-3 0 9002
2 20830 55.6508 68.7026 0064288 100.9816 259.7263 2.00569622 33266
GPS BIIA-10
1 20959U 90103A 95094.20822801 .00000014 00000-0 10000-3 0 8435
2 20959 55.0178 128.3031 0095694 228.9793 130.2549 2.00555783 31850
DMSP B5D2-5
1 20978U 90105A 95096.67016918 .00000138 00000-0 64998-4 0 1509
2 20978 98.6454 165.1268 0080001 21.0747 339.3697 14.32531917227077
Glonass 47
1 21006U 90110A 95095.06361795 .00000040 00000-0 10000-3 0 7485
2 21006 65.0230 99.5264 0059422 186.9213 172.9966 2.13102724 33653
Glonass 48
1 21007U 90110B 95096.19012185 .00000052 00000-0 10000-3 0 8818
2 21007 65.0514 99.5812 0033801 182.0085 178.0050 2.13101267 33668
Glonass 49
1 21008U 90110C 95095.14154297 .00000041 00000-0 00000+0 0 538
2 21008 65.0297 99.5590 0011426 277.1134 82.7775 2.13099189 33631
```

```
AO-21
1 21087U 91006A 95095.51275274 .00000094 00000-0 82657-4 0 5817
2 21087 82.9391 286.3610 0035296 351.0138 9.0329 13.74553102209740
RS-12/13
1 21089U 91007A 95096.62378778 .00000035 00000-0 21416-4 0 7886
2 21089 82.9240 153.8515 0030160 14.8325 345.3706 13.74055901208944
MOP-2
1 21140U 91015B 95095.06918981 -.00000017 00000-0 10000-3 0 9302
2 21140 0.1919 99.8240 0002928 316.8394 160.8256 1.00280537 17201
Nadezhda 3
1 21152U 91019A 95096.71942071 .00000020 00000-0 44477-5 0 401
2 21152 82.9216 109.8210 0043307 118.0638 242.4907 13.73516728203697
Glonass 50
1 21216U 91025A 95095.08199136 -.00000058 00000-0 10000-3 0 3963
2 21216 65.0528 338.6525 0008537 203.6950 156.3192 2.13102916 31163
Glonass 51
1 21217U 91025B 95089.98847525 -.00000055 00000-0 10000-3 0 8050
2 21217 65.0493 338.8177 0010656 243.1301 116.8168 2.13101443 31049
Glonass 52
1 21218U 91025C 95095.73211164 -.00000057 00000-0 10000-3 0 2826
2 21218 65.0210 338.6271 0007113 289.9119 70.0645 2.13102537 31179
GRO
1 21225U 91027B 95094.06894376 .00003163 00000-0 65050-4 0 2076
2 21225 28.4616 10.7719 0003172 262.2504 97.7716 15.42394504101871
Meteor 3-4
1 21232U 91030A 95093.11417427 .00000051 00000-0 10000-3 0 7927
2 21232 82.5437 324.6291 0012793 176.9612 183.1577 13.16467155189506
NOAA 12
1 21263U 91032A 95096.79483553 .00000081 00000-0 55451-4 0 4361
2 21263 98.5888 122.6742 0013873 102.6428 257.6303 14.22504835202274
OKEAN 3
1 21397U 91039A 95092.23371367 .00000324 00000-0 43212-4 0 931
2 21397 82.5260 189.2206 0024203 39.9792 320.3204 14.76352798206155
GPS BIIA-11
1 21552U 91047A 95095.47569301 -.00000010 00000-0 10000-6 0 8403
2 21552 55.9595 66.3320 0063943 242.8046 116.5296 2.00570607 27473
ERS-1
1 21574U 91050A 95095.18666621 -.00000001 00000-0 15784-4 0 1261
2 21574 98.5542 170.5206 0001122 82.9390 277.1922 14.32243070194608
UO-22
1 21575U 91050B 95094.68676019 .00000042 00000-0 28509-4 0 5906
2 21575 98.4029 167.8052 0007967 133.5030 226.6813 14.36968270194948
ORBCOMM-X
1 21576U 91050C 95094.74412260 .00000046 00000-0 30366-4 0 6853
2 21576 98.4008 166.3676 0004278 137.0534 223.0986 14.36373130194860
TUBSAT-A
1 21577U 91050D 95094.74542620 .00000028 00000-0 23960-4 0 5848
2 21577 98.4009 166.8799 0006791 135.4468 224.7265 14.36477916194891
SARA
1 21578U 91050E 95095.72412444 .00000312 00000-0 11510-3 0 7843
```

```
2 21578 98.4155 172.7878 0005519 128.6788 231.4885 14.38976281195271
TDRS 4
1 21639U 91054B 95095.52098112 .00000073 00000-0 10000-3 0 8775
2 21639 0.0040 52.3658 0002875 317.2585 196.8634 1.00271649107497
Meteor 3-5
1 21655U 91056A 95096.49086942 .00000051 00000-0 10000-3 0 7911
2 21655 82.5499 269.5850 0013525 179.2730 180.8410 13.16838788175062
UARS
1 21701U 91063B 95092.91437803 .00000000 00000-0 21140-4 0 6618
2 21701 56.9865 78.2037 0005324 104.4939 255.6684 14.96364487194308
DMSP B5D2-6
1 21798U 91082A 95096.70909720 .00000057 00000-0 54012-4 0 7929
2 21798 98.9605 108.2919 0013778 30.3628 329.8339 14.13875485173109
Glonass 53
1 21853U 92005A 95093.12838799 .00000027 00000-0 10000-3 0 9890
2 21853 64.9740 99.2862 0008261 186.4365 173.5886 2.13102262 24729
Glonass 54
1 21854U 92005B 95097.17284570 .00000063 00000-0 00000+0 0 1103
2 21854 64.9805 99.1530 0016402 9.2231 350.8284 2.13103777 24794
Glonass 55
1 21855U 92005C 95094.42062597 .00000034 00000-0 00000+0 0 1032
2 21855 64.9804 99.2501 0007864 220.4681 139.4952 2.13102218 24726
JERS-1
1 21867U 92007A 95097.13515959 .00000062 00000-0 10000-4 0 5528
2 21867 97.7182 174.6765 0000723 102.0669 258.0730 14.98637394172405
GPS BIIA-12
1 21890U 92009A 95092.44966673 -.00000023 00000-0 10000-3 0 6368
2 21890 53.9789 244.8513 0056958 176.6996 183.2941 2.00547724 22785
GPS BIIA-13
1 21930U 92019A 95095.64576117 -.00000084 00000-0 10000-3 0 6153
2 21930 55.6881 6.1453 0039755 174.5142 185.5576 2.00566267 21770
EUVE
1 21987U 92031A 95095.54967231 .00001113 00000-0 41988-4 0 3979
2 21987 28.4355 250.9173 0010416 291.2687 68.6688 15.19194217156891
SAMPEX
1 22012U 92038A 95093.84259360 .00001577 00000-0 13581-3 0 6181
2 22012 81.6704 224.1563 0118601 169.6751 190.6928 14.91365181149592
GPS BIIA-14
1 22014U 92039A 95095.19151728 -.00000010 00000-0 10000-3 0 5312
2 22014 54.8388 186.0867 0082303 312.9889 46.3654 2.00547543 13607
Glonass 56
1 22056U 92047A 95097.13611646 -.00000052 00000-0 00000+0 0 184
2 22056 64.8945 338.7179 0004634 294.2532 65.7527 2.13103344 20875
Glonass 57
1 22057U 92047B 95096.96186472 -.00000053 00000-0 00000+0 0 191
2 22057 64.9063 338.7408 0008166 330.8161 29.1912 2.13102463 20842
Glonass 58
1 22058U 92047C 95094.55584338 -.00000059 00000-0 10000-3 0 76
2 22058 64.9052 338.8307 0008735 277.6761 82.2606 2.13102879 20847
TOPEX
```

```
1 22076U 92052A 95096.21453392 -.00000038 00000-0 10000-3 0 8651
2 22076 66.0398 42.3620 0007657 268.5355 91.4780 12.80931147124021
KO-23
1 22077U 92052B 95095.27201950 -.00000037 00000-0 10000-3 0 4822
2 22077 66.0784 28.4304 0010342 217.8127 142.2164 12.86290124124350
S80/T
1 22078U 92052C 95094.82713204 -.00000037 00000-0 10000-3 0 4799
2 22078 66.0771 28.3328 0010383 211.5924 148.4471 12.86574234124371
GPS BIIA-15
1 22108U 92058A 95095.64893226 -.00000002 00000-0 10000-3 0 5482
2 22108 54.1917 245.4824 0112507 148.3047 212.3660 2.00565480 18799
FREJA
1 22161U 92064A 95096.83305651 .00000054 00000-0 67196-4 0 5003
2 22161 62.9942 269.4563 0804357 340.6957 16.5121 13.21829013120618
LAGEOS II
1 22195U 92070B 95092.13028723 -.00000009 00000-0 10000-3 0 3907
2 22195 52.6575 271.0683 0138469 243.4287 115.2020 6.47294045 57654
GPS BIIA-16
1 22231U 92079A 95093.33828826 -.00000002 00000-0 10000-3 0 5165
2 22231 54.6837 187.3679 0035499 285.4453 74.1967 2.00568663 17320
GPS BIIA-17
1 22275U 92089A 95092.98850631 -.00000001 00000-0 10000-3 0 5432
2 22275 54.6381 184.8965 0051823 253.7343 105.7360 2.00556129 16722
TDRS 5
1 22314U 93003B 95084.11622106 -.00000305 00000-0 10000-3 0 4934
2 22314 1.6990 72.8626 0002343 267.4183 198.0074 1.00271014 8073
GPS BIIA-18
1 22446U 93007A 95096.05129402 -.00000040 00000-0 10000-3 0 5231
2 22446 54.5064 305.2990 0081400 352.3438 7.5221 2.00547961 15774
Glonass 59
1 22512U 93010A 95094.06823589 .00000031 00000-0 10000-3 0 6921
2 22512 64.9920 99.1121 0008861 193.3662 166.6308 2.13102018 16319
Glonass 60
1 22513U 93010B 95095.41550152 .00000043 00000-0 00000+0 0 7339
2 22513 64.9893 99.0794 0007063 215.5432 144.4326 2.13102558 16536
Glonass 61
1 22514U 93010C 95093.36279767 .00000028 00000-0 00000+0 0 7346
2 22514 65.0135 99.1356 0010332 200.1095 159.8711 2.13102922 16499
ASTRO-D
1 22521U 93011A 95093.10509572 .00002338 00000-0 16119-3 0 3958
2 22521 31.1069 355.8755 0057267 114.3146 246.3487 15.02129263116079
UFO F1
1 22563U 93015A 95096.15374002 -.00000047 00000-0 10000-3 0 4000
2 22563 26.0866 295.3439 0002610 347.0009 234.8673 0.99247867 11743
GPS BIIA-19
1 22581U 93017A 95095.19667815 -.00000086 00000-0 10000-3 0 4162
2 22581 55.1924 5.7696 0056336 34.6328 325.7832 2.00552976 14818
ARSENE
1 22654U 93031B 95088.26292353 -.00000121 00000-0 10000-3 0 3080
2 22654 2.4269 87.0575 2902125 207.2118 134.6696 1.42203032 5252
```

```
GPS BIIA-20
1 22657U 93032A 95091.83943488 -.00000093 00000-0 10000-3 0 4510
2 22657 55.2208 5.7557 0069532 214.9339 144.6345 2.00569933 10073
RADCAL
1 22698U 93041A 95094.44797570 .00000078 00000-0 29065-4 0 3900
2 22698 89.5387 294.3617 0091150 320.0656 39.3845 14.21340925 91967
GPS BIIA-21
1 22700U 93042A 95091.30728744 -.00000032 00000-0 10000-3 0 4005
2 22700 54.3735 246.4227 0035106 342.0320 17.8010 2.00562024 12861
NOAA-13
1 22739U 93050A 95094.82077117 .00000039 00000-0 46872-4 0 7700
2 22739 98.9860 43.6063 0010579 23.6189 336.5476 14.10928873 85097
GPS BIIA-22
1 22779U 93054A 95094.88329240 -.00000048 00000-0 10000-3 0 4522
2 22779 54.6325 305.3224 0019564 244.8738 114.9339 2.00563478 11696
Meteor 2-21
1 22782U 93055A 95096.00845065 .00000077 00000-0 56516-4 0 3917
2 22782 82.5515 334.4000 0023538 121.6711 238.6744 13.83030352 80564
UFO F2
1 22787U 93056A 95096.84107753 -.00000075 00000-0 00000+0 0 4080
2 22787 4.5620 324.6817 0003346 56.0823 188.2213 1.00276361 4449
SPOT 3
1 22823U 93061A 95095.13994413 -.00000023 00000-0 10000-4 0 4242
2 22823 98.7410 170.1609 0001292 74.3770 285.7565 14.20018035 78922
STELLA
1 22824U 93061B 95095.20714694 -.00000036 00000-0 31695-5 0 3799
2 22824 98.6245 172.3565 0007196 70.9776 289.2177 14.27100449 79321
AO-27
1 22825U 93061C 95096.19348031 .00000009 00000-0 21562-4 0 3810
2 22825 98.6216 173.6035 0009619 70.5380 289.6846 14.27657313 79497
IO-26
1 22826U 93061D 95094.19059455 .00000015 00000-0 23655-4 0 3797
2 22826 98.6223 171.7110 0009833 75.7304 284.4972 14.27764102 79218
HEATHSAT
1 22827U 93061E 95095.75939759 .00000038 00000-0 33165-4 0 4417
2 22827 98.6214 173.2041 0010247 62.0474 298.1743 14.27885368 79448
ITAMSAT
1 22828U 93061F 95092.17233543 .00000051 00000-0 38269-4 0 3570
2 22828 98.6206 169.7555 0011183 69.9445 290.2940 14.28093382 47023
PO-28
1 22829U 93061G 95095.19559908 .00000032 00000-0 30364-4 0 3726
2 22829 98.6181 172.7619 0011155 61.6405 298.5899 14.28071554 79379
KO-25
1 22830U 93061H 95095.74709748 -.00000002 00000-0 16639-4 0 3882
2 22830 98.5225 167.3314 0012485 41.4665 318.7460 14.28083945 79457
GPS BIIA-23
1 22877U 93068A 95096.42964712 -.00000003 00000-0 10000-3 0 2571
2 22877 55.3880 66.6734 0036068 299.5360 60.0730 2.00551010 10614
METEOSAT 6
1 22912U 93073B 95096.46124280 -.00000093 00000-0 10000-3 0 2781
```

```
2 22912 0.2550 271.1854 0000236 288.1057 151.1275 1.00271519 3461
HST Array
1 22920U 90037C 95096.20110052 .00006368 00000-0 48175-3 0 3045
2 22920 28.4778 121.4236 0002943 147.6920 212.3661 15.00414200 73489
Meteor 3-6
1 22969U 94003A 95095.32790932 .00000051 00000-0 10000-3 0 1584
2 22969 82.5558 210.1163 0014255 256.2243 103.7257 13.16727922 57296
TUBSAT-B
1 22970U 94003B 95096.28298726 .00000051 00000-0 10000-3 0 1496
2 22970 82.5622 209.3979 0014903 250.7478 109.2033 13.16824152 57425
GPS BIIA-24
1 23027U 94016A 95095.01034410 -.00000086 00000-0 10000-3 0 1851
2 23027 55.0697 7.6426 0062227 198.2220 161.6265 2.00552728 7898
Glonass 62
1 23043U 94021A 95095.78720435 -.00000058 00000-0 00000+0 0 1829
2 23043 64.7766 339.1843 0004246 185.2829 174.7673 2.13102980 7662
Glonass 63
1 23044U 94021B 95095.20067636 -.00000059 00000-0 00000+0 0 1656
2 23044 64.7728 339.2099 0027399 203.9052 156.0222 2.13103205 7658
Glonass 64
1 23045U 94021C 95093.03046801 -.00000059 00000-0 00000+0 0 1747
2 23045 64.7570 339.2975 0011355 32.6272 327.4988 2.13102316 7603
GOES 8
1 23051U 94022A 95096.12242363 -.00000264 00000-0 00000+0 0 2883
2 23051 0.1360 262.9695 0000217 185.7609 74.7856 1.00278855 3239
MSTI 2
1 23101U 94028A 95095.49764739 .00005856 00000-0 10679-3 0 1720
2 23101 97.1044 289.7797 0012811 146.4177 213.7890 15.49740864 51268
STRV-1A
1 23125U 94034B 95096.21122552 .00000692 00000-0 41575-3 0 1323
2 23125 7.4703 60.3676 7258878 61.7384 351.9713 2.29819175 5994
STRV-1B
1 23126U 94034C 95094.53263066 .00000477 00000-0 28886-3 0 1335
2 23126 7.4753 61.2220 7263608 60.0994 352.2126 2.29453109 6007
Nadezhda 4
1 23179U 94041A 95096.77176329 .00000031 00000-0 16799-4 0 903
2 23179 82.9470 200.7767 0034898 266.6689 93.0470 13.75665198 36652
Glonass 65
1 23203U 94050A 95094.10653733 .00000011 00000-0 00000+0 0 1244
2 23203 64.8022 218.9013 0007598 140.9749 219.0670 2.13101869 5024
Glonass 66
1 23204U 94050B 95093.40219579 .00000009 00000-0 00000+0 0 1330
2 23204 64.7967 218.9602 0015039 349.3009 10.6502 2.13102319 5007
Glonass 67
1 23205U 94050C 95095.63136018 .00000011 00000-0 00000+0 0 1225
2 23205 64.8041 218.8723 0001500 327.1465 32.8365 2.13102160 5055
DMSP B5D2-7
1 23233U 94057A 95096.64523935 .00000108 00000-0 82093-4 0 2914
2 23233 98.8851 155.3596 0012577 346.2399 13.8423 14.12592682 31056
Soyuz TM-20
```

```
1 23288U 94063A 95081.01606562 .00006386 00000-0 90015-4 0 1549
2 23288 51.6468 234.5363 0004423 284.7155 75.3320 15.58025960 26487
OKEAN 1-7
1 23317U 94066A 95095.49549394 .00000246 00000-0 33862-4 0 546
2 23317 82.5378 102.5628 0028071 68.2118 292.2956 14.73917496 25912
ELEKTRO
1 23327U 94069A 95089.85144609 -.00000125 00000-0 10000-3 0 560
2 23327 0.9350 264.6723 0006048 168.2917 137.7108 1.00269963 1541
RESURS 1-3
1 23342U 94074A 95094.56677749 .00000200 00000-0 41633-4 0 901
2 23342 98.0235 155.5145 0001209 60.0042 300.1285 14.69720745 22236
Glonass 68
1 23396U 94076A 95093.12854796 .00000027 00000-0 00000+0 0 705
2 23396 64.9225 99.2397 0029888 194.7779 165.1746 2.13102464 2848
Glonass 69
1 23397U 94076B 95095.18097592 .00000041 00000-0 00000+0 0 770
2 23397 64.9130 99.1982 0015140 321.1959 38.7172 2.13102361 2883
Glonass 70
1 23398U 94076C 95096.00283364 .00000049 00000-0 00000+0 0 797
2 23398 64.9007 99.1421 0005236 289.4492 70.5133 2.13102035 2911
RS-15
1 23439U 94085A 95095.86193408 -.00000039 00000-0 10000-3 0 408
2 23439 64.8205 11.9557 0167842 274.8654 83.3103 11.27525990 11360
NOAA 14
1 23455U 94089A 95096.71993073 .00000104 00000-0 81490-4 0 1282
2 23455 98.8949 39.8207 0010696 39.4672 320.7273 14.11502359 13739
ODERACS II A
1 23471U 95004C 95095.52268059 .00023248 00000-0 12649-3 0 445
2 23471 51.6484 152.8601 0014425 176.6601 183.4356 15.79724172 9670
ODERACS II B
1 23472U 95004D 95096.50187166 .00043035 00000-0 19275-3 0 486
2 23472 51.6508 146.6302 0012167 205.8336 154.1739 15.83620078 9842
Glonass 71
1 23511U 95009A 95094.20361001 -.00000060 00000-0 00000+0 0 251
2 23511 64.7835 339.5148 0006913 331.2943 28.7353 2.13103382 599
Glonass 72
1 23512U 95009B 95094.02788193 -.00000060 00000-0 00000+0 0 279
2 23512 64.7865 339.5327 0011273 201.7185 158.2894 2.13102830 592
Glonass 73
1 23513U 95009C 95096.43254177 -.00000056 00000-0 00000+0 0 249
2 23513 64.7920 339.4289 0004692 221.0764 138.9417 2.13102602 645
Soyuz TM-21
1 23519U 95010A 95095.95950650 .00007724 00000-0 10648-3 0 300
2 23519 51.6454 159.6055 0005306 343.1985 16.7980 15.58273141 3578
SFU
1 23521U 95011A 95093.46096464 .00007533 00000-0 25691-3 0 247
2 23521 28.4519 223.1194 0019735 112.2419 248.0374 15.28159495 2493
GMS 5
1 23522U 95011B 95091.21061389 -.00000116 00000-0 00000+0 0 173
2 23522 1.0556 293.6205 0006900 303.8455 187.0641 1.00366790 13
```

```
1995011D
1 23524U 95011D 95090.73644879 .00000031 00000-0 10000-4 0 61
2 23524 1.0615 288.8318 0215934 221.2041 135.7395 1.01247164 149
1995011E
1 23525U 95011E 95096.59402886 .01283247 89390-3 18793-2 0 466
2 23525 28.4526 191.0954 0009601 133.1418 227.0118 16.04005246 3071
1995012A
1 23526U 95012A 95095.68074582 .00007364 00000-0 81984-2 0 110
2 23526 82.9318 258.9269 0017998 229.5118 130.4229 13.71166606 1991
1995012B
1 23527U 95012B 95095.66508743 .00000024 00000-0 10000-4 0 131
2 23527 82.9266 258.9183 0015280 194.8303 166.9780 13.72777312 1990
1995013A
1 23528U 95013A 95091.40998656 -.00000299 00000-0 00000+0 0 192
2 23528 0.0799 67.9543 0058398 208.4760 6.0590 1.00012272 40
1995013B
1 23529U 95013B 95095.79216343 .00017388 12811-5 94540-3 0 218
2 23529 26.5749 92.1000 7511979 187.0407 148.0193 2.02954136 305
1995014A
1 23530U 95014A 95096.87737591 .00498547 57389-5 18536-3 0 382
2 23530 67.1434 6.3462 0137962 55.4461 305.9676 16.05236909 2452
1995014B
1 23531U 95014B 95086.19291859 .25635769 64237-5 22696-3 0 196
2 23531 67.1365 42.1022 0025171 80.8209 280.0470 16.49712247 743
1995015A
1 23533U 95015A 95096.23956387 .00000129 00000-0 93273-4 0 225
2 23533 98.8311 99.6263 0006108 213.8250 146.2516 14.12677946 1798
1995015B
1 23534U 95015B 95095.52971702 .00001068 00000-0 59760-3 0 95
2 23534 98.8290 98.9272 0002992 111.5300 248.6169 14.12879424 1699
1995015C
1 23535U 95015C 95095.17719144 -.00000025 00000-0 10000-4 0 40
2 23535 98.8293 98.5776 0003229 122.3006 237.8480 14.12676836 1648
1995016A
1 23536U 95016A 95096.70000000 -.00000294 00000-0 00000+0 0 60
2 23536 0.2110 218.6870 0022682 330.1020 196.9020 1.00625012 156
1995016B
1 23537U 95016B 95092.99461473 -.00000151 00000-0 00000+0 0 111
2 23537 0.3547 350.7595 0548339 176.9821 45.5669 1.08261283 108
1995016D
1 23539U 95016D 95091.03657706 .00000267 00000-0 10000-3 0 58
2 23539 7.1572 349.3029 7284505 180.4220 355.1222 2.28610924 86
1995017A
1 23545U 95017A 95094.65948514 -.00000025 00000-0 10000-4 0 95
2 23545 69.9867 109.8961 0009192 67.5449 292.6697 14.44789816 155
1995017B
1 23546U 95017B 95095.62792897 .00000573 00000-0 17989-3 0 117
2 23546 69.9788 107.6373 0009216 62.9952 297.2119 14.45380400 298
1995017C
1 23547U 95017C 95095.48958531 -.00001178 00000-0 -31784-3 0 80
```

```
2 23547 69.9820 107.9599 0009964 76.5831 283.6413 14.45325847 274
1995017D
1 23548U 95017D 95095.55921468 -.00000006 00000-0 15471-4 0 116
2 23548 69.9799 107.8087 0010159 84.7589 275.4714 14.45018467 281
1995018A
1 23549U 95018A 95096.85362148 .00113461 00000-0 33509-2 0 36
2 23549 143.3777 102.1910 0261160 83.0998 279.9378 15.06127287 200
1995018B
1 23550U 95018B 95096.83634571 .00224594 -58894-5 11411-2 0 47
2 23550 143.3787 102.3502 0352150 81.5034 282.5460 15.25988603 206
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

767. Re: Geosync satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: thomsona@netcom.com
Message-ID: <thomsonaD6s4zF.HFM@netcom.com>
Source record: 25267

In article <3lpa1g$rtt@rc1.vub.ac.be> jpcarlie@vub.ac.be (Carlier Jean-Pol) writes:
>Does anyone know where I could find the TLE's for ALL geosync satelites
>orbiting around the earth (I know the list is a bit long but anyway shorter
>than getting all sats alltogether).
>

I tried responding to your earlier query about this by email, but the
message bounced. Anyway, try ftp to
kilroy.jpl.nasa.gov/pub/space/elements/satelem.

The files there are weekly updates of about half the NORAD catalogue,
and should include just about all geosynchronous satellites, dead and
alive, except for classified ones.

768. Re: OS/2 Sat tracker under dev.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <3m9b5c$kgg@newsbf02.news.aol.com>
Source record: 25268

Hi,

I am the one the wrote the Kansas City Tracker Driver for Windows and
WiSP. If you are interested in KCT/T or other tracker support, please
drop me a note to:

dhoatson@aol.com
or
kc6wyg@amsat.org

73 David

769. TRAKBOX PCB Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: slewis@pacsat.demon.co.uk
Message-ID: <533025902wnr@pacsat.demon.co.uk>
Source record: 25269

Hi All

I'm looking for a single TRAKBOX PCB either unpopulated, part built or
kit

Please email me if you have one you wish to part with.
--
73 From: Simon Lewis GM4PLM - Helensburgh - Strathclyde - Scotland
Packet: GM4PLM @ GB7SAN.#78.GBR.EU Email: slewis@pacsat.demon.co.uk
AMSAT - UK Member 4282 **** SUPPORT YOUR LOCAL AMSAT GROUP

770. Warning From uucp

Newsgroup: rec.radio.amateur.space
Date: 1995-04-09 00:00:00 UTC
From: uucp@nicnet.NIc.IN
Message-ID: <199504092034.NAA19928@UCSD.EDU>
Source record: 25270

We have been unable to contact machine 'ren' since you queued your job.

ren!mail nicguwah (Date 04/08)
The job will be deleted in several days if the problem is not corrected.
If you care to kill the job, execute the following command:

uustat -krenZ3ba8

Sincerely,
nicnet!uucp

##
Data File:
From uucp Sat Apr 8 19:13 IST 1995 remote from nicnet
>From Ham-Space Sat Apr 8 04:30:34 PDT 1995 remote from UCSD.EDU
Received: from UCSD.EDU by nicnet.nic.in; Sat, 8 Apr 1995 19:13 IST
Received: by mail.ucsd.edu; id EAA01176
sendmail 8.6.11/UCSD-2.2-sun
Sat, 8 Apr 1995 04:30:37 -0700 for ham-space-list
Received: by mail.ucsd.edu; id EAA01170
sendmail 8.6.11/UCSD-2.2-sun
Sat, 8 Apr 1995 04:30:36 -0700 for ham-space-ddist
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Message-Id: <199504081130.EAA01170@mail.ucsd.edu>
Date: Sat, 8 Apr 95 04:30:34 PDT
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #96
To: Ham-Space@UCSD.EDU
Content-Type: text
Content-Length: 2822

Ham-Space Digest Sat, 8 Apr 95 Volume 95 : Issue 96

Today's Topics:
PacComm Sprint-2 with WISP?
Sat. Freq. Help!

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Wed, 5 Apr 1995 10:57:03 GMT
From: art.jeyes@jhuapl.edu (Art Jeyes)
Subject: PacComm Sprint-2 with WISP?

If anyone out there has any experience with the PacComm Spint-2 TNC
I would like to get some feedback on how well it performs. I am also
interested in hearing from anyone that has interfaced one of these
with WISP.

Thanks.....
73
Art -- AA3GU
Art.jeyes@jhuapl.edu

Date: Wed, 5 Apr 1995 10:08:06 GMT
From: art.jeyes@jhuapl.edu (Art Jeyes)
Subject: Sat. Freq. Help!

In Article <3lsbur$45s@newsbf02.news.aol.com>, jimkd0av@aol.com (JimKD0AV)
wrote:
occasionally)
>
>KO-25 (KITSAT-B)
> Downlink 435.175/436.500 MHz 9600 bps FSK FM Digital
> Uplink 145.870/145.980 MHz 9600 bps FSK FM Digital
>
My recent experience shows that the 145.980 uplink channel on KO-25 is not
functional at this time .... anyone else out there that can confirm this?

73

Art -- AA3GU
Art.Jeyes@jhuapl.edu

Date: Wed, 05 Apr 1995 11:33:35 -0500
From: rparsons@bga.com (Ronald G. Parsons)

References<3lrvi6$k2k@usenetp1.news.prodigy.com> <3lsbur$45s@newsbf02.news.aol.com>,
<art.jeyes.1147464126A@128.220.101.100>
Subject: Re: Sat. Freq. Help!

In article <art.jeyes.1147464126A@128.220.101.100>, art.jeyes@jhuapl.edu
(Art Jeyes) wrote:

> In Article <3lsbur$45s@newsbf02.news.aol.com>, jimkd0av@aol.com (JimKD0AV)
> wrote:
> occasionally)
> >
> >KO-25 (KITSAT-B)
> > Downlink 435.175/436.500 MHz 9600 bps FSK FM Digital
> > Uplink 145.870/145.980 MHz 9600 bps FSK FM Digital
> >
> My recent experience shows that the 145.980 uplink channel on KO-25 is not
> functional at this time .... anyone else out there that can confirm this?
>
> 73
>
> Art -- AA3GU
> Art.Jeyes@jhuapl.edu

That is correct. The 145.870 is the only one active now.

Ron W5RKN

End of Ham-Space Digest V95 #96
****

771. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-10 00:00:00 UTC
From: zlau@arrl.org
Message-ID: <1995Apr10.133611.2096@arrl.org>
Source record: 25271

N3SQE c002@Lehigh.EDU wrote:

: now, just to make sure...
: 3d will be a geosync sat? so a yagi pointed in one place is good enough?

The satellite will return to the same spot in the sky every two days.
For some purposes fixed yagis will be adequate.

: and as above....alalog...will that be such as SSB/FM/CW??

The linear transponder is for SSB/CW. FM doesn't allow to
satellite to efficiently handle a large user base simultaneously as
with SSB/CW. There will also be digital operations, but uplink/downlink
requirements won't be much easier than with existing satellites.
--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

772. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-10 00:00:00 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1147910311A@128.220.101.100>
Source record: 25272

In Article <1995Apr10.133611.2096@arrl.org>, zlau@arrl.org (Zack Lau (KH6CP)) wrote:
.alalog...will that be such as SSB/FM/CW??
>
>The linear transponder is for SSB/CW. FM doesn't allow to
>satellite to efficiently handle a large user base simultaneously as
>with SSB/CW. There will also be digital operations, but uplink/downlink
>requirements won't be much easier than with existing satellites.
>--
>Zack Lau KH6CP/1 2 way QRP WAS
> 8 States on 10 GHz
>Internet: zlau@arrl.org 10 grids on 2304 MHz

was wondering... now that design and possibly construction has to be underway, does anyone know what data rate P3D will handle digital data on? I assume 9.6K but I have heard PacComm has a defacto standard of 38.4K for the new SPRINT-2(SPIRIT-2) TNC and I have heard other data rates are being tossed around... since there aren't any radios (off the shelf) that can handle these data rates it would be good to start working on a receive system early... receiver modification is highly dependent upon data rate --so thats why I am interested in the final data rates ...

73

Art -- AA3GU
Art.Jeyes@jhuapl.edu

773. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-10 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3mbq3c$46p@desiree.teleport.com>
Source record: 25273

In article <art.jeyes.1147910311A@128.220.101.100>, art.jeyes@jhuapl.edu said...

>was wondering... now that design and possibly construction has to be underway,
>does anyone know what data rate P3D will handle digital data on?

Rudak-U will be very flexible with a DSP and other modems. The two most mentioned speeds are 56k and 256k. This will take some time to settle out after launch, so there's no rush right now. Considering what it takes to get any one working, I think it would be best to wait until it is launched and some testing is done to see what will actually work best.

> I assume 9.6K but I have heard PacComm has a defacto standard of 38.4K for the new
>SPRINT-2(SPIRIT-2) TNC

If they think this is a standard, they should think again. 56k is far more prevelant.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

774. Re: Geosync satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-04-10 00:00:00 UTC
From: joseav@aol.com
Message-ID: <3mbnsq$7j6@newsbf02.news.aol.com>
Source record: 25274

Standard telemetry beacons on geo sync satellites for c band over the USA are sitting about 4199.5 Mhz usually in vertical Pol. but it varies from bird to bird.

775. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-10 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3mcmcg$279e@ns4-1.CC.Lehigh.EDU>
Source record: 25275

>P3D will NOT be a geosync. If it was only part of the world could
>use it. P3D will have a molinya orbit much like but hopefully better
>than AO-10 and AO-13. The orbit paln that I saw indicated a progression
>so that one day North America could contact Europe and the next NA to
>Asia next Asia to Europe and so on. Preliminary keps are available so
>you can have a look at the coverages. 73 de Jerry KC5EGG

oh well, there goes the budget :)
is there any geosync hamsats expected soon?

thanks for the info

DAvid

|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

776. * SpaceNews 10-Apr-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-04-10 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3mc5k4$hvl@pilot.njin.net>
Source record: 25276
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0410
* SpaceNews 10-Apr-95 *

BID: $SPC0410

=========
SpaceNews
=========

MONDAY APRIL 10, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* LAUNCH FAILURE UPDATE *
========================
Following information comes from Richard Limebear, G3RWL. Anyone repeating this story is requested to acknowledge AMSAT-UK as the collator of the information:

Further information about the launch failure is now to hand. Apparently the failure was because the fourth stage did not burn completely so the fifth stage was not triggered; the fourth stage quenched 12 seconds before it was supposed to be exhausted. It is also understood that the debris fell on land, not in the sea, and the landing site is known but if salvage is attempted the components will not be re-usable (not surprising after falling about 600 km! do satellites get headaches ?).

Russian authorities are still claiming that UNAMSAT (the so-called Mexican spacecraft) was a Russian satellite which had Mexican participation; details of this are vague and further verification of ownership would be welcome from anyone who *KNOWS*.

The third payload *WAS* a dummy; I have seen the photographs, it was a plain cylinder.

Launch was from a (fixed) mobile launcher tube which, apparently, erects hydraulically from horizontal to vertical in about 13 seconds; the launch vehicle is then lifted vertically in some fashion before main motor ignition.

The Israelis are, I understand, already building two more Techsat-1 class spacecraft; more or less copies of the first one. There is no indication of a replacement launch but it is notable that Russian officials are now saying that there was no clause for financial compensation in the launch agreement. At the launch-site, however, Israeli staff were told by Russians that another

launch would be provided.

This information is a collation of data from 4X1AS (still in London), Geoff Perry, and Reuters whom we thank.

[Info via Richard, G3RWL for AMSAT-UK and UOSAT]

* SAREX QSY *
==========
Space Shuttle Flight STS-71, to be launched in June, is the first to feature a docking between the shuttle and the Russian MIR space station. Special Shuttle Amateur Radio Experiment (SAREX) voice frequencies will be used.

The special frequencies are: downlink: 145.84 MHz worldwide and uplinks: 144.45 and 144.47 MHz worldwide.

SAREX and MIR amateur radio stations normally share the same downlink frequency, which would cause interference on the STS-71 mission. Because of this and lessons learned from using particular frequencies during previous SAREX missions, the SAREX Working Group has made these changes for STS-71. The new frequencies were chosen after much deliberation to minimize interference between SAREX, MIR, and terrestrial stations.

Most SAREX operations are split frequency, with a downlink (astronauts transmitting to earth stations) and an uplink (earth stations transmitting to astronauts). Listen to the downlink and transmit only when the shuttle is in range and astronauts are on the air.

MIR operations are simplex and remain on 145.55 MHz.

Before transmitting, listen to the SAREX uplink to avoid interfering with others, and listen for the astronauts' instructions about frequencies they're using. They won't favor a specific uplink, and your ability to work them will be "the luck of the draw."

If these special SAREX frequencies prove acceptable, they will be used for future docking missions. If you have comments, send them to AMSAT's Frank Bauer, KA3HDO, at his callbook address, or to the ARRL Educational Activities Department.

Please note that there is a strong chance that STS-70 will fly before STS-71 if so, STS-70 will use the regular SAREX frequencies.

[Info via ARRL]

* EME LISTSERV NEWS *
====================
"Moon-Net", a new e-mail reflector for amateur EME operators, has been established by Michael Owen (W9IP) with support of his employer, St. Lawrence University. This reflector is devoted to exchange of information regarding all aspects of EME operation. It is an unmoderated list open to anyone with an interest in EME.

"Moon-Net" traffic should adhere closely to EME-related topics. Please refrain from posting VHF, satellite, or general ham radio-related messages to "Moon-Net". Also, please avoid cross-posting messages to/from "Moon-Net" with other radio-related lists. "Moon-Net" traffic is not archived.

To subscribe, address a message to : LISTSERV@VM.StLawu.EDU. In the body of the message, put "SUBSCRIBE Moon-Net" followed by your name. For example:
SUBSCRIBE Moon-Net Michael Owen

When your request for subscription is received, a file of instructions will be sent to you along with confirmation of subscription. This should only take a few moments.

To un-subscribe, the message should be UNSUBSCRIBE (everything else is the same):
UNSUBSCRIBE Moon-Net Michael Owen

Since subscription/unsubscriptions are handled automatically, no other text will be read if the address is LISTSERV.

To post a message to the net, address it to: Moon-Net@VM.StLawu.EDU. If you have problems, send a message to MOWE@SLUMUS.STLAWU.EDU. This is the first LISTSERV at this site so users should expect a few start-up glitches. Please be patient.

[Info via Michael Owen, W9IP]

* SpaceNews BBS NEWS *
==========
The SpaceNews BBS in Tacoma, Washington is still in full operation according to Mario, KD6ILO, who runs the system. Ted, N6EQZ in Renton supports the system as well with ARES and RACES information and traffic. The BBS can be found operating on 145.050 MHz. It is also linked to the UoSAT-OSCAR-22 satellite through the N7RSN SatGate also located in Tacoma, Washington.

[Info via Mario, KD6ILO @ N6EQZ.#APL.WA.USA.NOAM]

* THANKS! *
==========
Thanks to all those who sent messages of appreciation to SpaceNews, especially:

KD1ZD KA2DRV N2VQB DG4MLL KC5HWJ KD6ILO AD7I

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net

SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

777. ? Paket Sat Software ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-10 00:00:00 UTC
From: koellner@wall.scn.de
Message-ID: <3magc6$8n6@marina.scn.de>
Source record: 25277

Hello there!

I know there are some satellites running 9k6 FSK downlinks on 70cm with G3RUH mode. I have some small questions:

Which satellites?

I am used to run 9k6 FSK for terrestric work. But I know that I need special software to access these sats. Is there any FTP where I can find this software?

Please, mail your answer directly to me because my access to this news-group is not so optimal.

Thanks a lot in advance

DL4MEA@DB0KCP.#BAY.DEU.EU
--
Guenter Koellner TN EM A 33, Siemens AG., Germany
koellner@scn.de <http://www.scn.de/~koellner> +49 89 722 41962

778. 425 DX NEWS is looking for a WEB site !

Newsgroup: rec.radio.amateur.space
Date: 1995-04-11 00:00:00 UTC
From: I121171@relay.telecom.it
Message-ID: <3me29n$6p5@sgi.iunet.it>
Source record: 25278
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna,bit.listserv.lstsrv-l

425 Weekly DX News from Italy is lookin' for a WEB site !
Is there any provider that can give us a page ?????

Thanks in advance

Best 73 de I121171@amsat.org I121171@relay.telecom.it

779. Re: Anybody make STS-67 packet contact

Newsgroup: rec.radio.amateur.space
Date: 1995-04-11 00:00:00 UTC
From: paidukas@huey.mis.semi.harris.com
Message-ID: <3me6m7$947@hearye.mlb.semi.harris.com>
Source record: 25279

In article hqm@jac.zko.dec.com, little@iamu.chi.dec.com (Todd Little) writes:

>
>What's your setup? Particularly, can you describe your antenna system?
>
>Darryl
>

Yes I too have made contact with STS-67 via packet. My STS-67 QSO number is 66.
I used a 50 watt kenwood 2M radio and a diamond X300 omni at 62 feet, and
135 feet of 9913 coax and KPC-3 TNC.

Paul KE4QJA Work: paidukas@huey.mis.semi.harris.com
Packet: KE4QJA@KD4WLE.#MLBFL.FL.US.NA Home: KE4QJA@theborg.mlb.fl.us

780. ICOM 275/475 Questions (Probably Stupid...)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-11 00:00:00 UTC
From: jcw@kd4dts.radio.org
Message-ID: <1995Apr11.173347.10206@kd4dts.radio.org>
Source record: 25280

I have recently acquired a Icom 275 and 475, and a Kansas City Tracker board. I don't have any docs for the KCT, and as I understand it, it has no interaction with the TNC, only the rotator (I have a Kenpro 5400). In addition, as far as I can tell, the ICOMs can only step in 1Khz intervals in FM mode.

If I want to use the PacSats, do I need a different controller (like the AEA or TrakBox)? And, how to those controllers cause the radio to step in finer steps? Do they talk over the serial control port for the radio, and send the correct frequency? Or is there a mod for the ICOM that allows finer stepping?

There seems to be a severe lack of documentation out there for the satellites, as far as certain radio/TNC/antenna requirement go. I have seen articles that tell me how to aim antennas, mod radios, etc, but nothing that tells me which side band to use (upper or lower). Or proper tuning strategies. Or various radio/TNC/controller combinations. All these things seem to be passed on by word of mouth...

- John, KD4DTS (Satellite wannaba)

781. Re: DOS satellite tracking program?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-11 00:00:00 UTC
From: dunaway@magicnet.net
Message-ID: <3mevom$9e0@comet.magicnet.net>
Source record: 25281

In <NEWTNews.1456.797272535.drayegon@drayegon.america.com>, drayegon@america.com writes:
>
>I Does anyone know of any DOS based satellite tracking programs?
>
>>
>
>> Thanks, Tom Kreyche KG6YJ
>
>
>Tom use Insta Track avail from amsat.org

>
>it is dos and basically the standard for the rest.
>73 Ray AD4RR

>Instanttrack will run on dos pc with & without math-copprocessor. 512K ram and EGA/VGA
>monitor. It beats winsat hands down in my book, which is a Windows
>based pgm. Instanttrack will also run as a full-screen dos session
>under os2. Call AMSAT 301-589-6062 ($50.00 for members, $70.00 for
>non-members)
>
>Stewart Dunaway
>KE4SCY

782. Re: OS/2 Sat tracker under dev.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-11 00:00:00 UTC
From: dunaway@magicnet.net
Message-ID: <3mf0d9$a3e@comet.magicnet.net>
Source record: 25282

In <3m8k4c$aeb@styx.uwa.edu.au>, anilsson@yarrow.wt.uwa.edu.au (Andrew Nilsson) writes:
>Hi All,
>
>I am currently writing a native OS/2 satellite tracker and would like some
>feedback on what people would like in it.(assuming anyone here uses os/2)
>Just send me a piece of email with a list a features you would like
>and/or any comments. I am mostly interested in the user interface and the
>way the windows are arranged.
>
>Andrew Nilsson, VK6JBL
>anilsson@yarrow.wt.com.au

>Yes. I run Instanttrack under a dos full screen session. I'm no expert
>but I would be pleased to have instantracks features on os2 platform.
>
>Stewart Dunaway KE4SCY

783. Re: PK232 & WISP

Newsgroup: rec.radio.amateur.space
Date: 1995-04-11 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3mdorb$b9o@news.mci.net>
Source record: 25283

Bill, how do you have your PK232 configured, what modem do you have on the header to run the PACSATS. Starving for info. Thanks.

In article <3kvbpg$19t@infoman.net99.net>, billh@gn2.getnet.com says...
>
>I'm having an irritating little problem with WISP. About 3 of5 times it
>finishes a pass and exits it kicks the PK232 TNC out of KISS mode. If I
>let it go on into the next pass it goes in with MON 0, KISS off, and HB 9600
>which obviously won't work. I've gotten in the habit of running a comm
>program every time I start up just to make sure TNC is set right.
>
>Anyone having similar problems or got an idea how I can fix it.
>73
>
>Bill Hosking, W7JSW
>Scottsdale, Arizona

--
-=-=-=-=-=-=-=-=-=-=--=-=-=-=-=-=-=-=-=-=-
Bob Smith N3FTU
rsmith@internetMCI.COM Atlanta, GA

784. Re: FREE HAM NEWSLETTER

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: k4rdd@mail.chattanooga.net
Message-ID: <3mfer2$7b@news.chattanooga.net>
Source record: 25284
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <NEWTNews.18260.790755434.amsoft@amsoft.epix.net>,
AMSOFT@EPIX.NET says...
>
>
>The Jan 95 "The World of Ham Radio" CD-ROM newsletter is now
>available. This CD-ROM offers more ham programs than any of the
>others out there! Over 20,000 IBM files for amateur radio are
>stored on this CD-ROM. Included are the FCC CALLSIGN call book
>with US & Foreign listings current to 12/94, and AMCALL the new
>logbook from AmSoft that will auto log from the CD for you. Over
>1,350 Radio Modifications. The latest HST, NASA & Space images.
>Over 700 Megabytes of Amateur Radio Software packed into 1 CD. This
>CD-ROM is published every 4 months without delay in JAN, MAY, & SEP.
>
>
>If you would like to get a FREE newsletter about the JAN 1995 AmSoft
>CD-ROM please send your Internet E-mail address to: amsoft@epix.net
>
>
>

785. Re: DOS satellite tracking program?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3mf84g$hgq@over.mhv.net>
Source record: 25285

drayegon@america.com wrote:

: I Does anyone know of any DOS based satellite tracking programs?
: >
: > Thanks, Tom Kreyche KG6YJ

: Tom use Insta Track avail from amsat.org

: it is dos and basically the standard for the rest.
: 73 Ray AD4RR

Let me recommend STS ORBIT PLUS. I've been using it for 3 years and
LOVE it. Several Nasa sites use it as well as JPL and the Air Force. The
world map mode looks VERY simular to the big map in Mission control.

Tom - KB2SMS

786. Re: Sattrack for Dos

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: mbrinkho@falcon.inetnebr.com
Message-ID: <3mfalk$8qf@duck.inetnebr.com>
Source record: 25286

Bruce Hoebake (ke4qiz@theborg.mlb.fl.us) wrote:
: Sattrak 280 is made for dos. It runs very well on my 80286 with the
: math-co-processor. Hope this helps.

Does anyone know where I can download the compiled version of this software?
(FTP or otherwise?) I've heard that Sattrak can be used to track the GPS
satellites and I'd like to give it a try.

Thanks.
--
Matt C. Brinkhoff (KB0RXC)
mbrinkho@inetnebr.com
Lincoln, Nebraska (EN10PT)

787. Re: OS/2 Sat tracker under dev.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: chrism@osuunx.ucc.okstate.edu
Message-ID: <3mfoi9$14gu@bubba.ucc.okstate.edu>
Source record: 25287

anilsson@yarrow.wt.uwa.edu.au (Andrew Nilsson) writes:

>Hi All,

>I am currently writing a native OS/2 satellite tracker and would like some
>feedback on what people would like in it.(assuming anyone here uses os/2)
>Just send me a piece of email with a list a features you would like
>and/or any comments. I am mostly interested in the user interface and the
>way the windows are arranged.

>Andrew Nilsson, VK6JBL
>anilsson@yarrow.wt.com.au

How about some kind of drag-and-drop access to select the satellite(s)
that are tracked. Something like this... I click a toolbar button or
select a menu to get a window with one icon per satellite in my
database. Just drag the icon to the main screen to include it, and drag
a satellite pointer off the screen to remove it. Sure would beat
clicking through lines and lines of lists. Give me a while to think of
other suggestions. :-)

Cheers, good luck, and thanks for doing this for OS/2
Chris Morrison KG5NK
Tulsa, OK

P.S. I guess dragging and dropping could also work to load the program
in the first place. Double-click or drag an icon for the first
satellite to track and go from there.

--

==
= "I am Paul Harvey of Borg. Prepare for NEWS!" =
==

788. **Shuttle Radio Communications**

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: dsheehan@sallie.wellesley.edu
Message-ID: <12APR95.11160306@sallie.wellesley.edu>
Source record: 25288

Does anyone have a list of frequencies/repeaters to monitor the Shuttle? Thanks in advance.

Danny

789. Re: Please help a new guy

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: paidukas@huey.mis.semi.harris.com
Message-ID: <3mgi02$56g@hearye.mlb.semi.harris.com>
Source record: 25289

I recomend STSPlus and so does NASA. It is a PD program. Math coprocessor
is required. Way better than Amsat.

Paul KE4QJA
Packet: KE4QJA@KD4WLE.#MLBFL.FL.US.NA Internet: KE4QJA@theborg.mlb.fl.us

790. Re: Phase IIID freqs and mode ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: little@iamu.chi.dec.com
Message-ID: <3mgpl7$ee4@jac.zko.dec.com>
Source record: 25290

In article <3mcmcg$279e@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU writes:
|>>P3D will NOT be a geosync. If it was only part of the world could
|>>use it. P3D will have a molinya orbit much like but hopefully better
|>>than AO-10 and AO-13. The orbit paln that I saw indicated a progression
|>>so that one day North America could contact Europe and the next NA to
|>>Asia next Asia to Europe and so on. Preliminary keps are available so
|>>you can have a look at the coverages. 73 de Jerry KC5EGG
|>
|>oh well, there goes the budget :)
|>is there any geosync hamsats expected soon?

Why will this impact your budget? The plan as I understand it is that the apogee point will be in roughly the same point each time it is visable. So although the bird is not geosynchronous, it would appear like a time-shared geosynchronous bird that is shared between three places.

Also as was previously pointed out, a geosynchronous bird would only cover a portion of the globe. As a result substantially fewer amateurs world wide would be likely to contribute to such an effort. Given the costs involved and the difficulty just raising the funds for P3D, it's hard to imagine any geosynchronous amateur birds in the near future or possibly ever.

--
73, Member of AMSAT, ARRL, Palatine RACES, and the Arlington
Todd Communications League. Weather spotter and sponsor of the Hunting
N9MWB Ridge Elementary School Radio Club. See you on 160-1296 and OSCAR.

791. GOES/NOAA picture info

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: s0156757@unix1.cc.ysu.edu
Message-ID: <3mh83g$ueq@unix1.cc.ysu.edu>
Source record: 25291

```
--
------------------------------------------------------------------------------
- Tom Wick | My views and opinions represent exactly -
- s0156757@cc.ysu.edu | 1/2 of everyone elses views and opinions.. -
------------------------------------------------------------------------------
```

792. Re: DOS satellite tracking program?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-12 00:00:00 UTC
From: jim4897@athena.athenet.net
Message-ID: <3mhknm$55f@athena.athenet.net>
Source record: 25292

I think the best is STSORBITPLUS and it's only $10.00 and worth much more.

793. Re: **Shuttle Radio Communications**

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Message-ID: <3mj44d$huq@niven.ksc.nasa.gov>
Source record: 25293

Thomas.Randall@bbs.mhv.net (Thomas Randall) wrote:
>
> dsheehan@sallie.wellesley.edu wrote:
>
> : Does anyone have a list of frequencies/repeaters to monitor the
> : Shuttle? Thanks in advance.
>
> : Danny
>
> Try asking a ham radio club in your area, visit radio shack and see if
> they have a list of clubs. The shuttle when running a Sarex mission
> (Shuttle amateur radio experiment) uses 2 meters and the downlink is 145.550.
> STS-71 will use a special downlink - 145.840. If your scanner has a way
> to scan all freqs try scanning between 144.000 and 148.000. if there's a
> repeater re-broadcasting near you your bound to find it. Just remember,
> the shuttle transmissions are not continuous - there are sometimes LONG
> delays between transmissions. If you have a shortwave radio WA3NAN
> Goddard radio club rebraodcast on 3.860, 7.185,14.295, 14.285. In N.Y.
> I've only heard them on the first 2 freqs. If while the shuttle is flying
> over your area and you hear strange bursts of noise yuur hearing Packet
> transmissions from hams and the shuttle. This is computer communication.
> The shuttle usually uses 2 modes, voice and packet. The also use other
> modes as well.
>
> Tom Randall
> amateur radio KB2SMS
>
>

794. Re: **Shuttle Radio Communications**

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Message-ID: <3mj4et$huq@niven.ksc.nasa.gov>
Source record: 25294

Thomas.Randall@bbs.mhv.net (Thomas Randall) wrote:
>
> dsheehan@sallie.wellesley.edu wrote:
>
> : Does anyone have a list of frequencies/repeaters to monitor the
> : Shuttle? Thanks in advance.
>
> : Danny
>
> Try asking a ham radio club in your area, visit radio shack and see if
> they have a list of clubs. The shuttle when running a Sarex mission
> (Shuttle amateur radio experiment) uses 2 meters and the downlink is 145.550.
> STS-71 will use a special downlink - 145.840. If your scanner has a way
> to scan all freqs try scanning between 144.000 and 148.000. if there's a
> repeater re-broadcasting near you your bound to find it. Just remember,
> the shuttle transmissions are not continuous - there are sometimes LONG
> delays between transmissions. If you have a shortwave radio WA3NAN
> Goddard radio club rebraodcast on 3.860, 7.185,14.295, 14.285. In N.Y.
> I've only heard them on the first 2 freqs. If while the shuttle is flying
> over your area and you hear strange bursts of noise yuur hearing Packet
> transmissions from hams and the shuttle. This is computer communication.
> The shuttle usually uses 2 modes, voice and packet. The also use other
> modes as well.
>
> Tom Randall
> amateur radio KB2SMS
>
>
You might try NASA Spacelink, http://Spacelink.msfc.nasa.gov.
Click on the astronaut picture at the beginning and search for
ham;rebroadcast;shuttle;audio. One of the hits that returned was
NASA.Projects/Human.Space.Flight/Shuttle/Shuttle.Missions/Flight.033.STS-32/
Ham.Rebroadcasts.of.Mission.Audio. That was a pretty comprehensive list.

I had to re-post this reply due to operator interface error! Sorry.

73 de Roger, KD4ITU

795. Re: POLAR ORBITING SATELLITE's

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Message-ID: <3mj4no$huq@niven.ksc.nasa.gov>
Source record: 25295

cb1jpx@cbpackhv.xs4all.NL wrote:
>
>
>
> Hello Weather Satellite Friends
>
> My name is Jean and i living in the Nort Part of Belgium.
>
> I am a Weather Satellite freack , and i like to now wich Satellite , on
>
> wich frequentie's are standby.
>
> In this case: The Polar Orbiting Satellite's.
>
> I appreciate that i get the frequentie's and i am looking forward.
>
> Manny thanks for the trouble.
>
> And greetings from Mol a little vilage in Belgium.
>
>
> bye bye so long
> BE4RFM
>
>
One of the recent issues of "Popular Communications" magazine had a 2 1/2
page list of Satellite Frequencies. I believe it was the March or February
issue of this year. If you cannot locate this magazine, E-Mail me
and I will send a copy via snail-mail.

73 de Roger, KD4ITU

796. HAM SPAM Newsletters & other commercial broadcasts

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3mjbme$dt8@superb.csc.ti.com>
Source record: 25296

Is there a program available (freeware) that would screen out the SPAM
that we are receiving via e-mail? I get enough to shuffle through with
my business mail and the ARRL mailings that I subscribe to. The ARRL
may be the source of the problem since I haven't given out my address
to any other commercial operation. I just received three pages of information
about a ham newsletter of no interest to me. I sent them an e-mail asking
to be UNSUBSCRIBED, but doubt it will matter to them.

Ken K5MBV durham@lobby.ti.com

797. Re: rs15

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: I121171@relay.telecom.it
Message-ID: <3mjd2l$f0r@sgi.iunet.it>
Source record: 25297

Andy, RK3KPK operator of the RS3A RS Command Station sent me the following information today 29th January 1995 in response to my RS-15 TLM request.

RS-15 TELEMETRY

As a rule the telemetry is sent in CW. It represents various status indicators and measurements made on the transponders. 16 data channels are sent. Each channel is in the form of 3 alpha characters followed by 2 numeric characters. For example IIR 39, the IIR part is the alpha and the 39 is the numeric part of the channel. The alpha part indicates a specific status such as U < Normal or U = Normal for the onboard power supply. In the example IIR 39, the IIR parts gives a specific status for 1 channel. The onboard power supply voltage IIR means the Voltage is Normal. If however IIR is replaced by IIW in channel 1, e.g. IIW 39, then the voltage is less than normal. The numeric part of Channel 1, 39 in our example gives the real voltage of the onboard power supply where the value in volts equals the number sent multiplied by 0.4. That is ......

Volts = n x 0.4 = 39 x 0.4 = 15.6

1. II U,K,W,O - Voltage of the onboard power supply less than normal
S,D,R,G - Voltage of the onboard power suply is normal
n x 0.4 = real voltage in volts

2. IN U,K,W,O - Sensitivity transponder rx is maximum
S,D,R,G - Sensitivity transponder rx is minimum
n/10 = TX 29 MHz output power.

3. IA U,K,W,O - Beacon-1 output is nominal
S,D,R,G - Beacon-1 output is maximum
n x 0.2 = IFA-1 power supply voltage

4. IM U,K,W,O - Beacon-2 output is nominal
S,D,R,G - Beacon-2 output is maximum
n x 0.2 = IFA-2 power supply voltage

5. NI U,K,W,O - Service info
S,D,R,G - Service info
n x 0.2 = Stabilizer +5 V (Volts)

6. NN U,K,W,O - Service info
S,D,R,G - Service info
n x 0.4 = Solar battery voltage (volts)

7. NA U,K,W,O - Service info
S,D,R,G - Service info

n x 20 = Solar battery current (mA)

8. NM U,K,W,O - Service info
S,D,R,G - Service info
n x 20 = the consumption current (mA)

9. AI U,K,W,O - TLM sampling period = 60 min
S,D,R,G - TLM sampling period = 15 min
n - 10 = 10m TX temperature in C

10. AN U,K,W,O - Transmission of TLM = 600 Baud
S,D,R,G - Transmission of TLM = 1200 Baud
n - 10 = 2m RX temperature

11. AA U,K,W,O - Transmission from board memory = 600 Baud
S,D,R,G - Transmission from board memory = 1200 Baud
n - 10 = stabilizer temperarture in C

12. AM U,K,W,O - Receiving of board memory = 600 Baud
S,D,R,G - Receiving of board memory = 1200 Baud
n - 10 = temp of charger block in C

13. MI U,K,W,O - Transmission of TLM info is ON
S,D,R,G - Transmission of TLM info is OFF
n - temp., solar battery block 1
(identified by a table)

14. MN U,K,W,O - Transmission from board memory is ON
S,D,R,G - Transmission from board memory is OFF
n - temp., solar battery block 2 in C
(identified by a table)

15. MA U,K,W,O - No use
S,D,W,O - No use
n - temp., solar battery block 3 in C
(identified by a table)

16. MM U,K,W,O - Accumulator is OFF
S,D,W,O - Accumulator is ON
n - pressure in the hermetic container
(identified by a table)

This should assist our scientific use of RS-15 and to explore some of the anomalies of variable spin fading, signal strength, etc. Note that there is no positive indication of a Mode 'K' or 'T' transponder system unless it is resident within the vectors labelled 'Service Info'

73, Pat, G3IOR @ GB7VLS

798. Re: HAM SPAM Newsletters & other commercial broadcasts

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3mjm78$kt6@superb.csc.ti.com>
Source record: 25298

In article <3mjbme$dt8@superb.csc.ti.com>, durham@lobby.ti.com (ken) says:
>
I just received three pages of information
>about a ham newsletter of no interest to me. I sent them an e-mail asking
>to be UNSUBSCRIBED, but doubt it will matter to them.
>
Well I was wrong..... just received an unsubscribe e-mail from the ham
newsletter....hope this is permanent. K5MBV

799. Re: **Shuttle Radio Communications**

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3mht2a$48o@over.mhv.net>
Source record: 25299

dsheehan@sallie.wellesley.edu wrote:

: Does anyone have a list of frequencies/repeaters to monitor the
: Shuttle? Thanks in advance.

: Danny

Try asking a ham radio club in your area, visit radio shack and see if
they have a list of clubs. The shuttle when running a Sarex mission
(Shuttle amateur radio experiment) uses 2 meters and the downlink is 145.550.
STS-71 will use a special downlink - 145.840. If your scanner has a way
to scan all freqs try scanning between 144.000 and 148.000. if there's a
repeater re-broadcasting near you your bound to find it. Just remember,
the shuttle transmissions are not continuous - there are sometimes LONG
delays between transmissions. If you have a shortwave radio WA3NAN
Goddard radio club rebraodcast on 3.860, 7.185,14.295, 14.285. In N.Y.
I've only heard them on the first 2 freqs. If while the shuttle is flying
over your area and you hear strange bursts of noise yuur hearing Packet
transmissions from hams and the shuttle. This is computer communication.
The shuttle usually uses 2 modes, voice and packet. The also use other
modes as well.

Tom Randall
amateur radio KB2SMS

800. POLAR ORBITING SATELLITE's

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: cb1jpx@cbpackhv.xs4all.NL
Message-ID: <gate.c2sH4c1w165w@cbpackhv.xs4all.nl>
Source record: 25300

Hello Weather Satellite Friends

My name is Jean and i living in the Nort Part of Belgium.

I am a Weather Satellite freack , and i like to now wich Satellite , on

wich frequentie's are standby.

In this case: The Polar Orbiting Satellite's.

I appreciate that i get the frequentie's and i am looking forward.

Manny thanks for the trouble.

And greetings from Mol a little vilage in Belgium.

bye bye so long
BE4RFM

801. Req: N conn for 9913 dimensions?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: bob@texas.net
Message-ID: <3mia92$gkd@empire.texas.net>
Source record: 25301

Anyone know the proper cable trimming dimensions for the
Amphenol 82-202-2006 type N connector designed for Belden 9913 cable??

tnx in advance

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

802. Re: TRAKBOX PCB Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <3mkknh$ftb@newsbf02.news.aol.com>
Source record: 25302

You might want to try contacting Wayne Roth (WA2N) at:
wroth@netcom.com (I think)

Last time I talked to him, he had one in just the condition you are
looking for.

73 David
kc6wyg@amsat.org

803. Re: HAM SPAM Newsletters & other commercial broadcasts

Newsgroup: rec.radio.amateur.space
Date: 1995-04-13 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3ml3t7$ipb@desiree.teleport.com>
Source record: 25303

In article <3mjm78$kt6@superb.csc.ti.com>, durham@lobby.ti.com said...

>Well I was wrong..... just received an unsubscribe e-mail from the ham
>newsletter....hope this is permanent. K5MBV

Same here. I complained to these people when they posted their spam here.
I guess they thought that I wanted my mailbox full of the bull s**t
instead. I certainly did not ask for any of it.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

804. Kansas City Tracker info wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-04-14 00:00:00 UTC
From: EdCaffray@aol.COM
Message-ID: <950414001357_82729333@aol.com>
Source record: 25304

Could someone supply me with the address and or telephone number for ordering
the Kansas City Tracker.
Eddie N2XDS
edcaffray@aol.com

805. ceramic filters wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-04-14 00:00:00 UTC
From: stevekit@eznet.net
Message-ID: <stevekit.46.0002AECF@eznet.net>
Source record: 25305

I'm looking for 5.5 MHz ceramic band-pass and reject filters used in a VCR tuner demod. Most suppliers have the 4.5 MHz versions, but I need the 5.5 MHz versions.

Thank you.

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " stevekit@eznet.net " \ / *
* \ __\/__ / * OPEN YOUR MIND * \/ *
**********************************************************************
```

806. Dove (DO-17) Info

Newsgroup: rec.radio.amateur.space
Date: 1995-04-14 00:00:00 UTC
From: pheaney@dorsai.org
Message-ID: <D719C9.Gq6@dorsai.org>
Source record: 25306

Does anyone know if Dove has any type of operation schedule? When It passes overhead all I have heard is Packet telemetry revealing it's current status, or the voice test.

Any help would be deeply appreciated.

73 de Paul

va3hst @ va3rwp.#swon.on.can.na
va3hst @ gw.ra3apw.ampr.org

807. Re: TRAKBOX PCB Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-04-14 00:00:00 UTC
From: wroth@netcom.com
Message-ID: <wrothD71Fu9.KAD@netcom.com>
Source record: 25307

DHoatson (dhoatson@aol.com) wrote:
: You might want to try contacting Wayne Roth (WA2N) at:
: wroth@netcom.com (I think)

: Last time I talked to him, he had one in just the condition you are
: looking for.

: 73 David
: kc6wyg@amsat.org

Thanks Dave! Yes, I have a complete kit that I'm not going to have time
to put together. It's completely up to date, I just received it a few
months ago.

73's
Wayne
WA2N
wroth@netcom.com
--
wroth@netcom.com

808. Re: ICOM 275/475 Questions (Probably Stupid...)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: had@halycon.com
Message-ID: <NEWTNews.27277.797965477.had@had>
Source record: 25211

In article <3moluh$f86@news.halcyon.com>, <gfiber@halcyon.com> writes:
> Path: news.halcyon.com!usenet
> From: gfiber@halcyon.com (Gary P. Fiber)
> Newsgroups: rec.radio.amateur.space
> Subject: Re: ICOM 275/475 Questions (Probably Stupid...)
> Date: 15 Apr 1995 14:41:21 GMT
> Organization: Northwest Nexus Inc.
> Lines: 27
> Message-ID: <3moluh$f86@news.halcyon.com>
> References: <1995Apr11.173347.10206@kd4dts.radio.org>
> NNTP-Posting-Host: blv-pm0-ip18.halcyon.com
> X-Newsreader: WinVN 0.92.1
>
> In article <1995Apr11.173347.10206@kd4dts.radio.org>, jcw@kd4dts.radio.org
(John C. Wren) says:
> >
> >I have recently acquired a Icom 275 and 475, and a Kansas City Tracker
board.
> >I don't have any docs for the KCT, and as I understand it, it has no inter-
> >action with the TNC, only the rotator (I have a Kenpro 5400). In addition,
as
> >far as I can tell, the ICOMs can only step in 1Khz intervals in FM mode.
> >
> >If I want to use the PacSats, do I need a different controller (like the AEA
or
> >TrakBox)? And, how to those controllers cause the radio to step in finer
> >steps? Do they talk over the serial control port for the radio, and send
the
> >correct frequency? Or is there a mod for the ICOM that allows finer
stepping?
> >
> >There seems to be a severe lack of documentation out there for the
satellites,
> >as far as certain radio/TNC/antenna requirement go. I have seen articles
that
> >tell me how to aim antennas, mod radios, etc, but nothing that tells me
which
> >side band to use (upper or lower). Or proper tuning strategies. Or various
> >radio/TNC/controller combinations. All these things seem to be passed on by
> >word of mouth...
> >
> > - John,
KD4DTS (Satellite wannaba)
> The AEA ST-1 uses the CI-V serial port for controlling the icoms. Here the

program will
> tell the Icom the proper frequewncy to be on, there is no ' stepping ' per
say as
> the radio is able to understand direct commands for frequency. many computer
control
> programs make the radio scan by writting a new frequency to the radio each '
step ' Now
> some other devices rely on the actual Up / Down controls of the radio, this
is easier to do.
>
> 73' Gary Fiber
>
Hey old pal nice to see u
Just go on.
73

809. Info wanted on Satellite Controllers

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: n9rze@firefly.prairienet.org
Message-ID: <n9rze-1504951658440001@ruger-26.slip.uiuc.edu>
Source record: 25212

I've been looking into building my own dish for S-band operation. The current rotors could not hold up a 6' dish. So I need to build a custom platform. In doing so I use a standard heavy duty rotor for the azimuth, but for the elevation I would use a screw-jack. Thing is, the screw-jack uses a reed switch to tell the controller how many rotations it has moved. But, as far as I can tell, amateur equipment uses pots to tell the controllers where they are. This is no problem, I would put a pot onto the elevation assembly. But what I don't know is, what info do the controllers get. How do they know where the rotors are pointing? Such as the AEA ST1, does it have preset memories for the various commercial rotors? Can I tell it a custom setting for my setup? As in, it ask's for me to point to 0 degrees elevation then save that resistance value, then point to 90 degrees elevation and save that too. Then the controller knows from what value to work with. Thus I've solved my delema for a custom controller. I'm interestd in any and all controllers out there, not just the AEA ST1. Thanks in advance.

810. ftp site <amsat>

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3mpmg9$2n3e@ns4-1.CC.Lehigh.EDU>
Source record: 25213

where again is the AMSAT ftp site?

thanks

DAvid

```
|-------------------------------------------------------------------------|
| David Roseman | c002@lehigh.edu |
| SysOp of NODE 3 BBS | The Flying HAm - BBS |
| Running OBV/2 Software | TechnoMage - BBS |
| | N3SQE/SVARC - Ham |
| HAmmy in IRC | N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet |
|------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----|
```

811. Re: Recruiting Elmers from the Internet

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: Dean Perriello <perriello@delphi.com>
Message-ID: <JO6e58J.perriello@delphi.com>
Source record: 25214

Hi Paul,
About your message here for elmers, I would be willing to assist for AMSAT related questions, I am currently an area co-ordinator for AMSAT for NC and I work all amateur space satellites and the SAREX shuttle missions.

I have been collecting information sources here in the I-net for referral to other amateurs, as well as for my own info purposes. If you feel my assistance could be of use, please advise that you are going to refer questions to me.

You can use n4tys@amsat.org for my internet mailing address in the event you think I would be of assistance.
Dean Perriello, Greensboro, NC N4TYS

812. Re: ftp site <amsat>

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-1504952012500001@ivy-a1.ip.realtime.net>
Source record: 25215

In article <3mpmg9$2n3e@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> where again is the AMSAT ftp site?
>

ftp.amsat.org

Ron

813. Re: **Shuttle Radio Communications**

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: Dean Perriello <perriello@delphi.com>
Message-ID: <BO78ZGK.perriello@delphi.com>
Source record: 25216

Hi Danny,
You request for frequencies to monitor the shuttle:
If I knew your location, you could listen to live ground-to-air rebroadcasts from the Goddard Amateur Radio Club. I usually listen on 14295.

If you want to try and work the shuttle, they have an uplink freq of 144.45 FM (simplex) and 144.47 FM. The downlink is 145.84 FM (simplex). Note that you will need a radio capable of operating split freq. i.e. I am using a Yaesu FT-736R to communicate digitally or via voice.

MIR uses 145.55 simplex, some voice on this freq, usually they leave the packet BBS on.

Hope this helps, Dean N4TYS

814. Someone needing an "Elmer" <G>

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: elmer@pennet.microserve.com
Message-ID: <elmer.50.0016FB3B@pennet.microserve.com>
Source record: 25217

Well, I'm an Elmer. I'm also a VE and I'd be happy to answer any questions.
If I don't know the answer, I'll tell you so and I'll try to find it out.

73's, Elmer Laudenslager -- N3DQC
^^^^^ -- No fooling <G>

815. WISP Help Needed

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3mq9c6$h6e@newshost.lanl.gov>
Source record: 25308
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc

OK folks I give up. I need some help. I am running WISP with
a KPC-9612 trying to access the pacsats. Rig is FT-736
with the GB3RUH mod for 9600 baud. Antennas and rig are
controlled by a Kansas City Tracker card. I have optimized
the TNC for transmit with a AEA DM-1 and it is right on 3kHz
I also optimized the receive per Kantronics instructions.
The antennas point and the rig get tuned. The 9600 baud signal
breaks right through the squelch, the port 2 receive light comes
on solid, the connect light flickers. On the bottom of the status
display for msre the "T:" display racks up bytes at a great rate
but at the end of the pass I have nothing but KISS files for my efforts.
I would guess I have something set wrong but I can't figure it
out. For the first effort I am just trying to get a directory
so no joy. Any help will be greatly appreciated.
By way of my contribution I played with the mike drive on the 736
with the deviation meter in line and found no change in deviation.

816. Re: Dove (DO-17) Info

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3moha4$v9@over.mhv.net>
Source record: 25309

Paul Heaney (pheaney@dorsai.org) wrote:
: Does anyone know if Dove has any type of operation schedule? When It
: passes overhead all I have heard is Packet telemetry revealing it's
: current status, or the voice test.

: Any help would be deeply appreciated.

: 73 de Paul

: va3hst @ va3rwp.#swon.on.can.na
: va3hst @ gw.ra3apw.ampr.org

Paul,
That's ALL your likely to hear is packet. The voice mode has been
mostly off on Dove. I still enjoy recieving it's packet but I've yet to
decode the telemetry because I don't have the software to do it yet. I
had one program but couldn't get it to work.

Tom

817. Re: ICOM 275/475 Questions (Probably Stupid...)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-15 00:00:00 UTC
From: gfiber@halcyon.com
Message-ID: <3moluh$f86@news.halcyon.com>
Source record: 25310

In article <1995Apr11.173347.10206@kd4dts.radio.org>, jcw@kd4dts.radio.org (John C. Wren) says:
>
>I have recently acquired a Icom 275 and 475, and a Kansas City Tracker board.
>I don't have any docs for the KCT, and as I understand it, it has no inter-
>action with the TNC, only the rotator (I have a Kenpro 5400). In addition, as
>far as I can tell, the ICOMs can only step in 1Khz intervals in FM mode.
>
>If I want to use the PacSats, do I need a different controller (like the AEA or
>TrakBox)? And, how to those controllers cause the radio to step in finer
>steps? Do they talk over the serial control port for the radio, and send the
>correct frequency? Or is there a mod for the ICOM that allows finer stepping?
>
>There seems to be a severe lack of documentation out there for the satellites,
>as far as certain radio/TNC/antenna requirement go. I have seen articles that
>tell me how to aim antennas, mod radios, etc, but nothing that tells me which
>side band to use (upper or lower). Or proper tuning strategies. Or various
>radio/TNC/controller combinations. All these things seem to be passed on by
>word of mouth...
>
> - John, KD4DTS (Satellite wannaba)

The AEA ST-1 uses the CI-V serial port for controlling the icoms. Here the program will tell the Icom the proper frequewncy to be on, there is no ' stepping ' per say as the radio is able to understand direct commands for frequency. many computer control programs make the radio scan by writting a new frequency to the radio each ' step ' Now some other devices rely on the actual Up / Down controls of the radio, this is easier to do.

73' Gary Fiber

818. Re: TRAKBOX PCB Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <3mqedb$p27@newsbf02.news.aol.com>
Source record: 25218

Glad to know that someone that I now hangs out over here!

73 David

819. Re: **Shuttle Radio Communications**

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: ericksco@mhd.moorhead.msus.edu
Message-ID: <3mqgei$ubq@urvile.MSUS.EDU>
Source record: 25219

If you want to try to work the Space Shuttle during one of their SAREX missions, the propper frequencies are.....

145.550 downlink

144.910 uplink
144.930 "
144.950 "
144.970 "
144.910 "

Those are all voice frequencies........

The packet uplink frequency is..... 144.490 MHz

I have contacted the Shuttle MANY different times, (voice) using a Ringo Ranger 2 antenna hooked to a Yeasu FT 2400.

As you can see, You don't need anything fancy, so Good luck.

STS-71 WILL USE A SPECIAL UPLINK FREQUENCY OF 144.450 & 144.470 MHz with a

*****DOWNLINK OF 145.840 MHz.*****

They will use those frequencies on that mission, due for that mission so they don't interfear (sp) with the MIR, when they are docked to it.

820. REJECTED: Ham-Space Digest V95 #104

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: op@dg-rtp.dg.com
Message-ID: <9504161345.AD00034@rtp41.rtp.dg.com>
Source record: 25220

----- Mail rejected by CEO. -----
No Routing Link Available Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #104
X-Ceo_Options: Document

CEO comments:
See document for message.

CEO document contents:

Ham-Space Digest Sun, 16 Apr 95 Volume 95 : Issue 104

Today's Topics:
Shuttle Radio Communications
Dove (DO-17) Info
ICOM 275/475 Questions (Probably Stupid...)
Phase IIID freqs and mode ?
POLAR ORBITING SATELLITE's
Recruiting Elmers from the Internet
Someone needing an "Elmer" <G>

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 13 Apr 1995 12:12:13 GMT
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Subject: **Shuttle Radio Communications**

Thomas.Randall@bbs.mhv.net (Thomas Randall) wrote:
>
> dsheehan@sallie.wellesley.edu wrote:
>
> : Does anyone have a list of frequencies/repeaters to monitor the
> : Shuttle? Thanks in advance.

>
> : Danny
>
> Try asking a ham radio club in your area, visit radio shack and see if
> they have a list of clubs. The shuttle when running a Sarex mission
> (Shuttle amateur radio experiment) uses 2 meters and the downlink is 145.550.
> STS-71 will use a special downlink - 145.840. If your scanner has a way
> to scan all freqs try scanning between 144.000 and 148.000. if there's a
> repeater re-broadcasting near you your bound to find it. Just remember,
> the shuttle transmissions are not continuous - there are sometimes LONG
> delays between transmissions. If you have a shortwave radio WA3NAN
> Goddard radio club rebraodcast on 3.860, 7.185,14.295, 14.285. In N.Y.
> I've only heard them on the first 2 freqs. If while the shuttle is flying
> over your area and you hear strange bursts of noise yuur hearing Packet
> transmissions from hams and the shuttle. This is computer communication.
> The shuttle usually uses 2 modes, voice and packet. The also use other
> modes as well.
>
> Tom Randall
> amateur radio KB2SMS
>
>
You might try NASA Spacelink, http://Spacelink.msfc.nasa.gov.
Click on the astronaut picture at the beginning and search for
ham;rebroadcast;shuttle;audio. One of the hits that returned was
NASA.Projects/Human.Space.Flight/Shuttle/Shuttle.Missions/Flight.033.STS-32/
Ham.Rebroadcasts.of.Mission.Audio. That was a pretty comprehensive list.

I had to re-post this reply due to operator interface error! Sorry.

73 de Roger, KD4ITU

Date: 15 Apr 1995 13:22:12 GMT
From: Thomas.Randall@bbs.mhv.net (Thomas Randall)
Subject: Dove (DO-17) Info

Paul Heaney (pheaney@dorsai.org) wrote:
: Does anyone know if Dove has any type of operation schedule? When It
: passes overhead all I have heard is Packet telemetry revealing it's
: current status, or the voice test.

: Any help would be deeply appreciated.

: 73 de Paul

: va3hst @ va3rwp.#swon.on.can.na
: va3hst @ gw.ra3apw.ampr.org

Paul,
That's ALL your likely to hear is packet. The voice mode has been
mostly off on Dove. I still enjoy recieving it's packet but I've yet to

decode the telemetry because I don't have the software to do it yet. I
had one program but couldn't get it to work.

Tom

Date: 15 Apr 1995 14:41:21 GMT
From: gfiber@halcyon.com (Gary P. Fiber)
Subject: ICOM 275/475 Questions (Probably Stupid...)

In article <1995Apr11.173347.10206@kd4dts.radio.org>, jcw@kd4dts.radio.org (John C. Wren)
says:
>
>I have recently acquired a Icom 275 and 475, and a Kansas City Tracker board.
>I don't have any docs for the KCT, and as I understand it, it has no inter-
>action with the TNC, only the rotator (I have a Kenpro 5400). In addition, as
>far as I can tell, the ICOMs can only step in 1Khz intervals in FM mode.
>
>If I want to use the PacSats, do I need a different controller (like the AEA or
>TrakBox)? And, how to those controllers cause the radio to step in finer
>steps? Do they talk over the serial control port for the radio, and send the
>correct frequency? Or is there a mod for the ICOM that allows finer stepping?
>
>There seems to be a severe lack of documentation out there for the satellites,
>as far as certain radio/TNC/antenna requirement go. I have seen articles that
>tell me how to aim antennas, mod radios, etc, but nothing that tells me which
>side band to use (upper or lower). Or proper tuning strategies. Or various
>radio/TNC/controller combinations. All these things seem to be passed on by
>word of mouth...
>
> - John, KD4DTS (Satellite wannaba)
The AEA ST-1 uses the CI-V serial port for controlling the icoms. Here the program will
tell the Icom the proper frequewncy to be on, there is no ' stepping ' per say as
the radio is able to understand direct commands for frequency. many computer control
programs make the radio scan by writting a new frequency to the radio each ' step ' Now
some other devices rely on the actual Up / Down controls of the radio, this is easier to
do.

73' Gary Fiber

Date: 10 Apr 1995 21:35:12 -0400
From: c002@Lehigh.EDU
Subject: Phase IIID freqs and mode ?

>P3D will NOT be a geosync. If it was only part of the world could
>use it. P3D will have a molinya orbit much like but hopefully better
>than AO-10 and AO-13. The orbit paln that I saw indicated a progression
>so that one day North America could contact Europe and the next NA to
>Asia next Asia to Europe and so on. Preliminary keps are available so
>you can have a look at the coverages. 73 de Jerry KC5EGG

oh well, there goes the budget :)
is there any geosync hamsats expected soon?

thanks for the info

DAvid

|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

---

Date: 13 Apr 1995 12:16:56 GMT
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Subject: POLAR ORBITING SATELLITE's

cb1jpx@cbpackhv.xs4all.NL wrote:
>
>
>
> Hello Weather Satellite Friends
>
> My name is Jean and i living in the Nort Part of Belgium.
>
> I am a Weather Satellite freack , and i like to now wich Satellite , on
>
> wich frequentie's are standby.
>
> In this case: The Polar Orbiting Satellite's.
>
> I appreciate that i get the frequentie's and i am looking forward.
>
> Manny thanks for the trouble.
>
> And greetings from Mol a little vilage in Belgium.
>
>
> bye bye so long
> BE4RFM
>
>
One of the recent issues of "Popular Communications" magazine had a 2 1/2
page list of Satellite Frequencies. I believe it was the March or February
issue of this year. If you cannot locate this magazine, E-Mail me
and I will send a copy via snail-mail.

73 de Roger, KD4ITU

Date: Sat, 15 Apr 95 21:04:57 -0500
From: Dean Perriello <perriello@delphi.com>
Subject: Recruiting Elmers from the Internet

Hi Paul,
About your message here for elmers, I would be willing to assist for
AMSAT related questions, I am currently an area co-ordinator for AMSAT
for NC and I work all amateur space satellites and the SAREX shuttle
missions.

I have been collecting information sources here in the I-net for
referral to other amateurs, as well as for my own info purposes.
If you feel my assistance could be of use, please advise that you
are going to refer questions to me.

You can use n4tys@amsat.org for my internet mailing address in the
event you think I would be of assistance.
Dean Perriello, Greensboro, NC N4TYS

Date: Sat, 15 Apr 1995 22:58:43
From: elmer@pennet.microserve.com (Elmer O. Laudenslager, III)
Subject: Someone needing an "Elmer" <G>

Well, I'm an Elmer. I'm also a VE and I'd be happy to answer any questions.
If I don't know the answer, I'll tell you so and I'll try to find it out.

73's, Elmer Laudenslager -- N3DQC
^^^^^ -- No fooling <G>

End of Ham-Space Digest V95 #104
****

821. help getting 2 line keps...

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: LEAVITDG@splava.cc.PLattsburgh.EDU
Message-ID: <01HPEI9IMJHU9JRMBD@splava.cc.plattsburgh.edu>
Source record: 25221

I am trying to find the current larger list of 2 line keps for all sats
for a friend. Does anyone remember a good site, fillname/s , and
directory?
thankyou.
..Darrell
leavitdg@splava.cc.plattsburgh.edu

822. Pacsat HELP

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: mfranks@eagle
Message-ID: <3mrhm5$7jr@news.ais.net>
Source record: 25222

I am interested in using the pacsats when on lake Michigan this summer.
I will be cruising in remote areas. I have a Kantronics KPC-3 and an
Icom O2-AT HT. Can I acces the satellites for EMAIL with a standard
Packet controller or do I need a PSK Modem ?, Will I be able to acces
the birds with a HT ?, Where do I find Keps for the pacsats ?
Please EMAIL reply TNX de Mike WB9EZB 73 mfranks@ais.net

823. Re: ftp site <amsat>

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3mrl4d$1dc6@ns3-1.CC.Lehigh.EDU>
Source record: 25223

In article <rparsons-1504952012500001@ivy-a1.ip.realtime.net>, rparsons@bga.com
(Ronald G. Parsons) writes:
>In article <3mpmg9$2n3e@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:
>
>> where again is the AMSAT ftp site?
>>
>
>
>ftp.amsat.org
>

hmm..i tryed it and it was not there, ok, thanks anyway!

DAvid
|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

824. Two-Line Orbital Element Sets (TLE587)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.798056033@dolphin>
Source record: 25224

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #587 -
Alouette 1
1 00424U 62049A 95102.15242280 .00000128 00000-0 13994-3 0 937
2 00424 80.4616 350.0329 0024546 64.6886 295.6786 13.67839079623274
ATS 1
1 02608U 66110A 95102.45216173 -.00000064 00000-0 10000-3 0 9261
2 02608 14.6312 357.3520 0009695 56.5597 303.5159 1.00315155 20533
ATS 3
1 03029U 67111A 95100.17178968 -.00000111 00000-0 10000-3 0 3501
2 03029 14.7971 4.4068 0008894 276.6590 233.3398 1.00272455100414
Cosmos 398
1 04966U 71016A 95104.24842501 .00155376 81853-5 19303-3 0 8136
2 04966 51.4216 157.1285 0671629 231.3902 122.5040 14.73466266815706
Starlette
1 07646U 75010A 95101.89913158 -.00000162 00000-0 -17118-4 0 8774
2 07646 49.8281 54.5888 0206170 242.7124 115.2637 13.82188428 19171
LAGEOS
1 08820U 76039A 95102.35162910 .00000007 00000-0 10000-3 0 977
2 08820 109.8378 238.0468 0044132 221.3436 138.3709 6.38664440186256
ETS-2
1 09852U 77014A 95097.35227856 -.00000053 00000-0 10000-3 0 210
2 09852 12.6382 38.0039 0002444 46.6282 313.3665 0.99994637 13279
GOES 2
1 10061U 77048A 95102.48639942 .00000065 00000-0 10000-3 0 5155
2 10061 11.7022 42.1601 0011805 119.5777 40.7098 1.00166290 10115
IUE
1 10637U 78012A 95103.11882089 -.00000176 00000-0 10000-3 0 1238
2 10637 35.0883 90.0345 1323509 44.6627 55.0857 1.00243805 15615
GPS BI-01
1 10684U 78020A 95101.11177423 -.00000038 00000-0 10000-3 0 3493
2 10684 64.8070 36.6762 0060981 163.7702 196.4200 1.98069643110837
```

```
GPS BI-02
1 10893U 78047A 95098.35187616 .00000031 00000-0 10000-3 0 1568
2 10893 63.3660 274.9751 0221444 14.3536 346.2599 2.01627358124022
GOES 3
1 10953U 78062A 95102.48847888 .00000075 00000-0 10000-3 0 4758
2 10953 10.6772 44.9105 0003162 100.7480 56.1911 1.00290514 14727
SeaSat 1
1 10967U 78064A 95102.24888310 -.00000033 00000-0 33642-4 0 3880
2 10967 107.9987 1.0687 0001628 254.3397 105.7559 14.38025037879355
GPS BI-03
1 11054U 78093A 95102.46301566 .00000020 00000-0 10000-3 0 2760
2 11054 63.0618 272.9100 0044686 177.0368 182.9757 1.93505222120302
Nimbus 7
1 11080U 78098A 95103.67842977 -.00000087 00000-0 -40895-4 0 4925
2 11080 99.0128 340.4184 0009790 47.7226 312.4755 13.83712662831635
GPS BI-04
1 11141U 78112A 95104.04411793 -.00000039 00000-0 10000-3 0 9688
2 11141 64.8051 38.3221 0048504 26.5384 333.6935 1.92894816 9584
GPS BI-05
1 11690U 80011A 95102.07505353 -.00000036 00000-0 10000-3 0 9019
2 11690 65.1398 38.2978 0145552 195.0899 164.4645 2.00562830125533
GPS BI-06
1 11783U 80032A 95093.47432518 -.00000002 00000-0 10000-3 0 676
2 11783 62.5139 268.4705 0216937 29.3264 331.8248 2.03455558109864
GOES 5
1 12472U 81049A 95098.80212969 -.00000275 00000-0 10000-3 0 8501
2 12472 7.3974 54.8267 0005481 12.3477 347.6774 1.00300687 8733
Cosmos 1383
1 13301U 82066A 95100.91849531 .00000018 00000-0 36697-5 0 3950
2 13301 82.9288 91.4755 0027933 357.8903 2.2133 13.68064569638137
LandSat 4
1 13367U 82072A 95102.66195364 .00000024 00000-0 15329-4 0 6577
2 13367 98.1318 160.0821 0007849 48.7961 311.3913 14.57150412677677
DMSP B5D2-1
1 13736U 82118A 95104.24626906 .00000076 00000-0 50244-4 0 7028
2 13736 98.6304 294.4565 0007821 196.8667 163.2254 14.25725100639804
IRAS
1 13777U 83004A 95103.53395334 .00000345 00000-0 26765-3 0 9275
2 13777 98.9661 293.1830 0011571 202.2059 157.8598 13.99232682293144
Cosmos 1447
1 13916U 83021A 95100.60088161 .00000032 00000-0 17814-4 0 4927
2 13916 82.9463 151.7407 0036456 282.1532 77.5539 13.74323952604180
TDRS 1
1 13969U 83026B 95102.62874362 -.00000199 00000-0 10000-3 0 4069
2 13969 8.2682 47.9233 0065258 203.2633 261.2898 1.00267532 17054
GOES 6
1 14050U 83041A 95102.39796492 .00000034 00000-0 10000-3 0 3795
2 14050 6.2172 57.9153 0003524 327.1697 191.4549 1.00308558101868
OSCAR 10
1 14129U 83058B 95097.81955190 .00000136 00000-0 10000-3 0 3458
```

```
2 14129 26.4996 274.3259 6012937 266.6042 27.2074 2.05876232 60880
LandSat 5
1 14780U 84021A 95103.65943164 .00000003 00000-0 10645-4 0 2256
2 14780 98.1166 161.7173 0005721 51.6971 308.4744 14.57156853591238
UoSat 2
1 14781U 84021B 95101.51692283 .00000155 00000-0 34011-4 0 7888
2 14781 97.7820 107.1868 0012846 38.9754 321.2356 14.69329187594116
GPS BI-09
1 15039U 84059A 95102.11886673 -.00000047 00000-0 10000-3 0 2833
2 15039 64.4715 32.7756 0082315 16.2013 344.0499 1.92302311 79123
Cosmos 1574
1 15055U 84062A 95100.77579461 .00000052 00000-0 39174-4 0 6933
2 15055 82.9559 205.5679 0028966 106.3854 254.0488 13.73620000541483
GPS BI-10
1 15271U 84097A 95103.26039376 .00000010 00000-0 10000-3 0 9353
2 15271 62.1968 268.4272 0154945 353.4914 6.2819 2.00595966 76627
Cosmos 1602
1 15331U 84105A 95104.20024039 .00000284 00000-0 30754-4 0 3812
2 15331 82.5354 155.8370 0018768 293.1750 66.7483 14.84601103569178
NOAA 9
1 15427U 84123A 95103.55183980 .00000082 00000-0 67285-4 0 2113
2 15427 99.0037 161.8684 0016059 90.6662 269.6349 14.13698208532789
GPS BI-11
1 16129U 85093A 95100.74337690 -.00000040 00000-0 10000-3 0 6455
2 16129 65.1409 35.8304 0153186 87.3979 274.3431 1.89368076 13710
Mir
1 16609U 86017A 95104.23223013 .00002117 00000-0 33920-4 0 9979
2 16609 51.6455 118.1085 0005732 9.3594 350.7503 15.58336640522992
SPOT 1
1 16613U 86019A 95104.20481226 .00000090 00000-0 62356-4 0 8001
2 16613 98.6534 176.9632 0001489 49.6622 310.4682 14.20053408159285
Cosmos 1766
1 16881U 86055A 95100.33795041 .00000286 00000-0 31763-4 0 2954
2 16881 82.5173 217.3122 0018803 333.4283 26.5961 14.83606342469517
EGP
1 16908U 86061A 95101.84482482 -.00000083 00000-0 10000-3 0 9896
2 16908 50.0093 246.2062 0011110 353.1913 6.8769 12.44411949 62579
NOAA 10
1 16969U 86073A 95103.48709690 .00000031 00000-0 31590-4 0 1208
2 16969 98.5085 108.3247 0012913 167.5584 192.5916 14.24930648445260
MOS-1
1 17527U 87018A 95101.15839666 -.00000018 00000-0 18716-4 0 1939
2 17527 98.9915 168.0299 0000760 107.9653 252.1554 13.94923228414482
GOES 7
1 17561U 87022A 95103.38646118 .00000087 00000-0 10000-3 0 3391
2 17561 2.1963 73.0179 0003310 345.9584 144.5246 1.00277996 12982
Kvant-1
1 17845U 87030A 95103.78341180 .00020457 00000-0 27001-3 0 2155
2 17845 51.6444 120.3633 0005406 10.6782 349.8849 15.58345836522831
DMSP B5D2-3
```

```
1 18123U 87053A 95103.52284364 .00000002 00000-0 23380-4 0 9082
2 18123 98.7798 295.6866 0015259 45.1391 315.1020 14.15398283403577
RS-10/11
1 18129U 87054A 95102.06957499 .00000016 00000-0 17053-5 0 484
2 18129 82.9200 107.9428 0010182 278.9411 81.0590 13.72350415390904
Meteor 2-16
1 18312U 87068A 95103.31792393 .00000028 00000-0 11615-4 0 3878
2 18312 82.5564 333.8301 0012721 357.8724 2.2316 13.84054371386576
Meteor 2-17
1 18820U 88005A 95104.18996231 -.00000027 00000-0 -37561-4 0 5913
2 18820 82.5446 29.1556 0018487 56.9426 303.3507 13.84735087364019
DMSP B5D2-4
1 18822U 88006A 95104.05506301 .00000014 00000-0 24632-4 0 9145
2 18822 98.4101 311.0767 0005654 175.6643 184.4582 14.23149267373399
Glonass 34
1 19163U 88043A 95103.27669734 .00000086 00000-0 10000-3 0 9814
2 19163 65.1112 100.3436 0005964 147.3293 212.7316 2.13102601 53059
Glonass 36
1 19165U 88043C 95100.04814497 .00000089 00000-0 10000-3 0 3835
2 19165 65.0897 100.4367 0000304 88.6402 271.4012 2.13102123 53601
METEOSAT 3
1 19215U 88051A 95103.22280166 -.00000276 00000-0 10000-3 0 1098
2 19215 2.3715 70.2609 0001232 35.8421 106.3638 1.00276100 12921
AO-13
1 19216U 88051B 95101.26266056 -.00000576 00000-0 10000-4 0 265
2 19216 57.5599 193.6656 7280121 6.2710 359.3217 2.09726584 20762
OKEAN 1
1 19274U 88056A 95100.63928133 .00000208 00000-0 22864-4 0 9952
2 19274 82.5151 317.3616 0021405 107.9670 252.3887 14.82322044365140
Meteor 3-2
1 19336U 88064A 95102.11254764 .00000051 00000-0 10000-3 0 3843
2 19336 82.5376 112.1753 0015279 234.4887 125.4804 13.16972543322603
Glonass 39
1 19503U 88085C 95097.72960857 -.00000048 00000-0 10000-3 0 2711
2 19503 65.7145 339.4196 0007558 161.9753 198.0828 2.13101890 51041
NOAA 11
1 19531U 88089A 95103.44387462 .00000023 00000-0 37442-4 0 235
2 19531 99.1917 105.0594 0012514 14.0632 346.0883 14.13046160337618
TDRS 2
1 19548U 88091B 95102.37387176 .00000094 00000-0 10000-3 0 1148
2 19548 1.5937 75.8016 0002288 342.7510 105.3422 1.00266355 11202
Glonass 40
1 19749U 89001A 95096.36042188 .00000054 00000-0 10000-3 0 4852
2 19749 65.0885 100.1455 0008195 272.2264 90.9796 2.13144511 48529
Glonass 41
1 19750U 89001B 95102.51656500 .00000089 00000-0 10000-3 0 4036
2 19750 65.0689 99.9948 0005798 238.8629 121.1420 2.13101861 48672
GPS BII-01
1 19802U 89013A 95102.37279385 .00000084 00000-0 10000-3 0 416
2 19802 55.1715 127.8258 0027351 184.7470 175.2989 2.00574083 45052
```

```
Akebono
1 19822U 89016A 95102.79816739 .00017624 00000-0 99472-3 0 4767
2 19822 75.0964 12.5678 3782090 69.6018 326.6156 7.84689793132683
Meteor 2-18
1 19851U 89018A 95102.87580069 .00000027 00000-0 10825-4 0 3858
2 19851 82.5152 264.9682 0015557 102.6149 257.6761 13.84387033309154
MOP-1
1 19876U 89020B 95099.81783920 -.00000075 00000-0 10000-3 0 1078
2 19876 1.0707 71.3823 0000437 5.4209 47.2676 1.00271702 2336
TDRS 3
1 19883U 89021B 95103.26799769 -.00000272 00000-0 10000-3 0 618
2 19883 0.0478 253.6911 0001897 128.9875 233.7808 1.00271316194794
GPS BII-02
1 20061U 89044A 95103.71235008 -.00000018 00000-0 10000-3 0 522
2 20061 54.4881 304.1021 0141410 213.4172 145.6590 2.00563273 42827
Nadezhda 1
1 20103U 89050A 95103.42990883 .00000041 00000-0 27060-4 0 3560
2 20103 82.9573 66.3457 0037255 171.1614 189.0201 13.73851937289531
GPS BII-03
1 20185U 89064A 95101.06348707 .00000075 00000-0 10000-3 0 766
2 20185 55.0019 128.4484 0014777 320.0226 39.9600 2.00547697 41349
GMS 4
1 20217U 89070A 95097.33489005 -.00000289 00000-0 10000-3 0 1781
2 20217 0.8925 75.5516 0000557 105.6298 274.7901 1.00274170 21044
INTERCOSMOS 24
1 20261U 89080A 95101.72747282 .00000177 00000-0 54686-4 0 4006
2 20261 82.5962 186.9268 1241313 305.0440 44.0208 12.47237644251990
GPS BII-04
1 20302U 89085A 95100.59214694 -.00000014 00000-0 10000-3 0 511
2 20302 53.4102 244.3330 0008973 188.9053 171.0468 2.00554857 40135
Meteor 3-3
1 20305U 89086A 95102.83154250 .00000044 00000-0 10000-3 0 2889
2 20305 82.5534 62.8252 0004683 264.8746 95.1839 13.04427560261963
COBE
1 20322U 89089A 95102.06286728 -.00000309 00000-0 -16968-3 0 1101
2 20322 98.9633 119.0798 0009142 153.3315 206.8332 14.03442582276317
Kvant-2
1 20335U 89093A 95103.78341180 .00020457 00000-0 27001-3 0 2312
2 20335 51.6444 120.3633 0005406 10.6782 349.8849 15.58345836306042
GPS BII-05
1 20361U 89097A 95100.10787217 .00000020 00000-0 10000-3 0 9090
2 20361 55.7179 70.4924 0076352 120.1465 240.6087 2.00561811 29604
SPOT 2
1 20436U 90005A 95101.37031324 -.00000044 00000-0 00000+0 0 9187
2 20436 98.7396 176.2988 0001593 96.7805 263.3554 14.20020223270411
UO-14
1 20437U 90005B 95103.77499022 .00000014 00000-0 22310-4 0 884
2 20437 98.5698 189.1787 0011800 31.0149 329.1728 14.29882124272545
UO-15
1 20438U 90005C 95103.71273820 .00000005 00000-0 18875-4 0 8851
```

```
2 20438 98.5678 187.7213 0010960 34.7434 325.4462 14.29203153272436
PACSAT
1 20439U 90005D 95103.18943686 .00000017 00000-0 23613-4 0 8867
2 20439 98.5807 190.1856 0012043 33.4626 326.7314 14.29936141272479
DO-17
1 20440U 90005E 95103.25430082 .00000010 00000-0 20614-4 0 8869
2 20440 98.5820 190.6841 0012178 32.0172 328.1745 14.30076871272500
WO-18
1 20441U 90005F 95103.23527910 .00000014 00000-0 22164-4 0 8906
2 20441 98.5815 190.6426 0012758 32.6044 327.5925 14.30048689272501
LO-19
1 20442U 90005G 95103.19276504 .00000036 00000-0 30800-4 0 8867
2 20442 98.5815 190.9387 0013124 31.8223 328.3749 14.30150360272513
GPS BII-06
1 20452U 90008A 95098.51140674 -.00000016 00000-0 10000-3 0 194
2 20452 54.0276 184.5031 0057127 81.0335 279.6578 2.00569678 38078
MOS-1B
1 20478U 90013A 95102.20859359 .00000091 00000-0 10000-3 0 7668
2 20478 98.9949 173.3205 0000818 121.5309 238.5933 13.94917094184339
DEBUT
1 20479U 90013B 95103.30674807 -.00000015 00000-0 38281-4 0 8855
2 20479 99.0679 204.1156 0541061 19.7480 342.3720 12.83328400242638
FO-20
1 20480U 90013C 95104.24360536 .00000004 00000-0 80271-4 0 7832
2 20480 99.0688 204.7354 0541047 18.0130 343.9347 12.83229575242741
MOS-1B R/B
1 20491U 90013D 95101.83904526 -.00000405 00000-0 -69557-3 0 1226
2 20491 99.0342 255.2598 0469480 227.0494 129.0337 13.02989792245556
LACE
1 20496U 90015A 95100.22393502 .00001976 00000-0 66533-4 0 5230
2 20496 43.1030 158.2502 0008728 121.2336 238.9414 15.34361476287132
Nadezhda 2
1 20508U 90017A 95103.74134251 .00000065 00000-0 52795-4 0 3545
2 20508 82.9556 200.6945 0045617 122.6701 237.8866 13.73492080256808
OKEAN 2
1 20510U 90018A 95100.84917583 .00000160 00000-0 18744-4 0 3951
2 20510 82.5197 268.3776 0018106 301.6023 58.3424 14.78473412275643
GPS BII-07
1 20533U 90025A 95102.90874049 -.00000014 00000-0 10000-3 0 347
2 20533 54.8383 304.7490 0049120 80.7883 279.7475 2.00561507 36931
PegSat
1 20546U 90028A 95104.01314701 .00005043 00000-0 10725-3 0 7833
2 20546 94.1087 107.9439 0065436 222.0212 137.5973 15.42784637278588
HST
1 20580U 90037B 95104.22980700 .00000369 00000-0 21458-4 0 6114
2 20580 28.4682 101.8860 0006119 358.7055 1.3508 14.90851945 74353
MACSAT 2
1 20608U 90043B 95102.69834621 .00000205 00000-0 32270-4 0 860
2 20608 89.9324 177.0558 0107521 123.3075 237.8495 14.64821351263120
Glonass 44
```

```
1 20619U 90045A 95102.82963594 -.00000019 00000-0 10000-3 0 1806
2 20619 65.3086 338.7131 0024897 210.1642 149.7643 2.13102490 38119
Glonass 45
1 20620U 90045B 95096.84802760 -.00000053 00000-0 10000-3 0 1863
2 20620 65.3110 338.9109 0008142 47.3838 312.7394 2.13102465 38025
Glonass 46
1 20621U 90045C 95099.72968394 -.00000036 00000-0 10000-3 0 7878
2 20621 65.3240 338.8359 0014238 192.6833 167.3368 2.13101606 38085
Kristall
1 20635U 90048A 95103.78341180 .00020457 00000-0 27001-3 0 247
2 20635 51.6444 120.3633 0005406 10.6782 349.8849 15.58345836277064
ROSAT
1 20638U 90049A 95103.10887520 .00000362 00000-0 42704-4 0 4065
2 20638 52.9894 79.9962 0010775 254.5272 105.4535 15.07145866267301
Meteor 2-19
1 20670U 90057A 95103.65150147 .00000026 00000-0 10000-4 0 8850
2 20670 82.5487 329.8321 0017380 27.5746 332.6371 13.84164649242187
CRRES
1 20712U 90065A 95104.07746713 .00000089 00000-0 13199-3 0 743
2 20712 18.0192 64.7441 7179165 56.2522 352.5680 2.35390004 32975
GPS BII-08
1 20724U 90068A 95100.23698508 .00000068 00000-0 10000-3 0 8924
2 20724 54.8171 126.0972 0116605 171.7610 188.4979 2.00560099 32745
Feng Yun1-2
1 20788U 90081A 95104.20700664 -.00000027 00000-0 10000-4 0 3301
2 20788 98.8135 119.4271 0013669 250.5956 109.3636 14.01306137235872
Meteor 2-20
1 20826U 90086A 95102.98787913 .00000011 00000-0 -30375-5 0 8962
2 20826 82.5221 267.4294 0012035 291.5987 68.3874 13.83604765229211
GPS BII-09
1 20830U 90088A 95099.28808855 .00000015 00000-0 10000-3 0 9017
2 20830 55.6451 68.5000 0064368 100.7542 259.9666 2.00569806 33360
GPS BIIA-10
1 20959U 90103A 95103.18299688 .00000085 00000-0 10000-3 0 8454
2 20959 55.0059 127.9389 0094329 228.5555 130.7026 2.00556458 32031
DMSP B5D2-5
1 20978U 90105A 95103.58489628 .00000077 00000-0 43261-4 0 1580
2 20978 98.6442 172.0228 0079612 0.8624 359.2684 14.32533342228063
Glonass 47
1 21006U 90110A 95098.34846378 .00000076 00000-0 10000-3 0 7494
2 21006 65.0248 99.4211 0061704 186.6858 173.2772 2.13102711 33724
Glonass 48
1 21007U 90110B 95102.29050572 .00000089 00000-0 10000-3 0 8842
2 21007 65.0551 99.3657 0034663 182.6745 177.3228 2.13101267 33793
Glonass 49
1 21008U 90110C 95102.18054074 .00000090 00000-0 00000+0 0 559
2 21008 65.0309 99.3136 0011554 278.0416 81.8547 2.13099329 33783
AO-21
1 21087U 91006A 95101.99121649 .00000093 00000-0 82657-4 0 5834
2 21087 82.9374 281.5612 0035802 331.8246 28.0974 13.74553755210630
```

```
RS-12/13
1 21089U 91007A 95100.62877782 .00000028 00000-0 13399-4 0 7895
2 21089 82.9240 150.8819 0029802 4.2772 355.8637 13.74055856209497
MOP-2
1 21140U 91015B 95104.23883052 -.00000010 00000-0 10000-3 0 9383
2 21140 0.1893 96.0690 0003166 322.5828 229.2446 1.00281362 17298
Nadezhda 3
1 21152U 91019A 95103.42133375 .00000037 00000-0 22894-4 0 469
2 21152 82.9211 104.8547 0043510 99.7885 260.8188 13.73517139204610
Glonass 50
1 21216U 91025A 95103.52877353 -.00000018 00000-0 10000-3 0 3984
2 21216 65.0521 338.3632 0009894 180.0218 180.0466 2.13102775 31345
Glonass 51
1 21217U 91025B 95100.78151321 -.00000029 00000-0 10000-3 0 8066
2 21217 65.0472 338.4458 0010691 242.7743 117.1729 2.13101460 31279
Glonass 52
1 21218U 91025C 95101.83252739 -.00000024 00000-0 10000-3 0 2833
2 21218 65.0200 338.4165 0006615 301.8897 58.1058 2.13102556 31302
GRO
1 21225U 91027B 95101.38022348 .00003345 00000-0 69064-4 0 2095
2 21225 28.4629 319.9007 0002884 358.8893 1.1916 15.42433741103006
Meteor 3-4
1 21232U 91030A 95101.55029243 .00000051 00000-0 10000-3 0 7942
2 21232 82.5433 318.6645 0013350 154.8056 205.3726 13.16467444190613
NOAA 12
1 21263U 91032A 95103.47697886 .00000105 00000-0 65961-4 0 4433
2 21263 98.5887 129.1885 0014109 84.6062 275.6740 14.22506956203226
OKEAN 3
1 21397U 91039A 95100.77347130 .00000150 00000-0 18336-4 0 959
2 21397 82.5256 181.3189 0023946 13.4271 346.7558 14.76354822207419
GPS BIIA-11
1 21552U 91047A 95102.95418074 .00000002 00000-0 10000-6 0 8427
2 21552 55.9639 66.0402 0063252 242.9242 116.4080 2.00570419 27620
ERS-1
1 21574U 91050A 95104.19866496 .00000071 00000-0 42490-4 0 1298
2 21574 98.5546 179.4089 0001371 72.5299 287.6035 14.32245766195895
UO-22
1 21575U 91050B 95103.11213266 .00000037 00000-0 26966-4 0 5927
2 21575 98.4016 176.0263 0008499 111.0450 249.1647 14.36969671196154
ORBCOMM-X
1 21576U 91050C 95103.73025866 .00000049 00000-0 31202-4 0 6870
2 21576 98.3998 175.1267 0004552 113.3623 246.8033 14.36375082196150
TUBSAT-A
1 21577U 91050D 95104.14884242 -.00000012 00000-0 10566-4 0 5867
2 21577 98.4001 176.0478 0007158 109.4977 250.7009 14.36478817196241
SARA
1 21578U 91050E 95104.13773503 .00000274 00000-0 10277-3 0 7863
2 21578 98.4159 181.0428 0005666 105.0419 255.1395 14.38981393196485
TDRS 4
1 21639U 91054B 95102.49351149 .00000077 00000-0 10000-3 0 8798
```

```
2 21639 0.0232 123.2122 0002919 246.8274 193.4575 1.00274142107561
Meteor 3-5
1 21655U 91056A 95100.97367282 .00000051 00000-0 10000-3 0 7920
2 21655 82.5479 266.4159 0014241 169.6364 190.5054 13.16838036175653
UARS
1 21701U 91063B 95101.86646074 .00000072 00000-0 27394-4 0 6633
2 21701 56.9849 42.3367 0005336 113.8887 246.2705 14.96368511195647
DMSP B5D2-6
1 21798U 91082A 95103.43194352 .00000052 00000-0 50974-4 0 7990
2 21798 98.9608 115.0320 0013522 12.8061 347.3465 14.13876860174055
Glonass 53
1 21853U 92005A 95102.04431213 .00000090 00000-0 10000-3 0 9904
2 21853 64.9773 98.9978 0006645 201.0405 158.9479 2.13102202 24912
Glonass 54
1 21854U 92005B 95103.27316378 .00000083 00000-0 00000+0 0 1139
2 21854 64.9833 98.9454 0016456 8.2682 351.7805 2.13104069 24924
Glonass 55
1 21855U 92005C 95101.45953256 .00000091 00000-0 00000+0 0 1061
2 21855 64.9811 99.0135 0007816 219.9789 139.9946 2.13102332 24875
JERS-1
1 21867U 92007A 95103.21114794 .00000331 00000-0 32452-4 0 5587
2 21867 97.7183 180.6901 0000832 136.8718 223.2607 14.98626691173312
GPS BIIA-12
1 21890U 92009A 95103.41919031 -.00000018 00000-0 10000-3 0 6403
2 21890 53.9611 244.3957 0058399 171.8758 188.1340 2.00546982 23008
GPS BIIA-13
1 21930U 92019A 95101.13009746 -.00000071 00000-0 10000-3 0 6172
2 21930 55.6921 5.9271 0041403 173.9172 186.1455 2.00565951 21883
EUVE
1 21987U 92031A 95100.14818107 .00001139 00000-0 43203-4 0 3980
2 21987 28.4331 220.0213 0009358 344.8252 15.2059 15.19201900157590
SAMPEX
1 22012U 92038A 95102.36352044 .00001450 00000-0 12423-3 0 6209
2 22012 81.6706 215.1632 0119352 141.9840 218.9867 14.91386613150868
GPS BIIA-14
1 22014U 92039A 95102.17223855 .00000010 00000-0 10000-3 0 5353
2 22014 54.8439 185.8151 0081969 313.5030 45.8726 2.00546936 13743
Glonass 56
1 22056U 92047A 95100.89017516 -.00000029 00000-0 00000+0 0 193
2 22056 64.8914 338.5872 0004636 295.2722 64.7372 2.13103634 20951
Glonass 57
1 22057U 92047B 95101.18520891 -.00000027 00000-0 00000+0 0 213
2 22057 64.9081 338.5969 0008053 332.1890 27.8273 2.13102822 20935
Glonass 58
1 22058U 92047C 95102.53328707 -.00000021 00000-0 10000-3 0 80
2 22058 64.9036 338.5537 0008737 277.5430 82.4189 2.13102881 21016
TOPEX
1 22076U 92052A 95100.27448048 -.00000038 00000-0 10000-3 0 8666
2 22076 66.0390 33.9296 0007647 269.3295 90.6842 12.80931201124547
KO-23
```

```
1 22077U 92052B 95104.13560995 -.00000037 00000-0 10000-3 0 4847
2 22077 66.0772 9.8735 0011002 212.4228 147.6115 12.86289688125499
S80/T
1 22078U 92052C 95103.14463174 -.00000037 00000-0 10000-3 0 4816
2 22078 66.0913 10.9156 0010807 207.6636 152.3817 12.86574216125449
GPS BIIA-15
1 22108U 92058A 95102.62894380 -.00000017 00000-0 10000-3 0 5533
2 22108 54.1665 245.2140 0114459 148.5421 212.1226 2.00566351 18934
FREJA
1 22161U 92064A 95103.49041025 -.00000029 00000-0 33233-4 0 5026
2 22161 62.9908 252.5894 0804906 341.2925 15.9989 13.21828296121496
LAGEOS II
1 22195U 92070B 95100.78004936 -.00000009 00000-0 10000-3 0 3920
2 22195 52.6549 265.5963 0138353 247.2251 111.3640 6.47293800 58215
GPS BIIA-16
1 22231U 92079A 95102.31255193 .00000009 00000-0 10000-3 0 5217
2 22231 54.6820 187.0009 0036422 288.1009 71.5409 2.00567202 17500
GPS BIIA-17
1 22275U 92089A 95101.96322180 .00000009 00000-0 10000-3 0 5453
2 22275 54.6249 184.5404 0051652 254.0630 105.4195 2.00556651 16906
TDRS 5
1 22314U 93003B 95102.36269001 -.00000284 00000-0 10000-3 0 4951
2 22314 1.7395 72.0934 0002008 307.1528 265.4053 1.00264183 8255
GPS BIIA-18
1 22446U 93007A 95101.53607457 -.00000014 00000-0 10000-3 0 5255
2 22446 54.4859 305.0809 0081633 352.9062 7.0088 2.00549651 15885
Glonass 59
1 22512U 93010A 95100.16863046 .00000088 00000-0 10000-3 0 6935
2 22512 64.9909 98.9033 0009172 191.8983 168.1000 2.13101983 16440
Glonass 60
1 22513U 93010B 95101.51587986 .00000090 00000-0 00000+0 0 7368
2 22513 64.9903 98.8767 0007136 215.6542 144.3340 2.13102865 16669
Glonass 61
1 22514U 93010C 95103.21722096 .00000084 00000-0 00000+0 0 7375
2 22514 65.0133 98.8031 0010335 199.7701 160.2126 2.13103087 16706
ASTRO-D
1 22521U 93011A 95101.27829075 .00001772 00000-0 12043-3 0 3974
2 22521 31.1061 303.8268 0056778 195.6549 164.2349 15.02154623117308
UFO F1
1 22563U 93015A 95100.34177633 .00000021 00000-0 10000-3 0 4032
2 22563 26.1146 295.3423 0002758 342.3694 295.8783 0.99247904 11784
GPS BIIA-19
1 22581U 93017A 95100.18272944 -.00000075 00000-0 10000-3 0 4172
2 22581 55.1952 5.5654 0055844 34.9751 325.4207 2.00552693 14917
ARSENE
1 22654U 93031B 95098.10546024 -.00000095 00000-0 10000-3 0 3092
2 22654 2.4457 86.7268 2901770 207.9227 133.2995 1.42203107 5394
GPS BIIA-20
1 22657U 93032A 95103.80501430 -.00000064 00000-0 10000-3 0 4549
2 22657 55.2226 5.2736 0069242 215.3670 144.2055 2.00569895 10316
```

```
RADCAL
1 22698U 93041A 95094.44797570 .00000078 00000-0 29065-4 0 3900
2 22698 89.5387 294.3617 0091150 320.0656 39.3845 14.21340925 91967
GPS BIIA-21
1 22700U 93042A 95101.27893866 -.00000013 00000-0 10000-3 0 4022
2 22700 54.3653 246.0193 0035533 341.4214 18.4403 2.00562580 13060
NOAA-13
1 22739U 93050A 95103.40142441 .00000071 00000-0 64473-4 0 7767
2 22739 98.9877 52.1898 0010150 1.4502 358.6695 14.10930031 86306
GPS BIIA-22
1 22779U 93054A 95101.86338060 -.00000013 00000-0 10000-3 0 4543
2 22779 54.6226 305.0383 0019221 245.1211 114.7085 2.00564466 11839
Meteor 2-21
1 22782U 93055A 95104.11117702 .00000012 00000-0 -26559-5 0 3936
2 22782 82.5511 327.9797 0023849 100.2631 260.1223 13.83030371 81686
UFO F2
1 22787U 93056A 95103.92556039 -.00000078 00000-0 00000+0 0 4109
2 22787 4.5528 324.7844 0003598 47.5114 234.2195 1.00277030 4517
SPOT 3
1 22823U 93061A 95103.24298685 -.00000013 00000-0 14721-4 0 4267
2 22823 98.7414 178.1671 0001389 77.0031 283.1301 14.20019332 80070
STELLA
1 22824U 93061B 95104.18148145 -.00000031 00000-0 50093-5 0 3810
2 22824 98.6213 181.2004 0007282 48.9342 311.2467 14.27100647 80604
AO-27
1 22825U 93061C 95100.67889719 .00000031 00000-0 30336-4 0 3827
2 22825 98.6213 178.0279 0009693 58.6665 301.5468 14.27658061 80136
IO-26
1 22826U 93061D 95103.23083531 .00000020 00000-0 25675-4 0 3818
2 22826 98.6218 180.6292 0010212 51.6475 308.5609 14.27765374 80508
HEATHSAT
1 22827U 93061E 95100.24409798 .00000043 00000-0 34885-4 0 4420
2 22827 98.6209 177.6281 0010266 49.6589 310.5485 14.27886223 80080
ITAMSAT
1 22828U 93061F 95101.14043172 .00000003 00000-0 18590-4 0 3599
2 22828 98.6193 178.6030 0011149 46.1782 314.0314 14.28094150 48304
PO-28
1 22829U 93061G 95104.16382868 -.00000006 00000-0 14994-4 0 3748
2 22829 98.6186 181.6131 0011479 35.0995 325.0941 14.28072465 80659
KO-25
1 22830U 93061H 95100.23118066 -.00000004 00000-0 15823-4 0 3897
2 22830 98.5220 171.7060 0012398 29.4826 330.7050 14.28084334 80091
GPS BIIA-23
1 22877U 93068A 95102.41300826 .00000005 00000-0 10000-3 0 2603
2 22877 55.4057 66.4220 0040302 300.6792 58.9176 2.00551058 10733
METEOSAT 6
1 22912U 93073B 95103.56218009 -.00000089 00000-0 10000-3 0 2846
2 22912 0.2560 270.8703 0000303 265.7485 217.1323 1.00271773 3540
HST Array
1 22920U 90037C 95102.32057455 .00006731 00000-0 50887-3 0 3073
```

```
2 22920 28.4731 81.4798 0002929 178.8356 181.2258 15.00488153 74406
Meteor 3-6
1 22969U 94003A 95103.76235338 .00000051 00000-0 10000-3 0 1609
2 22969 82.5575 204.1688 0014178 233.5498 126.4324 13.16728082 58403
TUBSAT-B
1 22970U 94003B 95100.30994586 .00000051 00000-0 10000-3 0 1504
2 22970 82.5630 206.5587 0014847 239.8322 120.1319 13.16824629 57957
GPS BIIA-24
1 23027U 94016A 95101.99085599 -.00000069 00000-0 10000-3 0 1907
2 23027 55.0753 7.3557 0063013 195.2933 164.5309 2.00552901 8036
Glonass 62
1 23043U 94021A 95103.29535234 -.00000020 00000-0 00000+0 0 1858
2 23043 64.7734 338.9225 0004681 181.0411 179.0139 2.13103050 7824
Glonass 63
1 23044U 94021B 95101.30103609 -.00000028 00000-0 00000+0 0 1674
2 23044 64.7683 338.9960 0027565 203.7361 156.1938 2.13103266 7783
Glonass 64
1 23045U 94021C 95103.35418430 -.00000020 00000-0 00000+0 0 1787
2 23045 64.7616 338.9349 0011191 33.6938 326.4400 2.13102669 7826
GOES 8
1 23051U 94022A 95102.30010657 -.00000261 00000-0 10000-3 0 2949
2 23051 0.1226 263.3939 0000686 193.7498 136.5726 1.00277129 11034
MSTI 2
1 23101U 94028A 95103.18117751 .00006502 00000-0 11793-3 0 1763
2 23101 97.1042 297.3515 0012998 121.7624 238.4835 15.49846132 52458
STRV-1A
1 23125U 94034B 95100.56168486 .00001030 00000-0 44851-3 0 1353
2 23125 7.4762 58.6095 7257086 65.2587 351.3463 2.29826469 6090
STRV-1B
1 23126U 94034C 95100.63303443 .00001247 00000-0 51917-3 0 1357
2 23126 7.4913 58.7741 7260995 64.9958 351.4406 2.29466439 6140
Nadezhda 4
1 23179U 94041A 95100.77208723 .00000044 00000-0 30203-4 0 914
2 23179 82.9468 197.8122 0034816 255.1259 104.6045 13.75665496 37206
Glonass 65
1 23203U 94050A 95103.02246290 -.00000003 00000-0 00000+0 0 1301
2 23203 64.7993 218.6023 0007408 143.5613 216.4777 2.13102217 5215
Glonass 66
1 23204U 94050B 95104.19516647 .00000004 00000-0 00000+0 0 1385
2 23204 64.7912 218.5973 0015038 348.3538 11.6040 2.13102265 5232
Glonass 67
1 23205U 94050C 95101.26245899 -.00000008 00000-0 00000+0 0 1249
2 23205 64.8023 218.6809 0001492 321.7328 38.2463 2.13102361 5171
DMSP B5D2-7
1 23233U 94057A 95103.16170141 .00000068 00000-0 60555-4 0 2999
2 23233 98.8857 161.8227 0012433 328.0931 31.9486 14.12594253 31973
OKEAN 1-7
1 23317U 94066A 95100.38340480 .00000148 00000-0 19067-4 0 559
2 23317 82.5393 98.0664 0028098 51.6610 308.7122 14.73918047 26631
ELEKTRO
```

```
1 23327U 94069A 95099.96090426 -.00000112 00000-0 10000-3 0 588
2 23327 0.9109 264.1867 0002756 111.3773 244.4699 1.00270063 1643
RESURS 1-3
1 23342U 94074A 95101.91952765 .00000113 00000-0 27030-4 0 934
2 23342 98.0224 162.7415 0001069 68.2221 291.9097 14.69722935 23318
Glonass 68
1 23396U 94076A 95102.04444151 .00000089 00000-0 00000+0 0 749
2 23396 64.9269 98.9412 0029840 194.7643 165.1745 2.13102774 3033
Glonass 69
1 23397U 94076B 95102.21984906 .00000089 00000-0 00000+0 0 791
2 23397 64.9130 98.9518 0015124 318.6881 41.2241 2.13102657 3034
Glonass 70
1 23398U 94076C 95102.57245789 .00000087 00000-0 00000+0 0 822
2 23398 64.9037 98.9206 0005209 284.2072 75.7562 2.13102269 3057
RS-15
1 23439U 94085A 95100.20793226 -.00000039 00000-0 10000-3 0 418
2 23439 64.8202 4.9282 0167820 274.1045 84.0713 11.27525765 11856
NOAA 14
1 23455U 94089A 95103.45408357 .00000047 00000-0 50466-4 0 1351
2 23455 98.8951 46.4965 0010340 22.8593 337.3030 14.11503246 14687
ODERACS II A
1 23471U 95004C 95103.23936866 .00022732 00000-0 12166-3 0 509
2 23471 51.6521 112.8870 0013707 201.8250 158.2199 15.80118352 10899
ODERACS II B
1 23472U 95004D 95104.26165430 .00047074 00000-0 20271-3 0 552
2 23472 51.6471 106.1902 0012292 227.8415 132.1551 15.84404560 11072
Glonass 71
1 23511U 95009A 95101.24249243 -.00000028 00000-0 00000+0 0 273
2 23511 64.7783 339.2741 0006529 331.6576 28.3569 2.13102744 749
Glonass 72
1 23512U 95009B 95100.59750720 -.00000032 00000-0 00000+0 0 295
2 23512 64.7905 339.3026 0011497 200.1433 159.8662 2.13102965 733
Glonass 73
1 23513U 95009C 95103.00219720 -.00000021 00000-0 00000+0 0 260
2 23513 64.7910 339.2015 0004512 218.3960 141.6334 2.13102631 783
Soyuz TM-21
1 23519U 95010A 95103.78341180 .00020457 00000-0 27001-3 0 380
2 23519 51.6444 120.3633 0005406 10.6782 349.8849 15.58345836 4796
SFU
1 23521U 95011A 95104.23629729 -.00002070 00000-0 -80875-4 0 318
2 23521 28.4596 149.7548 0020778 230.7836 129.0825 15.28168419 4141
GMS 5
1 23522U 95011B 95099.20000000 -.00000127 00000-0 00000+0 0 186
2 23522 1.0520 293.5980 0000069 277.8000 217.2320 1.00268949 94
1995011D
1 23524U 95011D 95090.73644879 .00000031 00000-0 10000-4 0 61
2 23524 1.0615 288.8318 0215934 221.2041 135.7395 1.01247164 149
1995011E
1 23525U 95011E 95099.81022869 .16658305 -77085-5 24745-2 0 599
2 23525 28.4674 166.2227 0006648 117.7574 243.2977 16.33170290 3595
```

```
Cosmos 2310
1 23526U 95012A 95103.85378033 .00007366 00000-0 81984-2 0 131
2 23526 82.9414 252.9226 0020664 199.9100 160.1230 13.71160075 3112
1995012B
1 23527U 95012B 95103.75508280 .00002048 00000-0 22083-2 0 159
2 23527 82.9287 252.9415 0015515 169.9886 190.7408 13.72815965 3109
Intelsat 705
1 23528U 95013A 95097.60000000 -.00000297 00000-0 00000+0 0 207
2 23528 0.0280 89.3360 0039605 188.3680 77.5640 1.00277117 104
1995013B
1 23529U 95013B 95102.17164679 .00022604 -12192-5 98578-3 0 274
2 23529 26.6055 90.0654 7510730 190.5412 132.6662 2.03251280 432
Cosmos 2311
1 23530U 95014A 95104.22269533 .00394075 57566-5 18580-3 0 575
2 23530 67.1438 341.5737 0117178 57.5199 303.7248 16.06959698 3633
1995014B
1 23531U 95014B 95086.19291859 .25635769 64237-5 22696-3 0 196
2 23531 67.1365 42.1022 0025171 80.8209 280.0470 16.49712247 743
DMSP B5D2-8
1 23533U 95015A 95103.88889263 .00000082 00000-0 67902-4 0 298
2 23533 98.8315 107.1681 0006457 189.1087 170.9974 14.12678655 2871
1995015B
1 23534U 95015B 95102.96547313 .00000906 00000-0 51057-3 0 113
2 23534 98.8273 106.2572 0003504 109.3229 250.8332 14.12891490 2742
1995015C
1 23535U 95015C 95101.19740511 -.00000025 00000-0 10000-4 0 97
2 23535 98.8275 104.5014 0006883 184.4136 175.6761 14.12686132 2498
Brasilsat B2
1 23536U 95016A 95102.16358134 -.00000292 00000-0 00000+0 0 138
2 23536 0.1214 245.0843 0004880 34.5637 278.3038 1.00276124 209
Eutelsat HB1
1 23537U 95016B 95100.53362688 .00000073 00000-0 00000+0 0 177
2 23537 0.0284 350.9533 0002121 324.1539 87.7734 1.00266393 182
1995016D
1 23539U 95016 D 95102.11876229 .00041899 00000-0 62107-2 0 64
2 23539 7.0724 344.1401 7281464 190.1357 136.4330 2.29559900 336
ORBCOMM FM1
1 23545U 95017A 95103.59050636 .00000069 00000-0 37108-4 0 127
2 23545 69.9894 89.2083 0008999 54.3818 305.8150 14.44795313 1442
ORBCOMM FM2
1 23546U 95017B 95103.44804473 .00000408 00000-0 13295-3 0 147
2 23546 69.9805 89.5001 0009391 59.1356 301.0677 14.45385828 1422
MICROLAB 1
1 23547U 95017C 95103.44839280 .00000292 00000-0 99967-4 0 111
2 23547 69.9823 89.5034 0009930 66.1739 294.0429 14.45333663 1427
1995017D
1 23548U 95017D 95103.86581613 .00000464 00000-0 14992-3 0 140
2 23548 69.9797 88.5491 0010066 72.7580 287.4660 14.45029160 1486
OFEQ 3
1 23549U 95018A 95103.54880300 .00017936 00000-0 51409-3 0 126
```

```
2 23549 143.3751 142.4335 0260321 139.1930 222.8997 15.06313641 1214
1995018B
1 23550U 95018B 95103.04469737 .00257323 -23310-5 12506-2 0 91
2 23550 143.3765 140.9647 0339754 135.1512 227.7217 15.29369433 1156
AMSC-1
1 23553U 95019A 95103.90000000 -.00000182 00000-0 00000+0 0 104
2 23553 2.8680 15.7660 1577177 177.7850 224.5430 1.07702749 84
1995019B
1 23554U 95019B 95099.54822247 -.00000625 00000-0 10000-4 0 34
2 23554 26.4385 16.3684 7518131 177.2196 33.5180 2.00901653 46
Progress M-27
1 23555U 95020A 95103.78341180 .00020457 00000-0 27001-3 0 123
2 23555 51.6444 120.3633 0005406 10.6782 349.8849 15.58345836 725
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

825. Re: OS/2 Sat tracker under dev.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: gsmith@manny.rcinet.com
Message-ID: <D7517J.IrD@dmapub.dma.org>
Source record: 25225

In <3mfoi9$14gu@bubba.ucc.okstate.edu>, chrism@osuunx.ucc.okstate.edu (Chris Morrison) writes:
>anilsson@yarrow.wt.uwa.edu.au (Andrew Nilsson) writes:
>
>>Hi All,
>
>>I am currently writing a native OS/2 satellite tracker and would like some
>>feedback on what people would like in it.(assuming anyone here uses os/2)
>>Just send me a piece of email with a list a features you would like
>>and/or any comments. I am mostly interested in the user interface and the
>>way the windows are arranged.
>
>>Andrew Nilsson, VK6JBL
>>anilsson@yarrow.wt.com.au
>
>How about some kind of drag-and-drop access to select the satellite(s)
>that are tracked. Something like this... I click a toolbar button or
>select a menu to get a window with one icon per satellite in my
>database. Just drag the icon to the main screen to include it, and drag
>a satellite pointer off the screen to remove it. Sure would beat
>clicking through lines and lines of lists. Give me a while to think of
>other suggestions. :-)
>
>Cheers, good luck, and thanks for doing this for OS/2
>Chris Morrison KG5NK
>Tulsa, OK
>
>P.S. I guess dragging and dropping could also work to load the program
>in the first place. Double-click or drag an icon for the first
>satellite to track and go from there.
>
>
Good idea, and be able to Drop the latest keps onto the icon to update to the latest keps rather than having to tell the thing which keps file to use.
-73- De Greg, N8PPZ

gsmith@manny.rcinet.com

826. Re: ftp site <amsat>

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3mrqa0$701@news.onramp.net>
Source record: 25226

```
>> where again is the AMSAT ftp site?
>>
>
>
>ftp.amsat.org
>

hmm..i tryed it and it was not there, ok, thanks anyway!

DAvid
|

try ftp.amsat.org/amsat
```

827. Re: ftp site <amsat>

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-1604951527450001@edwin-b7.ip.realtime.net>
Source record: 25227

In article <3mrl4d$1dc6@ns3-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> In article <rparsons-1504952012500001@ivy-a1.ip.realtime.net>,
rparsons@bga.com
> (Ronald G. Parsons) writes:
> >In article <3mpmg9$2n3e@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:
> >
> >> where again is the AMSAT ftp site?
> >>
> >
> >
> >ftp.amsat.org
> >
>
> hmm..i tryed it and it was not there, ok, thanks anyway!
>
> DAvid

I just checked and it IS there. I used anonymous login.

Ron

828. Question about STSPLUS Sat Tracker

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: FULLER@UWSTOUT.EDU
Message-ID: <01HPEX0AGQGY000JFF@UWSTOUT.EDU>
Source record: 25228

Trying out STSPLUS and have a question that I cannot find an answer to in the documentation.

Does anyone know what the 'highlighed data" in F3 Pass Predictions and Data Output signify. These lines always appear to be the passes with the lowest angle. Does the "highlighted data" mean more than that?

Thanks in advance!

829. Re: Question about STSPLUS Sat Tracker

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3ms8lk$p6c@over.mhv.net>
Source record: 25229

Jon H. Fuller (FULLER@UWSTOUT.EDU) wrote:
: Trying out STSPLUS and have a question that I cannot find an answer to in the
: documentation.

: Does anyone know what the 'highlighed data" in F3 Pass Predictions and Data
: Output signify. These lines always appear to be the passes with the lowest
: angle. Does the "highlighted data" mean more than that?

: Thanks in advance!

Jon,
My take on it is that it's showing the LOWEST altitude passes. I know
of no other reason why it does that other than maybe it's a bug of some
sort. Maybe someone else knows or has their own idea. GREAT program!

Tom

830. Re: Question about STSPLUS Sat Tracker

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: jim4897@athena.athenet.net
Message-ID: <3msbvl$6np@athena.athenet.net>
Source record: 25230

you may ask the author, David Ransom Jr. He has been very cooperative with me. email 75240.176@compuserve.com

831. Re: ftp site <amsat>

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3msfbi$3ih0@ns3-1.CC.Lehigh.EDU>
Source record: 25231

```
>> >> where again is the AMSAT ftp site?
>> >>
>> >
>> >
>> >ftp.amsat.org
>> >
>>
>> hmm..i tryed it and it was not there, ok, thanks anyway!
>>
>> DAvid
>
>
>I just checked and it IS there. I used anonymous login.
>
>Ron

yeah, it seems like I have to try like 2-3 times before it connects
thanks anywho

DAvid

|-------------------------------------------------------------------------|
| David Roseman | c002@lehigh.edu |
| SysOp of NODE 3 BBS | The Flying HAm - BBS |
| Running OBV/2 Software | TechnoMage - BBS |
| | N3SQE/SVARC - Ham |
| HAmmy in IRC | N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet |
|------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----|
```

832. **Shuttle Radio Communica

Newsgroup: rec.radio.amateur.space
Date: 1995-04-16 00:00:00 UTC
From: clint.bradford@woodybbs.com
Message-ID: <93.3756.7587.0NFB9F26@woodybbs.com>
Source record: 25232

Subject: **Shuttle Radio Communications**

>> Does anyone have a list of frequencies/repeaters to monitor the
>>Shuttle? Thanks in advance.

Use this for starters...

There have been many requests for "where do I find the audio for the Shuttle" on the forum. As mentioned earlier, the Goddard Amateur Radio Club (Greenbelt, MD) re-transmits the audio on a number of HF frequencies, and a number of Amateur Radio repeaters throughout North America also place the Shuttle audio on their output. This system is called "NASA Select Audio", and is usually pulled from a satellite feed or other direct method. This service is available on non-DoD missions. On some launches a video feed is also available, which is then made available on some ATV (Amateur Television) repeaters.

I have summarized those feeds that I know about below, I would encourage you to let me know of any additions or changes that you know about. Keep in mind the list will change as repeaters add or drop the audio. Also, the audio will be present only when there is activity, which is not constant, especially at night. At other times you will probably hear other Hams chatting.

Minneapolis, MN 145.150
Minneapolis, MN 147.120 (WB0BQG/R)
Los Angeles, CA 145.460
Dayton/Columbus, OH 145.110 (WB4LA) (Very Wide Coverage)
Columbus, OH 443.700
Phoenix, AZ 449.000
Ashburn, GA 147.285 (South GA)
San Joaquin Valley, CA 52.220 (Bakersfield to Stockton)
Mountain View, CA 145.580 (NASA-Ames Research Center)
Houston, TX 146.640 (W5RRR) (Johnson Space Center)
Birmingham, AL 145.150 (N4AHN/R)
Birmingham, AL 145.380
Huntsville, AL 147.100 (Marshall Center Amateur RC)
Merrit Island, FL 146.940 (K4GCC/R) (Cape Canaveral area)
Tampa, FL 444.525
St. Petersburg, FL 444.725
Cedar Rapids, IA 146.400 (NN0V)

Amateur Television

San Francisco, CA 427.250 (Mt. Diablo, vert polarization)

HF Frequencies (May change, varies according to conditions)

3.860 MHz (US and Canada)
7.185 MHz (US and Canada)
14.295 MHz (Worldwide)
21.395 MHz (Worldwide)
28.650 MHz (Worldwide)

Last Update: July 7, 1990 John Chapman WB8INY 70010,201

• wcECHO 4.0 • AR-Net: ATTENTION to Details • Mira Loma, CA • 909-681-6221

833. Icom R7100 bandwidth mods

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: horse1@ix.netcom.com
Message-ID: <3mseag$cpg@ixnews3.ix.netcom.com>
Source record: 25233
Cross-posted to: rec.radio.amateur.space,rec.radio.scanner

would anyone have any information on modifying the R7100 FM bandwidth for reception of APT sattelite images? I know that EEB in Washington, D.C. performes this modification, but I would like to find out where to get the parts so that I can perform the mods myself.

Horse1@ix.netcom.com

834. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: jmaynard@admin5.hsc.uth.tmc.edu
Message-ID: <radio/personal-intro_798149278@rtfm.mit.edu>
Source record: 25234
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 3.1.1.2
Archive-name: radio/personal-intro
Revision: 2.1 1994/11/01 03:50:23
Posting-Frequency: posted on the 15th of each month

This message describes the rec.radio.amateur.*, rec.radio.cb,
rec.radio.info, and rec.radio.swap newsgroups, as well as their Internet
mailing list counterparts and complements. It is intended to serve as a
guide for the new reader on what to find where. Questions and comments may
be directed to the author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@admin5.hsc.uth.tmc.edu. This message was last changed on 31 October
1994 to add the discussion of non-Usenet mailing lists and streamline most
of the history discussion, and to change the moderator information for
rec.radio.info.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

Over the years, as the net grew, the volume of discussion became
progressively higher. First one by one, and then as part of two
reorganizations, what was once one group became many. In the process,
developments elsewhere on the net were reflected in the groups as they were
created, most notably the change to place all of the ham radio groups in one
hierarchy.

The collection of newsgroups continues to grow as more people join the net,
and as more topics of discussion gain volume, I expect to see more groups be
created as well. This follows what is happening on the rest of the net.

Nearly all of the radio newsgroups have corresponding mailing lists, the
notable exception being rec.radio.swap. There are also a few mailing lists
that don't have newsgroups.

The Current Groups
==================

It's important to post messages to the group that's appropriate for them,
and not to the groups that aren't. The whole idea of having different
```

newsgroups is so that folks who aren't interested in, say, homebrewing, don't have to wade through messages about homebrewing on the way to read about Field Day. Posting appropriately is just good etiquette.

The rec.radio.amateur.misc group is the catchall. It is what rec.ham-radio was renamed to during the first major reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, was removed on September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there. To answer a frequently asked question: No, there is no mailing list that goes along with this group. If you can't read Usenet news directly, you're out of luck.

The group rec.radio.amateur.policy was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate - it's now legal to order a pizza on the autopatch, if you're not in the pizza business - as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The group rec.radio.cb is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently David Dodell, WB7TPY. The email address for submissions to the group is rec-radio-info@stat.com. Inquires and other administrivia should be directed to rec-radio-info-request@stat.com. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

Mailing Lists

In addition to the mailing lists that mirror the Usenet newsgroups, there also are a few that stand alone. These cover specific areas of ham radio, and discussion is focused on just those areas.

The cq-contest mailing list is for discussions of contesting in ham radio. To join, send email with the word "subscribe" on a line by itself to cq-contest-request@tgv.com.

The DX mailing list covers the finer points of DXing. This one is also joined by mailing "subscribe" on a line by itself, this time to

dx-request@unbc.edu.

There's also a VHF mailing list, for VHF operators of the weak signal persuasion. You can join this one be sending "subscribe vhf" on a line by itself to vhf-request@w6yx.stanford.edu.

All of the following mailing lists are sponsored to the Boston Amateur Radio Club, as well as some others of local interest. Thanks to N1IST for the information.

qrp-l: This is the qrp mailing list, previously maintained by Bruce Walker at Think.com. It is for discussions about the design, construction, and use of qrp (low power) radios and related equipment.
arrl-ve-list: This is a one-way list, run by Bart Jahnke of the ARRL VEC, for announcements to VEs and VE teams.
w1aw-list: ARRL bulletins, news, and information
newsline-list: Redistribution of Amateur Radio Newsline
letter-list: Redistribution of the ARRL Letter
fox-list: Fox hunting and Radio Direction Finding
fieldorg-l: ARRL field organization discussions
ham-tech: Technical discussions and questions about Amateur Radio
arrl-exam-list: amateur radio license examinations scheduled in the US and in some foreign areas.

To sign up or inquire about these lists, send mail to listserv@netcom.com with the following in the body (subject is ignored) of the message.
<listname> is the name of the list to subscribe to.
To subscribe: subscribe <listname>
To unsubscribe: unsubscribe <listname>
For more information: help
To post (to the two-way lists), send your message to <listname>@netcom.com

Please do NOT send subscription requests to the mailing lists themselves; that doesn't work very often, and is very annoying to those on the list. Also, please keep your electronic mail address current with any mailing lists you subscribe to, as dealing with returned email is a nuisance for the person maintaining the mailing list.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while

still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
"All is strange and vague." "Are we dead?" "Or is this Ohio?"
-- Yakko and Dot Warner

835. Re: ftp site <amsat>

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: drayegon@america.com
Message-ID: <NEWTNews.18184.798121551.drayegon@drayegon.america.com>
Source record: 25235

> Subject: ftp site <amsat>
> Date: 15 Apr 1995 19:56:57 -0400
> where again is the AMSAT ftp site?
> DAvid

ftp.amsat.org

if you are using a web browser you can also try it as

ftp://ftp.amsat.org netscape does this fairly well it does seem faster if you have wsftp to work with though. I think I got the last copy of it off cica.indiana.edu using web browser.
73 Ray AD4RR

836. Re: help getting 2 line keps...

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: jimkd0av@aol.com
Message-ID: <3mtpvu$e6u@newsbf02.news.aol.com>
Source record: 25236

use ftp to archive.afit.af.mil

then pub\space look for files with *.tle like amateur.tle, mir.tle,
weather.tle.

tle.new has all of the satellites in it.

gl and 73,
Jim

837. Re: Icom R7100 bandwidth mods

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: Collier_Chun@ccm.hf.intel.com
Message-ID: <3mtv48$k0s@ornews.intel.com>
Source record: 25237
Cross-posted to: rec.radio.amateur.space,rec.radio.scanner

In article <3mseag$cpg@ixnews3.ix.netcom.com>, horse1@ix.netcom.com says...
>would anyone have any information on modifying the R7100 FM bandwidth
>for reception of APT sattelite images? I know that EEB in Washington,
>D.C. performes this modification, but I would like to find out where to
>get the parts so that I can perform the mods myself.

If you don't want your '7100 hacked up, there's an external IF module that you can purchase called the Swagursat. It plugs into the IF output on the back of the '7100 and provides a 30 - 40 kHz bandwidth for APT reception. I have one, and it works okay (not great, but certainly better than without it). The only problem is that for what you get, it's pretty expensive. All it is comprised of is a metal chassis box and essentially a receiver strip from the 10.7 MHz IF back to the speaker.

Or if you're looking for an experiment with one of those IF's-on-a-chip IC's, this would be a good one.

838. Re: OS/2 Sat tracker under dev.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: tgb@bnu003
Message-ID: <TGB.95Apr17115718@bnu003>
Source record: 25238

Any fears about IBM pulling the plug on your OS?

Seems last couple communications week magazines have had articles
about IBM giving up on OS/2.

--
tgb@bnr.com home bnu002.uucp!tommyb!tom@bnu002.cncc.bnr.com
--
tgb@bnr.com home bnu002.uucp!tommyb!tom@bnu002.cncc.bnr.com

839. Shuttle/W5YI ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: rburgan@detroit.freenet.org
Message-ID: <3muarh$i8r@detroit.freenet.org>
Source record: 25239

It seems to me that the W5YI one way broadcast deletion proposal
before the Commission, would apply equally to the one way
broadcasts by the Goddard Amateur Radio Club of the Shuttle
commms. Any thoughts?
Roland Burgan, KB8XI
Hancock, MI
###
--

840. Re: Shuttle/W5YI ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: cnc23a@b4pph13e.bnr.ca
Message-ID: <3muctd$ea9@crchh327.bnr.ca>
Source record: 25240

In article <3muarh$i8r@detroit.freenet.org>, rburgan@detroit.freenet.org (Roland B. Burgan) writes:
|>
|> It seems to me that the W5YI one way broadcast deletion proposal
|> before the Commission, would apply equally to the one way
|> broadcasts by the Goddard Amateur Radio Club of the Shuttle
|> commms. Any thoughts?
|> Roland Burgan, KB8XI
|> Hancock, MI
|> ###
|> --

It would (unfortunately) seem to apply here as well. Unfortunate, because the SAREX rebroadcast has intrested many a good amateur into the hobby.

--
==========

Ken M. Edwards, PE Bell Northern Research, Research Triangle Park, NC
(919) 991-4769 email: cnc23a@bnr.ca Ham: N4ZBB Packet: n4zbb@n1gmv.nc
DX PacketCluster (tm) Node : W4DW

All opinions are my own and do not necessarily reflect the views of my employer or co-workers, family, friends, congress, or president.

841. FS: Myers new style S-band dish

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <D76zHy.1J8@murdoch.acc.Virginia.EDU>
Source record: 25241

I realize this isn't rec.radio.swap but the following rather specialized item is likely to get "lost" in the 100's of entries on that bulletin board.

I have a brand new (never rained on) Myers new style 2 part cast magnesium S-band dish. The dish works very well and I have used it with an SSB downconverter for both CW and SSB contacts on AO-13 before the orientation was altered last month. Only reason to sell is that, being a "tinkerer" I've built a slightly larger dish (with minimal signal improvment) and I don't need both. This will be a great setup for the Mode-S downlink on P3D.

New dish costs $56 plus $12 for shipping and handling. I'll sell this one for $50.00 and I'll pay the shipping anywhere in the continental U.S.

Please E-mail direct to:
sem2r@galen.med.virginia.edu

-73's de WB4QKT / Stacey

842. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: duncanr@spawar-gw1.navy.mil
Message-ID: <9503177981.AA798147134@smtp-gw.spawar.navy.mil>
Source record: 25242

```
subscribe duncanr@smtp-gw.spawar.navy.mil Ham-Space
```

843. S-band reception

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: dbraun@scdtintel.com
Message-ID: <3mupjv$bjg@inews.sc.intel.com>
Source record: 25243

I was thinking of starting to put together a S-band receive setup
for AO-13. If anyone has any advice on doing this, please let
me know! I'm especially interested in knowing about antenna designs.
Also, is the AO-13 S-band transponder healthy these days? Is
the DOVE S-band beacon working? Are there any other things on S-band
to listen to?

Thanks a lot,

Doug Braun
N1OWU
dbraun@ichips.intel.com

844. paging J.Rocci

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: stevekit@eznet.net
Message-ID: <stevekit.52.0014CB93@eznet.net>
Source record: 25244

I'm not able to return mail to you, so here is the information you need for now.

Steve Kittelsen
145-H Spanish Trail
Rochester, NY 14612

Thanks

```
**********************************************************************
* __/\__/\ Steve Kittelsen __________ *
* / /\ \ Rochester, New York \ / *
* I I I I " stevekit@eznet.net " \ / *
* \ __\/__ / * OPEN YOUR MIND * \/ *
**********************************************************************
```

845. * SpaceNews 17-Apr-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-04-17 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3muaqf$pif@pilot.njin.net>
Source record: 25245
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0417
* SpaceNews 17-Apr-95 *

BID: $SPC0417

=========
SpaceNews
=========

MONDAY APRIL 17, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* FUTURE AMERICAN VISITORS ON MIR *
==========
Astronaut Shannon W. Lucid, Ph.D., will be the second American to be a prime crew member during a five-month stay aboard Russia's space station Mir in 1996. Jerry M. Linenger (Commander, Medical Corps, USN) will be the third American to fly to the orbital laboratory, also in 1996.

John E. Blaha (Colonel, USAF, Ret.) will serve as backup to Lucid and Scott E. Parazynski will act as backup to Linenger. Lucid and Blaha have been training since February in Star City, Russia. Linenger and Parazynski will begin training at the Gagarin Cosmonaut Training Center in late May. Blaha and Parazynski will continue training at Star City for stays aboard Mir on future missions.

These assignments continue the U.S./Russia human space flight cooperation, which consists of a three-phased program.

Phase one includes seven planned Space Shuttle-Mir missions between 1995 and 1997, including rendezvous, docking and crew transfers. The Space Shuttle will assist with crew exchange, resupply and payload activities for Mir. Russian cosmonauts have flown on two Shuttle Missions - STS-60 in 1994 and STS-63 last month. Four or more U.S. astronaut stays aboard Mir are planned, totaling nearly two years of on-orbit time.

Phase two is the joint development of the core international Space Station. Phase three is the expansion of the Space Station to include all of the international partners.

Lucid, 52, has flown four times aboard the Shuttle. She was a mission specialist on STS-51-G in June 1985, STS- 34 in October 1989, STS-43 in August 1991 and STS-58 in October 1993. She received her master of science and doctorate of philosophy degrees in biochemistry from the

University of Oklahoma in 1970 and 1973 respectively.

Blaha, 52, has flown on four Shuttle missions, STS-29 in March 1989, STS-33 in November 1989, STS-43 in August 1991 and STS-58 in October 1993. He received a master of science degree in astronautical engineering from Purdue University in 1966.

Linenger, 40, flew on Discovery's STS-64 mission in September 1994. He earned a doctorate in medicine from Wayne State University in 1981 and a master of public health degree in health policy and a doctor of philosophy degree in epidemiology from the University of North Carolina in 1989.

Parazynski, 33, was a member of Atlantis' STS-66 crew in November 1994. He completed medical school at Stanford University in 1989 and served his medical internship at the Brigham and Women's Hospital of Harvard Medical School in 1990.

[Info via NASA]

* RS-15 DX NEWS *
==========
James Tudehope, KL7QR, of Valdez, Alaska reported contacting Cyo, JA0BBW, in Japan via RS-15 using CW from 05:16 GMT to 05:25 GMT on 14-Apr-95. James uses 100 watts of transmitter power into a ground plane on 2 meters for his uplink to the satellite. His downlink antenna consists of a dipole strung between trees.

KL7QR was also able to contact Steve, VE3TFU, near Toronto, Canada on RS-15 using SSB. He received a 5x5 signal report. James perfers to operate CW on RS-15 because he seems to get more use of the satellite from horizon to horizon, as opposed to operating SSB where he has a narrower window of good copy. James can usually be found on a downlink frequency of 29.375 MHz on both RS-15 and RS-10 satellites.

* THREAT TO HAM BULLETINS *
==========
A petition for rule making before the FCC would eliminate all one-way transmissions such as code practice and information bulletins on the amateur bands below 30 MHz.

The FCC has assigned file number RM-8626 to the petition, which was filed by Frederick O. Maia, W5YI, publisher of the commercial newsletter "The W5YI Report". The petition seeks to eliminate the rules that permit one-way information bulletins and Morse code practice in the amateur bands below 30 MHz. The effect of the petition would be to silence W1AW bulletin and code practice transmissions, among others.

Maia calls the FCC rule that permits certain one-way transmissions on the amateur bands "a very permissive category and taken in its broadest context, permits just about anything to be transmitted that is even remotely associated with the amateur service."

Maia says that code practice is now available on computer software, and information bulletins about amateur radio can be had on various computer on-line services.

Comments on the petition may be sent in the form of a letter to the Secretary, FCC, Washington, DC 20554. The file number, RM-8626, should be shown prominently at the top. An original and five copies is preferred, but single copy comments will be accepted.

A copy should also be sent to Mr. Maia's lawyer, Raymond A. Kowalski, Keller and Heckman, 1001 G Street NW, Washington, DC 20001. The deadline for comments on the petition is May 4, 1995.

[Info via ARRL]

* AMSAT-OSCAR-10 NEWS *
========================
Benoit, VE2VB, reports that the AO-10 satellite is performing well. Benoit is using a Kenwood TS-790A with KLM 22-C downlink and KLM 40-CX uplink antennas with no preamp on receive and no external power amplifier on transmit. He's worked into Germany, France, England, USA, and many more areas of the world on the satellite.

* NEWS CORRECTION *
====================
The SpaceNews BBS in Tacoma, Washington is on 145.690 MHz, and it is linked to the N7SBP - UO-22 SatGate gateway.

[Info via Mario, KD6ILO]

* FEEDBACK/INPUT WELCOMED *
===========================
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net

Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

846. Re: WISP Help Needed

Newsgroup: rec.radio.amateur.space
Date: 1995-04-18 00:00:00 UTC
From: Ken Quinn <kquinn@shadow.net>
Message-ID: <3mv6ta$eg@anshar.shadow.net>
Source record: 25246
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc

Gerald Schmitt <ggs@aerie.lanl.gov> wrote:
>
>The antennas point and the rig get tuned. The 9600 baud signal
>breaks right through the squelch, the port 2 receive light comes
>on solid, the connect light flickers. On the bottom of the status
>display for msre the "T:" display racks up bytes at a great rate
>but at the end of the pass I have nothing but KISS files for my
efforts.

Gerald, it sounds like the TNC is doing fine (at least receiving), "T:"
will only increment on valid KISS packets from the TNC. The "F:" and
"D:" boxes should be incrementing also. If "D:" is incrementing on you
can't call up the directory with ViewDir, you may want to check your
subdirectory assignments for each satellite.

BTW, you can turn off the KISS file option (it just clutters up the HD).

>I would guess I have something set wrong but I can't figure it
>out. For the first effort I am just trying to get a directory
>so no joy. Any help will be greatly appreciated.
>By way of my contribution I played with the mike drive on the 736
>with the deviation meter in line and found no change in deviation.

Maximize the mspe window, so that you can view everything coming from
bird and try sending some manual fill requests (directory or file,
doesn't
matter) to see if the bird responds. If no OK's or NO-1's, then you're
not
making it. You may want to look at your 736 mod to the varactor or your
cable from the TNC to the radio.

Just some ideas, hope they help.
73's and Good Luck de Ken, N4SMY

847. some sat info please...

Newsgroup: rec.radio.amateur.space
Date: 1995-04-18 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3n1dtf$1llt@ns3-1.CC.Lehigh.EDU>
Source record: 25247

I resently got some sat info <either here or rec.space.news> but they
have Meteosat2,3 at 137.??MHz and GOES sats also at 137.??MHz
they are all geosync. Shouldn't they be in the 1691MHz range and now the
137MHz range?
please help....

btw: WHY is arsene still in keps if it doesn't work and never did?

DAvid
|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

848. Re: Shuttle/W5YI ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-18 00:00:00 UTC
From: Ken Quinn <kquinn@shadow.net>
Message-ID: <3mv7l2$eg@anshar.shadow.net>
Source record: 25248

rburgan@detroit.freenet.org (Roland B. Burgan) wrote:
>
>It seems to me that the W5YI one way broadcast deletion proposal
>before the Commission, would apply equally to the one way
>broadcasts by the Goddard Amateur Radio Club of the Shuttle
>commms. Any thoughts?

Roland, I think W5YI is more interested in the CW practice bullitens coming from W1AW because it cuts into his business of selling code practice tapes and software... Maybe I'm reading it wrong, but it sure seems like it's for less than altruistic reasons! But I would agree that it does seem to be fuzzy in that area. I believe his lawyer is fielding questions on these issues... saw the name and number in one of the recent Space News bullitens.

73's, Ken - N4SMY -

849. Re: OS/2 Sat tracker under dev.

Newsgroup: rec.radio.amateur.space
Date: 1995-04-18 00:00:00 UTC
From: bobo@mugin
Message-ID: <2f936131.4d5547494e@mugin.DIALix.oz.au>
Source record: 25249

In article <TGB.95Apr17115718@bnu003>,
Tom G. Brusehaver/Consultant Euler Solutions <tgb@bnr.com> wrote:

>Any fears about IBM pulling the plug on your OS?

>Seems last couple communications week magazines have had articles
>about IBM giving up on OS/2.

There is no truth in that rumour.

--
// Bob Ogden. -- .-_|\ ---
\\ Preferred: bobo@mugin.DIALix.oz.au / \
// Alternate: bobogden@iinet.com.au Perth-> *_.-._/
\\ -- v ---

850. Re: WISP Help Needed

Newsgroup: rec.radio.amateur.space
Date: 1995-04-19 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3n3bpc$5k8@newshost.lanl.gov>
Source record: 25250
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc

Ken and all who offered help,

It is running now. The problem was with the KPC-9612. WISP
needs to be able to access the extended KISS instruction set
and use port2 apparently the 9612 defaults to port1.
What I learned is there are a couple of things that have to be
done form another terminal program before MSPE runs.

The TNC interface has to be in terminal for you to be able
to access these commands. If they won't work type "int term"
from the cmd: prompt. The TNC setup commands are:
maxusers 0/1 ;this locks TNC to port2
mydrop 1/0 ;this allows the extended KISS command set on port2

When this is done get out of your terminal program and start WISP as usual.

:note the maxusers may not be necessary I will experiment and
report. With the new WISP you can do this from within the program
I expect to get this done this weekend and will post instructions
Monday.

73 de Jerry finally on the birds.
KC5EGG @KO-23 @KO-25

851. * CURRENT ver of Instant Track? *

Newsgroup: rec.radio.amateur.space
Date: 1995-04-19 00:00:00 UTC
From: bruce@ancc.com
Message-ID: <D7ArDA.3r4@ancc.com>
Source record: 25251

What is the current ver of Instant track? I'm still running ver. 1.0,
is there a more current one available? Are there upgrades via any
BBS's?

Please E-mail, and I'll summarize one post on the newsgroup.

Thanks
Bruce N9EHA

Bruce Warrington
American National Can Corp.
Chicago, IL USA
bruce@ancc.com

${opinions} == "my_own" && !those.of.ancc

852. RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-20 00:00:00 UTC
From: adam@libertynet.org
Message-ID: <3n6bvc$mc9@rodan.UU.NET>
Source record: 25252
Cross-posted to: news.announce.newgroups,news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

```
REQUEST FOR DISCUSSION (RFD)
unmoderated group rec.radio.amateur.low-profile

Group Name: rec.radio.amateur.low-profile
Proponent: Adam O'Donnell <adam@libertynet.org>
Distribution: worldwide
Newsgroups file: Operation of low-profile amateur radio stations.

This is a formal Request For Discussion on the creation of an unmoderated
Usenet newsgroup, rec.radio.amateur.low-profile.

This RFD has been posted in accordance with the Guidelines for Newsgroup
Creation. Its language is based on previously submitted RFDs.

**********************************************************************

NOTE: This is not a Call for Votes (CFV). Do not try to vote now.

This message begins a discussion period considering the creation of a
rec.radio.amateur.low-profile newsgroup. Discussion should take place in
news.groups. All follow-up posts should be made to news.groups.

Any comments such as "I vote yes for rec.radio.amateur.low-profile" will
be treated only as a positive reaction to the proposed charter and not
as a yes vote on the creation of the group. The CFV will contain
instructions on how to vote.

**********************************************************************

CHARTER:

Rec.Radio.Amateur.Low-Profile is a newsgroup devoted to those
amateurs who, for various reasons, must configure their radio stations
to operate from restrictive areas such as condos, apartments, townhouses,
neighborhoods with outdoor antenna restrictions, ships/boats, mobile
homes,
or wherever they fry their burgers and call home.

The objective of this newsgroup is to encourage us to investigate
means of employing all of the modes available to us for as many different
purposes as possible. For examples, how can we use: FM (frequency
modulation), CW (morse code),
SSB (Single Side Band: Voice on the Short Wave bands) on: LongWave,
ShortWave, VHF (Very High Frequency), UHF (Ultra High Frequency),
MicroWave, and Satellite.
```

Operators who use the newsgroup will be encouraged to describe in
detail their home station and how they solved the never-ending problem of
small city lots and housing development "no-antenna" contracts.

Rec.Radio.Amateur.Low-Profile will be an unmoderated newsgroup.
Users of the group are already experienced netiquette because of their
experience in Amateur Radio, which is a sort of Ladies/Gentleman's club.

A Rec.Radio.Amateur.Low-Profile FAQ will be posted a few weeks after the
creation of the newsgroup.

REASONING:

There are many newsgroups and mailing lists that exist on the
Internet for amateur radio antennas, low power operation, satellite
communications, etc. where operators in restrictive conditions post
continually post messages for help with their situation. In more cases
than not, the operator cannot find sufficient help on the 'group or list.

There should be a place where people who have solved their problems
with cramped quarters can post their problems to a group of knowledgable
amateurs.

I have conducted several informal polls and have discovered
that there are many amateurs (and, actually, non-amateurs) who would
very much favor and enjoy the creation of a newsgroup of this sort.

Distribution of RFD:

The complete official messages - RFD, CFV and vote results
will be posted to these required or affected newsgroups:
news.announce.newgroups, news.groups
rec.radio.amateur.antenna, rec.radio.amateur.misc,
rec.radio.amateur.homebrew, rec.radio.amateur.equiptment,
rec.radio.amateur.space, rec.radio.amateur.policy

Procedure for creating this newsgroup:

Interested parties are encouraged to comment on this proposal in
news.groups. Please post your comments *only* in news.groups.

After 21 days, if there appears to be a strong consensus in favor of
this proposal as it is written here, a CFV will be posted, which
will initiate the voting process; otherwise, discussion will
continue until a more refined proposal can be prepared.

After the CFV is posted, the voting period will be at least 21 days.
If the group passes by receiving 100 more YES votes than NO votes,
and (at least) two-thirds of the total vote is affirmative, the
newsgroup
rec.radio.amateur.low-profile will be created.

Again, please do *not* vote now. The voting process has not begun,
and your votes will be DISCARDED if you attempt to do so.

For more information on the newsgroup creation process, see the
documents entitled "How to Create a New Usenet Newsgroup" and
"Usenet Newsgroup Creation Companion", posted regularly to news.groups,
news.announce.newusers, and news.answers, and available for ftp at
rtfm.mit.edu in /pub/usenet/news.groups.

72, 73 (best regards)
Adam O'Donnell <adam@libertynet.org>

853. PacComm Spirit-2 hook up.....

Newsgroup: rec.radio.amateur.space
Date: 1995-04-20 00:00:00 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1148761512A@128.220.101.100>
Source record: 25253

Hi...

I am replacing my DSP-2232 with a PacComm Spirit-2 G3RUH TNC and am having some problems... was wondering if anyone can see where I have gone astray or make some sugguestions....

first lets establish the baseline ...
system currently is an Icom 970 hooked up to a DSP-2232 and in that configuration I get about 500KB on a good pass of KO-23/25 (pretty good considering I live in a valley and am surrounded by very tall trees)...

my Spirit 2 arrived yesterday (from the folks at PacComm) and I built an adapter cable that fits on the end of my IC-970 to DSP-2232 and adapts that cable to go to the Spirit... I set up a new communications configuration in WISP for a TNC-2 and setup for KO-23 & KO-25 to use that configuration.... everything looks good... MSPE comes up and the TNC goes into KISS mode ... DCD light comes on on the TNC about where I would expect it to but very few packets are decoded ...I had a great pass last night (my best with the Spirit-2) and only got 3K of data ... I rang out the adapter cable and found no shorts/or high resistance paths ....and since I am preperly decoding some packets I think it must be hooked up to the correct pins... Soooo... why no data????

Are there some setups I must do to the PacComm that I am missing???

HELP!!!!!

& 73

Art -- AA3GU

854. Re: **Shuttle Radio Communications**

Newsgroup: rec.radio.amateur.space
Date: 1995-04-20 00:00:00 UTC
From: cnc23a@b4pph13e.bnr.ca
Message-ID: <3n681s$jh7@crchh327.bnr.ca>
Source record: 25254

In article <BO78ZGK.perriello@delphi.com>, Dean Perriello <perriello@delphi.com> writes:
|> Hi Danny,
|> You request for frequencies to monitor the shuttle:
|> If I knew your location, you could listen to live ground-to-air
|> rebroadcasts from the Goddard Amateur Radio Club. I usually listen on
|> 14295.
|>
|> If you want to try and work the shuttle, they have an uplink freq of
|> 144.45 FM (simplex) and 144.47 FM. The downlink is 145.84 FM (simplex).
|> Note that you will need a radio capable of operating split freq. i.e. I
|> am using a Yaesu FT-736R to communicate digitally or via voice.
|>
|> MIR uses 145.55 simplex, some voice on this freq, usually they leave
|> the packet BBS on.
|>
|> Hope this helps, Dean N4TYS

I thought this was only for a specific mission (Mir-Shuttle joint) sometime
in July. The previous and following missions (I have been told) will use
the standard:

FM Voice Downlink: (Worldwide) 145.55 MHz
FM Voice Uplink: 144.91, 144.93, 144.95, 144.97, and 144.99 MHz
FM Voice Uplink: (Europe only) 144.70, 144.75, and 144.80 MHz
FM Packet Downlink: 145.55 MHz
FM Packet Uplink: 144.49 MHz

Is this incorrect ?

--
==========

Ken M. Edwards, PE Bell Northern Research, Research Triangle Park, NC
(919) 991-4769 email: cnc23a@bnr.ca Ham: N4ZBB Packet: n4zbb@n1gmv.nc
DX PacketCluster (tm) Node : W4DW

All opinions are my own and do not necessarily reflect the views of
my employer or co-workers, family, friends, congress, or president.

855. Re: **Shuttle Radio Communications**

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Message-ID: <3n8529$k25@niven.ksc.nasa.gov>
Source record: 25161

cnc23a@b4pph13e.bnr.ca (Ken Edwards) wrote:
>
> In article <BO78ZGK.perriello@delphi.com>, Dean Perriello <perriello@delphi.com> writes:
> |> Hi Danny,
> |> You request for frequencies to monitor the shuttle:
> |> If I knew your location, you could listen to live ground-to-air
> |> rebroadcasts from the Goddard Amateur Radio Club. I usually listen on
> |> 14295.
> |>
> |> If you want to try and work the shuttle, they have an uplink freq of
> |> 144.45 FM (simplex) and 144.47 FM. The downlink is 145.84 FM (simplex).
> |> Note that you will need a radio capable of operating split freq. i.e. I
> |> am using a Yaesu FT-736R to communicate digitally or via voice.
> |>
> |> MIR uses 145.55 simplex, some voice on this freq, usually they leave
> |> the packet BBS on.
> |>
> |> Hope this helps, Dean N4TYS
>
> I thought this was only for a specific mission (Mir-Shuttle joint) sometime
> in July. The previous and following missions (I have been told) will use
> the standard:
>
> FM Voice Downlink: (Worldwide) 145.55 MHz
> FM Voice Uplink: 144.91, 144.93, 144.95, 144.97, and 144.99 MHz
> FM Voice Uplink: (Europe only) 144.70, 144.75, and 144.80 MHz
> FM Packet Downlink: 145.55 MHz
> FM Packet Uplink: 144.49 MHz
>
>
> Is this incorrect ?
>
> --
> ==
>
> Ken M. Edwards, PE Bell Northern Research, Research Triangle Park, NC
> (919) 991-4769 email: cnc23a@bnr.ca Ham: N4ZBB Packet: n4zbb@n1gmv.nc
> DX PacketCluster (tm) Node : W4DW
>
> All opinions are my own and do not necessarily reflect the views of
> my employer or co-workers, family, friends, congress, or president.

Ken:
The frequencies listed by Dean are correct for all Shuttle-MIR

docking missions. The frequencies you list will be in effect for all other missions. This year, only two docking missions are scheduled, STS-71, now targeted for early July, and STS-74, tentatively scheduled for late October.

73 de Roger, KD4ITU

856. Summ: Current ver of Instant Track

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: root@ancc.com
Message-ID: <D7E0As.9A8@ancc.com>
Source record: 25162

Seems the current ver of instant track is 1.00b.
I also got a recommendation to get the instant track utilities, from
ftp.amsat.org

Have to look for the latest version at Dayton.

Thanks to Wayne Estes WD5FFH (wayne@csg.mot.com)
and Gary WA4YMZ (WA4YMZ@AMSAT.ORG)

Bruce N9EHA
(bruce@ancc.com)

857. Parabolic dish manufacturers?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: twsmith@netcom.com
Message-ID: <twsmithD7EApF.598@netcom.com>
Source record: 25163

I need help finding the names of companies other than Andrew, who make reasonably priced 2 ft to 4 ft parabolic antennas. I'm especially interested in commercial quality dishes that could be mounted on a tower and would survive reasonable winds. Things like spun or stamped aluminum, solid or perforated.

If you can send me any company names and phone numbers I'll be grateful.

Thanks,

Terry K7YNO

--
twsmith@netcom.com

858. Re: What's up and working?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <3n902g$o13@newsbf02.news.aol.com>
Source record: 25164

If you are just interested in mode B birds, then you have AO10 (sort of) and AO13.

I say "sort of" because the on-board comptuer has failed on AO10 and it cannot be controlled. I have still made several contacts thru it.

73 David, KC6WYG

859. Macintosh Software?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: "John R. Martinelli" <72567.1155@CompuServe.COM>
Message-ID: <3n9a9p$7k5$1@mhafc.production.compuserve.com>
Source record: 25165

Hi,
I'm making it to Dayton this year and I am looking for a good Mac
Sat program. Anyone know of any good ones I might find there?
Thanks!
-John WB3FLM

--
John

860. Re: Parabolic dish manufacturers?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3n9cgd$qpi@news.doit.wisc.edu>
Source record: 25166

Terry,

You may want to contact Stu Gurske at SWAGUR Enterprises. I'm getting two-four footers from SWAGUR to mount on a tower for weather satellite work.

You can reach SWAGUR at 608.592.7409 or 73004.3461@compuserve.com

Good Luck,

Kevin N9JKP

861. Re: Parabolic dish manufacturers?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3n9che$qpi@news.doit.wisc.edu>
Source record: 25167

Terry,

You may want to contact Stu Gurske at SWAGUR Enterprises. I'm getting two-four footers from SWAGUR to mount on a tower for weather satellite work.

You can reach SWAGUR at 608.592.7409 or 73004.3461@compuserve.com

Good Luck,

Kevin N9JKP

862. Re: Parabolic dish manufacturers?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3n9ci2$qpi@news.doit.wisc.edu>
Source record: 25168

Terry,

You may want to contact Stu Gurske at SWAGUR Enterprises. I'm getting two-four footers from SWAGUR to mount on a tower for weather satellite work.

You can reach SWAGUR at 608.592.7409 or 73004.3461@compuserve.com

Good Luck,

Kevin N9JKP

863. Re: Parabolic dish manufacturers?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3n9cuu$erc@news.doit.wisc.edu>
Source record: 25169

Terry,

You may want to contact Stu Gurske at SWAGUR Enterprises. I'm getting two-four footers from SWAGUR to mount on a tower for weather satellite work.

You can reach SWAGUR at 608.592.7409 or 73004.3461@compuserve.com

Good Luck,

Kevin N9JKP

864. Re: Parabolic dish manufacturers?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3n9da1$erc@news.doit.wisc.edu>
Source record: 25170

Terry,

I'm getting two 4' dishes from SWAGUR Enterprises. I'm going to be mounting them on a tower (one will be for WEFAX and the other for HRPT). You can reach them at 608.592.7409 or 73004.3461@compuserve.com

73,
Kevin N9JKP

--
****
* Kevin G. Shea N9JKP *
* 4460 Dahmen Pass *
* Cross Plains, WI 53528 USA *
* 608.789.4326,voice; 608.798.1747,fax *
****

865. Re: Macintosh Software?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-2104951818400001@maria-4d.ip.realtime.net>
Source record: 25171

In article <3n9a9p$7k5$1@mhafc.production.compuserve.com>, John R. Martinelli <72567.1155@CompuServe.COM> wrote:

> Hi,
> I'm making it to Dayton this year and I am looking for a good Mac
> Sat program. Anyone know of any good ones I might find there?
> Thanks!
> -John WB3FLM
>
> --
> John

If by Mac Sat program, you want an orbit calculation program, I'd recommend OrbiTrack 2.1.5 available from BEK Developers, P.O. Box 47114, St. Petersburg, FL 33743-7114.

If you are interested in other Mac stuff, e-mail me with more scecific requests.

Ron W5RKN

866. Apology

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3n9dk3$eus@news.doit.wisc.edu>
Source record: 25172

I'm sorry for the multiple posting. I have a beta version of Netscape and when I tried to post a reply it told me it was unsuccessful....It LIED to me for when I signed on a couple of minutes later I saw the multiple posts.

Again I'm sorry for the bandwidth, I'll be reporting the bug and I will be more careful

73,
Kevin N9JKP

--
****
* Kevin G. Shea N9JKP *
* 4460 Dahmen Pass *
* Cross Plains, WI 53528 USA *
* 608.789.4326,voice; 608.798.1747,fax *
****

867. ATS-3 Info?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: nogap@ix.netcom.com
Message-ID: <3n6ud0$p4v@ixnews3.ix.netcom.com>
Source record: 25255

Hello there.

Can anybody provide info regarding ATS-3? Specifically, I need
up/downlink freqs, modes currently utilized, and either a Keplerian
element set, or, if I remember correctly and this bird is geosync'ed,
where to find it.

868. What's up and working?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: crippel@marlin.exchange.com
Message-ID: <3n6vq2$2tu@grouper.exchange.com>
Source record: 25256

I was quite active on AO10 a few years ago and have been off for a "bit." I like to mode "B" birds in that type of orbit and am a little confused as to what is up and how it it working.

869. Re: Icom R7100 bandwidth mods

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3n7iim$5qa@sandra.teleport.com>
Source record: 25257
Cross-posted to: rec.radio.amateur.space,rec.radio.scanner

In article <3mseag$cpg@ixnews3.ix.netcom.com>, horse1@ix.netcom.com said...

>would anyone have any information on modifying the R7100 FM bandwidth
>for reception of APT sattelite images? I know that EEB in Washington,
>D.C. performes this modification, but I would like to find out where to
>get the parts so that I can perform the mods myself.

The Swagursat uses the 10.7 mHz IF output. It does seem to be a lot of $$ for the unit, but I have priced out filters and they are not cheap for this not common bandwidth.

The Swagursat converts the 10.7 signal to 455 kHz, and then applies the ~40 kHz filter before the detector. As shipped, mine had a response about 3 kHz low. It was a simple adjustment, however.

If the IC-R7100 follows my R-7000 design (I don't see why not) it has a 10.7 mHz IF on FM, and you can replace whatever filter you don't expect to use with a ~40 kHz unit. They are about $100.00. I have seen them offered by Spectrum International, but a few years ago they had prices that seemed pretty high (around $150.00).

The Swagursat is by far the easiest way to do it. I am using one, and once adjusted it has proved out quite well.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

870. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: R lindberg + E Winnie <rlindber@kendaco.telebyte.com>
Message-ID: <Pine.LNX.3.91.950421071354.14921A-100000@kendaco.telebyte.com>
Source record: 25258
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

I never thought I would say this about an amateur newsgroup, but I
think this is a BAD idea, too narrow in focus and with too limited a base
of users.

Ralph Lindberg N7BSN Ellen Winnie N7PYK
e-mail => dragonsl@scn.org (best address, read daily, forwards to find us)
rlindberg@kpt.nuwc.navy.mil (last resort only)

871. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: cweddle@astro.as.arizona.edu
Message-ID: <3n8htf$cn0@news.ccit.arizona.edu>
Source record: 25259
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In article <Pine.LNX.3.91.950421071354.14921A-100000@kendaco.telebyte.com> R lindberg + E Winnie <rlindber@kendaco.telebyte.com> writes:
> I never thought I would say this about an amateur newsgroup, but I
>think this is a BAD idea, too narrow in focus and with too limited a base
>of users.
>
>
>Ralph Lindberg N7BSN Ellen Winnie N7PYK
>e-mail => dragonsl@scn.org (best address, read daily, forwards to find us)
>rlindberg@kpt.nuwc.navy.mil (last resort only)
>

Do you mean the topic of "antennas" is too narrow in focus? I would expect such a topic to catch the interest of quite a few amateurs. Seems to be doing that now, methunks.
Chris N7RME

872. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-21 00:00:00 UTC
From: k2ph@dxis.monroe.pa.us
Message-ID: <D7EAIp.Dov@dxis.monroe.pa.us>
Source record: 25260
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

From article <3n8htf$cn0@news.ccit.arizona.edu>, by cweddle@astro.as.arizona.edu (Chris Weddle):
> In article <Pine.LNX.3.91.950421071354.14921A-100000@kendaco.telebyte.com> R lindberg + E Winnie <rlindber@kendaco.telebyte.com> writes:
>> I never thought I would say this about an amateur newsgroup, but I
>>think this is a BAD idea, too narrow in focus and with too limited a base
>>of users.
>
> Do you mean the topic of "antennas" is too narrow in focus? I would expect
> such a topic to catch the interest of quite a few amateurs. Seems to be
> doing that now, methunks.

Exactly! The rec.radio.amateur.antenna group already exists and
appears to be a perfect forum for the discussion of antennas,
low profile and otherwise.

73,
Bob K2PH

--
+------------------ \-\-\-\ -----------------------------+
Bob Schreibmaier K2PH	INTERNET: k2ph@dxis.monroe.pa.us
(a.k.a. "The QRPer")	ICBM: 40o55'N 75o30'W
Kresgeville, PA	Free the Intel 486!
+---+

873. Re: Macintosh Software?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-22 00:00:00 UTC
From: Sean Sharkey <sean@g0oanint.demon.co.uk>
Message-ID: <9504220937030037@g0oanint.demon.co.uk>
Source record: 25173

In article <3n9a9p$7k5$1@mhafc.production.compuserve.com>, John R. Martinelli writes:

>
> Hi,
> I'm making it to Dayton this year and I am looking for a good Mac
> Sat program. Anyone know of any good ones I might find there?
> Thanks!
> -John WB3FLM
>
> --
> John

If you have FTP access then try

ftp.demon.co.uk /pub/ham/mac

you'll find a couple of Mac Sat programmes in there all of which are Shareware, of there is also lots of other Mac Ham type software.

Regards,

Sean.

874. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-22 00:00:00 UTC
From: dmoorman@interaccess.com
Message-ID: <dmoorman-2204952104340001@nb-dyna71.interaccess.com>
Source record: 25174
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In article
<Pine.LNX.3.91.950421071354.14921A-100000@kendaco.telebyte.com>, R
lindberg + E Winnie <rlindber@kendaco.telebyte.com> wrote:

> I never thought I would say this about an amateur newsgroup, but I
> think this is a BAD idea, too narrow in focus and with too limited a base
> of users.

As a condo-dwelling ham, I can see a use for this group. It would be
handy to be able to exchange information about invisible antennas and
RFI/TVI type problems, etc., in a focused group. I couldn't say how many
people woudlpost to it, though. Anyone else interested?

Dave K9SW
Downers Grove,
Illinois

875. Radio meteor help

Newsgroup: rec.radio.amateur.space
Date: 1995-04-22 00:00:00 UTC
From: jalan@mail.ast.cam.ac.uk
Message-ID: <3nard2$ipt@lyra.csx.cam.ac.uk>
Source record: 25175

What equipment is needed to 'listen in' to meteors? I have little knowledge of electronics (although willing to learn!) so the simpler the better. Pointers to information gratefully accepted.

876. Two-Line Orbital Element Sets (TLE590)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-22 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.798576799@dolphin>
Source record: 25176

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #590 -
Alouette 1
1 00424U 62049A 95111.14940190 .00000165 00000-0 18400-3 0 984
2 00424 80.4617 341.1579 0024549 42.7893 317.5156 13.67838733624509
ATS 1
1 02608U 66110A 95104.44575540 -.00000064 00000-0 10000-3 0 9279
2 02608 14.6308 357.3263 0009845 57.0437 303.0338 1.00315398 20553
ATS 3
1 03029U 67111A 95111.24514148 -.00000129 00000-0 10000-3 0 3526
2 03029 14.8008 4.2800 0008766 276.1841 271.2691 1.00272828100523
Cosmos 398
1 04966U 71016A 95111.22971093 .00121069 81506-5 14981-3 0 8214
2 04966 51.4204 125.9262 0664101 255.0578 97.5971 14.75269831816739
Starlette
1 07646U 75010A 95111.15362365 -.00000147 00000-0 -52700-5 0 8794
2 07646 49.8285 18.0662 0205739 273.2855 84.4525 13.82188292 20455
LAGEOS
1 08820U 76039A 95106.73618685 .00000009 00000-0 10000-3 0 981
2 08820 109.8375 239.5479 0044115 220.2740 139.4459 6.38664506186536
ETS-2
1 09852U 77014A 95097.35227856 -.00000053 00000-0 10000-3 0 210
2 09852 12.6382 38.0039 0002444 46.6282 313.3665 0.99994637 13279
GOES 2
1 10061U 77048A 95102.48639942 .00000065 00000-0 10000-3 0 5155
2 10061 11.7022 42.1601 0011805 119.5777 40.7098 1.00166290 10115
IUE
1 10637U 78012A 95111.11760955 -.00000222 00000-0 10000-3 0 1269
2 10637 35.1016 89.9067 1324319 44.9163 61.5191 1.00241289 15695
GPS BI-01
1 10684U 78020A 95101.11177423 -.00000038 00000-0 10000-3 0 3493
2 10684 64.8070 36.6762 0060981 163.7702 196.4200 1.98069643110837
```

```
GPS BI-02
1 10893U 78047A 95098.35187616 .00000031 00000-0 10000-3 0 1568
2 10893 63.3660 274.9751 0221444 14.3536 346.2599 2.01627358124022
GOES 3
1 10953U 78062A 95110.40931411 .00000061 00000-0 10000-3 0 4772
2 10953 10.6913 44.8277 0003264 95.6257 41.2734 1.00293483 14805
SeaSat 1
1 10967U 78064A 95110.73560940 .00000004 00000-0 45822-4 0 3902
2 10967 107.9995 18.6281 0001724 251.8351 108.2609 14.38027364880572
GPS BI-03
1 11054U 78093A 95102.46301566 .00000020 00000-0 10000-3 0 2760
2 11054 63.0618 272.9100 0044686 177.0368 182.9757 1.93505222120302
Nimbus 7
1 11080U 78098A 95108.16154492 -.00000108 00000-0 -59856-4 0 4934
2 11080 99.0122 344.7137 0009586 37.3846 322.7972 13.83711982832258
GPS BI-04
1 11141U 78112A 95104.04411793 -.00000039 00000-0 10000-3 0 9688
2 11141 64.8051 38.3221 0048504 26.5384 333.6935 1.92894816 9584
GPS BI-05
1 11690U 80011A 95102.07505353 -.00000036 00000-0 10000-3 0 9019
2 11690 65.1398 38.2978 0145552 195.0899 164.4645 2.00562830125533
GPS BI-06
1 11783U 80032A 95104.77897211 .00000005 00000-0 10000-3 0 680
2 11783 62.5066 268.0883 0217507 29.2354 331.9913 2.03456652110092
GOES 5
1 12472U 81049A 95104.78384600 -.00000276 00000-0 10000-3 0 8510
2 12472 7.4098 54.7603 0005525 11.3198 348.6673 1.00298552 8794
Cosmos 1383
1 13301U 82066A 95109.03666314 -.00000001 00000-0 -18724-4 0 3974
2 13301 82.9282 85.5203 0027214 335.5605 24.4250 13.68064809639243
LandSat 4
1 13367U 82072A 95109.18538593 .00000054 00000-0 21924-4 0 6599
2 13367 98.1331 166.4535 0007515 30.1866 329.9764 14.57151726678627
DMSP B5D2-1
1 13736U 82118A 95105.50950276 .00000074 00000-0 49734-4 0 7039
2 13736 98.6305 295.7003 0007897 192.8091 167.2890 14.25725375639989
IRAS
1 13777U 83004A 95110.54163881 .00000177 00000-0 15193-3 0 9348
2 13777 98.9675 300.0442 0011830 182.8374 177.2717 13.99235245294123
Cosmos 1447
1 13916U 83021A 95108.60932666 .00000033 00000-0 19607-4 0 4948
2 13916 82.9434 145.8165 0036195 258.6941 101.0148 13.74324153605280
TDRS 1
1 13969U 83026B 95108.78765713 -.00000203 00000-0 10000-3 0 4078
2 13969 8.2782 47.8912 0005382 273.4020 253.6000 1.00265335 17115
GOES 6
1 14050U 83041A 95110.26398819 .00000012 00000-0 10000-3 0 3832
2 14050 6.2336 57.8362 0005776 347.9370 131.3441 1.00310937101947
OSCAR 10
1 14129U 83058B 95097.81955190 .00000136 00000-0 10000-3 0 3458
```

```
2 14129 26.4996 274.3259 6012937 266.6042 27.2074 2.05876232 60880
LandSat 5
1 14780U 84021A 95106.68079917 .00000028 00000-0 16120-4 0 2260
2 14780 98.1176 164.6638 0005685 43.1605 317.0039 14.57157526591675
UoSat 2
1 14781U 84021B 95105.53478433 .00000168 00000-0 36203-4 0 7893
2 14781 97.7823 111.0171 0012549 27.4078 332.7787 14.69330689594701
GPS BI-09
1 15039U 84059A 95102.11886673 -.00000047 00000-0 10000-3 0 2833
2 15039 64.4715 32.7756 0082315 16.2013 344.0499 1.92302311 79123
Cosmos 1574
1 15055U 84062A 95109.22539320 .00000038 00000-0 24277-4 0 6956
2 15055 82.9569 199.3401 0029161 83.9443 276.5042 13.73620162542642
GPS BI-10
1 15271U 84097A 95103.26039376 .00000010 00000-0 10000-3 0 9353
2 15271 62.1968 268.4272 0154945 353.4914 6.2819 2.00595966 76627
Cosmos 1602
1 15331U 84105A 95108.58122391 .00000269 00000-0 28906-4 0 3827
2 15331 82.5350 151.7338 0018400 276.9575 82.9556 14.84603117569820
NOAA 9
1 15427U 84123A 95110.62940948 .00000097 00000-0 75236-4 0 2193
2 15427 99.0011 168.9925 0016122 71.7958 288.4967 14.13700070533783
GPS BI-11
1 16129U 85093A 95110.24874975 -.00000045 00000-0 10000-3 0 6470
2 16129 65.1456 35.5757 0153652 87.1106 274.6462 1.89368093 13894
Mir
1 16609U 86017A 95110.38853242 .00013384 00000-0 17875-3 0 31
2 16609 51.6464 87.2306 0005466 32.3069 328.1497 15.58394457523948
SPOT 1
1 16613U 86019A 95110.82802429 .00000090 00000-0 62356-4 0 8020
2 16613 98.6532 183.4462 0001881 62.2156 297.9110 14.20053920160226
Cosmos 1766
1 16881U 86055A 95109.24065463 .00000231 00000-0 25103-4 0 2974
2 16881 82.5197 208.9764 0018269 303.3780 56.5700 14.83610793470831
EGP
1 16908U 86061A 95110.75964951 -.00000083 00000-0 10000-3 0 9915
2 16908 50.0093 218.7969 0011144 16.2425 343.8765 12.44412052 63680
NOAA 10
1 16969U 86073A 95110.86008303 .00000015 00000-0 24423-4 0 1299
2 16969 98.5072 115.4744 0013417 145.9296 214.2748 14.24931418446315
MOS-1
1 17527U 87018A 95109.19190921 -.00000044 00000-0 -32110-6 0 1953
2 17527 98.9933 175.8645 0001013 113.8539 246.2732 13.94921040415601
GOES 7
1 17561U 87022A 95108.35168056 .00000077 00000-0 10000-3 0 3460
2 17561 2.2068 72.9235 0003915 354.9373 128.1294 1.00279809 13030
Kvant-1
1 17845U 87030A 95109.61896346 .00011348 00000-0 15268-3 0 2243
2 17845 51.6456 91.0898 0005598 25.5090 334.6546 15.58378693523744
DMSP B5D2-3
```

```
1 18123U 87053A 95110.80400859 .00000027 00000-0 36215-4 0 9291
2 18123 98.7802 302.8558 0015111 25.5796 334.6123 14.15399667404602
RS-10/11
1 18129U 87054A 95111.03733503 .00000049 00000-0 37110-4 0 503
2 18129 82.9206 101.3117 0010019 247.4679 112.5413 13.72351365392135
Meteor 2-16
1 18312U 87068A 95107.65545086 .00000046 00000-0 27902-4 0 3881
2 18312 82.5555 330.3895 0012513 345.5207 14.5593 13.84054771387179
Meteor 2-17
1 18820U 88005A 95110.76530970 .00000108 00000-0 82235-4 0 5970
2 18820 82.5451 23.9276 0018276 39.5821 320.6677 13.84736300364927
DMSP B5D2-4
1 18822U 88006A 95105.10966556 .00000008 00000-0 21918-4 0 9152
2 18822 98.4098 312.0839 0005700 172.2947 187.8319 14.23149321373540
Glonass 34
1 19163U 88043A 95105.15372068 .00000070 00000-0 10000-3 0 9828
2 19163 65.1103 100.2912 0006817 156.4597 203.5901 2.13102599 53091
Glonass 36
1 19165U 88043C 95110.84104797 .00000062 00000-0 10000-3 0 3852
2 19165 65.0906 100.0687 0002226 299.0199 60.9564 2.13102091 53831
METEOSAT 3
1 19215U 88051A 95103.22280166 -.00000276 00000-0 10000-3 0 1098
2 19215 2.3715 70.2609 0001232 35.8421 106.3638 1.00276100 12921
AO-13
1 19216U 88051B 95101.26266056 -.00000576 00000-0 10000-4 0 265
2 19216 57.5599 193.6656 7280121 6.2710 359.3217 2.09726584 20762
OKEAN 1
1 19274U 88056A 95105.09450107 .00000232 00000-0 25873-4 0 9969
2 19274 82.5147 313.1919 0021717 94.6656 265.7039 14.82323988365805
Meteor 3-2
1 19336U 88064A 95111.00125950 .00000051 00000-0 10000-3 0 3867
2 19336 82.5366 105.8832 0015429 210.2054 149.8165 13.16972551323772
Glonass 39
1 19503U 88085C 95107.58416280 -.00000031 00000-0 10000-3 0 2726
2 19503 65.7020 339.1022 0009532 165.7325 194.3597 2.13101870 51252
NOAA 11
1 19531U 88089A 95110.87871857 .00000022 00000-0 36749-4 0 313
2 19531 99.1935 112.6932 0012179 354.0410 6.0610 14.13047066338669
TDRS 2
1 19548U 88091B 95110.48366509 .00000078 00000-0 10000-3 0 1160
2 19548 1.6449 74.7421 0003204 351.8622 144.5088 1.00263329 11282
Glonass 40
1 19749U 89001A 95109.03049867 .00000053 00000-0 10000-3 0 4884
2 19749 65.0593 99.7188 0016050 94.7795 265.4155 2.13101398 48799
Glonass 41
1 19750U 89001B 95108.14761763 .00000052 00000-0 10000-3 0 4040
2 19750 65.0705 99.8042 0005885 236.7491 123.1924 2.13101837 48793
GPS BII-01
1 19802U 89013A 95110.34956481 .00000041 00000-0 10000-3 0 436
2 19802 55.1808 127.5081 0027207 185.0656 174.9490 2.00574526 45219
```

```
Akebono
1 19822U 89016A 95110.69929497 .00017629 00000-0 96608-3 0 4797
2 19822 75.0954 8.0569 3782175 63.7139 330.1642 7.84958759133305
Meteor 2-18
1 19851U 89018A 95106.92318796 .00000074 00000-0 52482-4 0 3862
2 19851 82.5139 261.7406 0015727 92.0553 268.2396 13.84388124309714
MOP-1
1 19876U 89020B 95110.28446374 -.00000088 00000-0 10000-3 0 1087
2 19876 1.1036 71.1944 0000874 2.8890 228.2920 1.00272326 2433
TDRS 3
1 19883U 89021B 95105.19572917 -.00000272 00000-0 10000-3 0 638
2 19883 0.0437 258.3683 0001939 115.7641 218.2237 1.00271356194810
GPS BII-02
1 20061U 89044A 95103.71235008 -.00000018 00000-0 10000-3 0 522
2 20061 54.4881 304.1021 0141410 213.4172 145.6590 2.00563273 42827
Nadezhda 1
1 20103U 89050A 95110.85850277 .00000019 00000-0 39195-5 0 3644
2 20103 82.9586 60.8676 0037569 150.3464 209.9831 13.73852039290556
GPS BII-03
1 20185U 89064A 95105.05273503 .00000077 00000-0 10000-3 0 784
2 20185 55.0164 128.3132 0105977 317.6868 41.4463 2.00546898 41422
GMS 4
1 20217U 89070A 95108.41983796 -.00000295 00000-0 10000-3 0 1809
2 20217 0.9205 75.7528 0000592 91.2634 330.4979 1.00270486 21157
INTERCOSMOS 24
1 20261U 89080A 95105.73808901 .00000102 00000-0 31360-4 0 4010
2 20261 82.5965 184.3674 1241074 295.9208 51.9162 12.47238084252490
GPS BII-04
1 20302U 89085A 95110.56418292 -.00000018 00000-0 10000-3 0 535
2 20302 53.3994 243.9232 0010427 172.0506 187.9298 2.00553818 40338
Meteor 3-3
1 20305U 89086A 95110.88528987 .00000044 00000-0 10000-3 0 2931
2 20305 82.5504 57.2464 0005329 283.7470 76.2981 13.04420933263018
COBE
1 20322U 89089A 95106.48300866 -.00000166 00000-0 -78171-4 0 1118
2 20322 98.9601 123.4339 0009328 141.5287 218.6551 14.03442755276939
Kvant-2
1 20335U 89093A 95109.04181118 -.00005556 00000-0 -65163-4 0 2362
2 20335 51.6454 93.9855 0005354 25.3063 334.7997 15.58356811306863
GPS BII-05
1 20361U 89097A 95105.09368954 .00000000 00000-0 10000-3 0 9106
2 20361 55.7210 70.2951 0076185 120.1020 240.6351 2.00562024 29701
SPOT 2
1 20436U 90005A 95110.88256491 -.00000044 00000-0 00000+0 0 9211
2 20436 98.7405 185.6926 0001794 84.2831 275.8565 14.20021565271761
UO-14
1 20437U 90005B 95108.18345953 .00000021 00000-0 25233-4 0 893
2 20437 98.5695 193.5167 0011755 18.7321 341.4292 14.29882591273177
UO-15
1 20438U 90005C 95108.75338136 .00000005 00000-0 19028-4 0 8864
```

```
2 20438 98.5631 192.6706 0010609 22.4383 337.7259 14.29203667273154
PACSAT
1 20439U 90005D 95107.24787396 .00000003 00000-0 18116-4 0 8870
2 20439 98.5803 194.1839 0012014 22.2224 337.9471 14.29936434273056
DO-17
1 20440U 90005E 95107.73213459 .00000014 00000-0 22475-4 0 8875
2 20440 98.5815 195.0971 0012122 19.5803 340.5834 14.30077467273147
WO-18
1 20441U 90005F 95107.78316875 .00000015 00000-0 22551-4 0 8918
2 20441 98.5813 195.1251 0012744 19.5378 340.6289 14.30049197273150
LO-19
1 20442U 90005G 95107.25059433 .00000014 00000-0 22121-4 0 8872
2 20442 98.5816 194.9400 0013095 20.4691 339.7013 14.30150631273099
GPS BII-06
1 20452U 90008A 95108.48266270 .00000018 00000-0 10000-3 0 217
2 20452 54.0246 184.0996 0056410 80.9386 279.7893 2.00570389 38272
MOS-1B
1 20478U 90013A 95108.23373689 .00000091 00000-0 10000-3 0 7686
2 20478 98.9962 179.1958 0000921 110.3022 249.8223 13.94918994185176
DEBUT
1 20479U 90013B 95107.82823952 -.00000054 00000-0 -48304-4 0 8865
2 20479 99.0682 207.7954 0541024 9.5293 351.5595 12.83327923243211
FO-20
1 20480U 90013C 95108.29766810 -.00000026 00000-0 15490-4 0 7843
2 20480 99.0691 208.0347 0541079 8.8460 352.1726 12.83229156243268
MOS-1B R/B
1 20491U 90013D 95106.44631495 -.00000518 00000-0 -90923-3 0 1237
2 20491 99.0353 259.1273 0469640 216.2373 140.6057 13.02984642246159
LACE
1 20496U 90015A 95110.89971254 .00001312 00000-0 46971-4 0 5261
2 20496 43.1009 97.4325 0009558 200.6215 159.4284 15.34397493288776
Nadezhda 2
1 20508U 90017A 95110.73477873 .00000021 00000-0 59819-5 0 3628
2 20508 82.9565 195.5392 0045998 103.6946 256.9337 13.73491872257767
OKEAN 2
1 20510U 90018A 95105.38365448 .00000221 00000-0 27204-4 0 3962
2 20510 82.5201 264.1644 0017682 285.6035 74.3199 14.78475688276318
GPS BII-07
1 20533U 90025A 95105.90030332 -.00000027 00000-0 10000-3 0 354
2 20533 54.8361 304.6456 0049219 79.3032 281.2558 2.00561536 36995
PegSat
1 20546U 90028A 95110.43450470 .00004940 00000-0 10469-3 0 7852
2 20546 94.1107 111.5768 0066057 197.1255 162.7802 15.42841172279575
HST
1 20580U 90037B 95104.22980700 .00000369 00000-0 21458-4 0 6114
2 20580 28.4682 101.8860 0006119 358.7055 1.3508 14.90851945 74353
MACSAT 2
1 20608U 90043B 95107.20703071 .00000146 00000-0 22072-4 0 870
2 20608 89.9326 177.0198 0107880 107.7034 253.5968 14.64822378263783
Glonass 44
```

```
1 20619U 90045A 95107.52223810 -.00000032 00000-0 10000-3 0 1814
2 20619 65.3035 338.5444 0024067 210.9620 148.9555 2.13102459 38210
Glonass 45
1 20620U 90045B 95108.57954700 -.00000039 00000-0 10000-3 0 1896
2 20620 65.3005 338.5003 0009610 44.6057 315.5194 2.13102541 38272
Glonass 46
1 20621U 90045C 95110.52272942 -.00000049 00000-0 10000-3 0 7893
2 20621 65.3213 338.4698 0014131 192.4754 167.5295 2.13101568 38313
Kristall
1 20635U 90048A 95110.26024627 .00123877 00000-0 15766-2 0 314
2 20635 51.6464 87.8739 0005188 32.1970 328.0731 15.58428935523790
ROSAT
1 20638U 90049A 95106.09298919 -.00000036 00000-0 16494-4 0 4071
2 20638 52.9904 66.5618 0010404 265.0672 94.9121 15.07146191267757
Meteor 2-19
1 20670U 90057A 95108.06097245 -.00000050 00000-0 -58340-4 0 8868
2 20670 82.5459 326.3273 0017118 16.1704 343.9999 13.84163152242797
CRRES
1 20712U 90065A 95107.90025643 .00000115 00000-0 26628-3 0 763
2 20712 18.0172 63.2153 7178677 59.0861 351.9987 2.35391653 33066
GPS BII-08
1 20724U 90068A 95110.20866409 .00000040 00000-0 10000-3 0 8952
2 20724 54.8202 125.6958 0117118 172.2452 187.9732 2.00559984 32943
Feng Yun1-2
1 20788U 90081A 95111.20418291 -.00000027 00000-0 10000-4 0 3480
2 20788 98.8122 126.1850 0013940 228.3317 131.6574 14.01301982236853
Meteor 2-20
1 20826U 90086A 95107.47144651 .00000048 00000-0 29878-4 0 8972
2 20826 82.5222 263.8609 0012006 279.0251 80.9540 13.83605400229830
GPS BII-09
1 20830U 90088A 95104.27370534 -.00000000 00000-0 10000-3 0 9027
2 20830 55.6473 68.3018 0064245 100.6626 260.0445 2.00570268 33460
GPS BIIA-10
1 20959U 90103A 95110.16332767 .00000040 00000-0 10000-3 0 8514
2 20959 55.0202 127.6660 0095857 229.5960 129.6024 2.00555600 32176
DMSP B5D2-5
1 20978U 90105A 95110.63930323 .00000101 00000-0 51998-4 0 1659
2 20978 98.6427 179.0563 0079170 340.1776 19.6333 14.32535764229072
Glonass 47
1 21006U 90110A 95110.07983393 .00000057 00000-0 10000-3 0 7532
2 21006 65.0344 99.0294 0059595 187.7573 172.1303 2.13102879 33979
Glonass 48
1 21007U 90110B 95107.92164009 .00000052 00000-0 10000-3 0 8860
2 21007 65.0523 99.1710 0035876 183.1201 176.8889 2.13101146 33917
Glonass 49
1 21008U 90110C 95110.62730669 .00000060 00000-0 00000+0 0 588
2 21008 65.0321 99.0327 0011654 280.3968 79.4679 2.13099187 33966
AO-21
1 21087U 91006A 95108.90642991 .00000093 00000-0 82657-4 0 5852
2 21087 82.9338 276.4363 0034242 313.8915 45.9413 13.74553734211584
```

```
RS-12/13
1 21089U 91007A 95109.14847999 .00000022 00000-0 76024-5 0 7910
2 21089 82.9227 144.5653 0029105 340.6417 19.3633 13.74056171210667
MOP-2
1 21140U 91015B 95105.77595263 -.00000011 00000-0 10000-3 0 9399
2 21140 0.1658 91.6600 0002871 333.1588 58.0183 1.00282877 17313
Nadezhda 3
1 21152U 91019A 95110.85170177 .00000031 00000-0 16232-4 0 525
2 21152 82.9212 99.3493 0043670 80.0010 280.6073 13.73517577205631
Glonass 50
1 21216U 91025A 95104.93651340 -.00000019 00000-0 10000-3 0 4001
2 21216 65.0530 338.3122 0007915 204.8094 155.2496 2.13102791 31376
Glonass 51
1 21217U 91025B 95105.94341339 -.00000023 00000-0 10000-3 0 8074
2 21217 65.0462 338.2677 0010570 243.7993 116.1630 2.13101486 31383
Glonass 52
1 21218U 91025C 95106.99439236 -.00000029 00000-0 10000-3 0 2840
2 21218 65.0117 338.2345 0006781 308.9725 51.0163 2.13102529 31410
GRO
1 21225U 91027B 95104.29173899 .00002940 00000-0 59961-4 0 2103
2 21225 28.4635 299.6464 0003039 31.9862 328.0918 15.42448303103454
Meteor 3-4
1 21232U 91030A 95105.57834967 .00000051 00000-0 10000-3 0 7956
2 21232 82.5432 315.8165 0013698 145.3100 214.8891 13.16466915191147
NOAA 12
1 21263U 91032A 95110.79215234 .00000103 00000-0 65366-4 0 4526
2 21263 98.5884 136.3210 0014189 65.0358 295.2293 14.22509121204267
OKEAN 3
1 21397U 91039A 95105.17889507 .00000188 00000-0 23694-4 0 962
2 21397 82.5251 177.2408 0023667 359.6061 0.5186 14.76356499208060
GPS BIIA-11
1 21552U 91047A 95110.93123684 -.00000009 00000-0 10000-6 0 8444
2 21552 55.9652 65.7278 0063741 242.8840 116.4404 2.00569740 27780
ERS-1
1 21574U 91050A 95107.20266316 .00000042 00000-0 31943-4 0 1309
2 21574 98.5544 182.3710 0001331 64.1290 296.0031 14.32246022196326
UO-22
1 21575U 91050B 95111.18933953 .00000016 00000-0 19752-4 0 5949
2 21575 98.4005 183.9064 0008653 88.9354 271.2820 14.36970693197319
ORBCOMM-X
1 21576U 91050C 95108.18849336 .00000003 00000-0 15574-4 0 6885
2 21576 98.4004 179.4747 0004682 96.8189 263.3530 14.36375513196790
TUBSAT-A
1 21577U 91050D 95108.18882522 -.00000001 00000-0 14090-4 0 5879
2 21577 98.3994 179.9856 0007309 97.8204 262.3816 14.36479309196820
SARA
1 21578U 91050E 95108.17069330 .00000285 00000-0 10619-3 0 7870
2 21578 98.4160 184.9999 0005816 95.3273 264.8579 14.38983996197065
TDRS 4
1 21639U 91054B 95106.12203535 .00000075 00000-0 10000-3 0 8807
```

```
2 21639 0.0342 108.2421 0003403 268.2184 56.9122 1.00275344107606
Meteor 3-5
1 21655U 91056A 95105.45646756 .00000051 00000-0 10000-3 0 7935
2 21655 82.5492 263.2490 0014084 158.0965 202.0757 13.16838793176240
UARS
1 21701U 91063B 95105.87484509 .00000096 00000-0 29519-4 0 6649
2 21701 56.9855 26.2783 0005387 110.7870 249.3730 14.96371701196245
DMSP B5D2-6
1 21798U 91082A 95110.50861409 .00000063 00000-0 56914-4 0 8083
2 21798 98.9624 122.1263 0013312 353.2403 6.8582 14.13878504175052
Glonass 53
1 21853U 92005A 95107.20614942 .00000053 00000-0 10000-3 0 9919
2 21853 64.9782 98.8171 0006881 199.0849 160.8973 2.13102259 25022
Glonass 54
1 21854U 92005B 95108.43494024 .00000051 00000-0 00000+0 0 1165
2 21854 64.9818 98.7589 0016695 8.6891 351.3410 2.13104420 25037
Glonass 55
1 21855U 92005C 95110.37542119 .00000058 00000-0 00000+0 0 1090
2 21855 64.9867 98.7118 0007866 221.1975 138.7383 2.13102207 25065
JERS-1
1 21867U 92007A 95109.15358887 .00000970 00000-0 85706-4 0 5612
2 21867 97.7175 186.5720 0001453 95.0536 265.0852 14.98639449174201
GPS BIIA-12
1 21890U 92009A 95104.91512243 -.00000015 00000-0 10000-3 0 6422
2 21890 53.9584 244.3336 0057149 175.7661 184.2175 2.00545823 23035
GPS BIIA-13
1 21930U 92019A 95110.60322108 -.00000085 00000-0 10000-3 0 6214
2 21930 55.7084 5.5437 0040029 166.3549 193.7928 2.00566176 22072
EUVE
1 21987U 92031A 95104.35250777 .00001084 00000-0 40671-4 0 3996
2 21987 28.4345 191.7779 0009745 32.0292 328.0880 15.19210399158237
SAMPEX
1 22012U 92038A 95108.33480115 .00000865 00000-0 72953-4 0 6229
2 22012 81.6723 208.8628 0119946 122.6584 238.6263 14.91394518151752
GPS BIIA-14
1 22014U 92039A 95106.16121495 .00000035 00000-0 10000-3 0 5361
2 22014 54.8378 185.6552 0088350 310.7064 48.5956 2.00546698 13824
Glonass 56
1 22056U 92047A 95109.80608279 -.00000047 00000-0 00000+0 0 229
2 22056 64.8868 338.2742 0004678 298.9855 61.0163 2.13103185 21146
Glonass 57
1 22057U 92047B 95108.22409987 -.00000037 00000-0 00000+0 0 230
2 22057 64.9047 338.3587 0008011 332.8928 27.1157 2.13102684 21081
Glonass 58
1 22058U 92047C 95110.51064861 -.00000050 00000-0 10000-3 0 100
2 22058 64.8957 338.2777 0009125 273.8549 86.0873 2.13102962 21180
TOPEX
1 22076U 92052A 95109.09705751 -.00000038 00000-0 10000-3 0 8684
2 22076 66.0414 15.6053 0007594 272.2696 87.7445 12.80931061125676
KO-23
```

```
1 22077U 92052B 95108.72290918 -.00000037 00000-0 10000-3 0 4852
2 22077 66.0906 0.2735 0009489 216.0507 143.9873 12.86290056126086
S80/T
1 22078U 92052C 95107.18678124 -.00000037 00000-0 10000-3 0 4828
2 22078 66.0911 2.4501 0010409 207.4506 152.5970 12.86574157125962
GPS BIIA-15
1 22108U 92058A 95107.61469600 -.00000006 00000-0 10000-3 0 5550
2 22108 54.1927 244.9908 0119346 148.4302 212.2644 2.00565420 19033
FREJA
1 22161U 92064A 95107.80255120 .00000030 00000-0 57403-4 0 5035
2 22161 62.9905 241.6679 0805516 341.6658 15.6780 13.21830262122064
LAGEOS II
1 22195U 92070B 95104.79601046 -.00000009 00000-0 10000-3 0 3931
2 22195 52.6533 263.0578 0138368 248.9619 109.6094 6.47293824 58472
GPS BIIA-16
1 22231U 92079A 95110.28961204 -.00000007 00000-0 10000-3 0 5263
2 22231 54.6654 186.6591 0033558 288.6366 71.0311 2.00567386 17661
GPS BIIA-17
1 22275U 92089A 95107.44778768 .00000029 00000-0 10000-3 0 5462
2 22275 54.6262 184.3227 0052135 254.4218 105.0725 2.00556695 17011
TDRS 5
1 22314U 93003B 95102.36269001 -.00000284 00000-0 10000-3 0 4951
2 22314 1.7395 72.0934 0002008 307.1528 265.4053 1.00264183 8255
GPS BIIA-18
1 22446U 93007A 95107.02083037 -.00000033 00000-0 10000-3 0 5270
2 22446 54.4706 304.8655 0081162 352.6354 7.2514 2.00548971 15992
Glonass 59
1 22512U 93010A 95110.49232217 .00000059 00000-0 10000-3 0 6952
2 22512 64.9941 98.5547 0009100 192.8944 167.0768 2.13101983 16664
Glonass 60
1 22513U 93010B 95108.08546079 .00000051 00000-0 00000+0 0 7384
2 22513 64.9924 98.6494 0007028 213.2342 146.7165 2.13102626 16801
Glonass 61
1 22514U 93010C 95106.50200233 .00000057 00000-0 00000+0 0 7385
2 22514 65.0163 98.6888 0010667 198.3763 161.5876 2.13103030 16779
ASTRO-D
1 22521U 93011A 95105.66384969 .00001566 00000-0 10552-3 0 3984
2 22521 31.1078 275.8961 0056945 238.9790 120.5195 15.02168560117960
UFO F1
1 22563U 93015A 95105.21145279 .00000053 00000-0 10000-3 0 4040
2 22563 26.1060 295.2683 0002738 341.4103 236.8181 0.99248491 11834
GPS BIIA-19
1 22581U 93017A 95105.66743931 -.00000062 00000-0 10000-3 0 4186
2 22581 55.1982 5.3403 0057602 35.6666 324.7303 2.00553007 15029
ARSENE
1 22654U 93031B 95098.10546024 -.00000095 00000-0 10000-3 0 3092
2 22654 2.4457 86.7268 2901770 207.9227 133.2995 1.42203107 5394
GPS BIIA-20
1 22657U 93032A 95104.80214830 -.00000062 00000-0 10000-3 0 4554
2 22657 55.2517 5.2578 0069387 217.1415 142.3762 2.00569525 10336
```

```
RADCAL
1 22698U 93041A 95108.52808486 .00000061 00000-0 21462-4 0 3921
2 22698 89.5393 293.6238 0090377 273.9193 85.1660 14.21342196 93965
GPS BIIA-21
1 22700U 93042A 95105.26754630 -.00000013 00000-0 10000-3 0 4031
2 22700 54.3690 245.8511 0036697 343.9552 15.8917 2.00562894 13144
NOAA-13
1 22739U 93050A 95110.77653031 -.00000062 00000-0 -95389-5 0 7816
2 22739 98.9894 59.5705 0009742 340.8599 19.2213 14.10929260 87347
GPS BIIA-22
1 22779U 93054A 95108.84338179 -.00000037 00000-0 10000-3 0 4578
2 22779 54.6266 304.7504 0019075 244.7083 115.0878 2.00565334 11977
Meteor 2-21
1 22782U 93055A 95109.10302976 .00000051 00000-0 32985-4 0 3941
2 22782 82.5509 324.0242 0023996 87.1019 273.2890 13.83030866 82373
UFO F2
1 22787U 93056A 95110.82545251 -.00000090 00000-0 00000+0 0 4160
2 22787 4.5879 324.9797 0004337 72.9838 179.3736 1.00274888 4587
SPOT 3
1 22823U 93061A 95107.25927577 .00000017 00000-0 28675-4 0 4278
2 22823 98.7411 182.1342 0001450 86.7374 273.3967 14.20019958 80649
STELLA
1 22824U 93061B 95108.73875919 -.00000011 00000-0 13553-4 0 3829
2 22824 98.6221 185.6932 0007198 37.7455 322.4230 14.27100859 81257
AO-27
1 22825U 93061C 95105.23439703 .00000007 00000-0 20369-4 0 3837
2 22825 98.6210 182.5209 0009757 46.2823 313.9157 14.27658357 80787
IO-26
1 22826U 93061D 95107.71591230 .00000026 00000-0 28348-4 0 3822
2 22826 98.6215 185.0532 0010277 39.4028 320.7893 14.27766060 81145
HEATHSAT
1 22827U 93061E 95108.72297883 -.00000009 00000-0 14123-4 0 4449
2 22827 98.6197 185.9904 0010189 28.2891 331.8846 14.27886942 81292
ITAMSAT
1 22828U 93061F 95105.20409675 .00000016 00000-0 24054-4 0 3602
2 22828 98.6180 182.6094 0011209 35.4152 324.7764 14.28094895 48880
PO-28
1 22829U 93061G 95108.22755354 .00000048 00000-0 36717-4 0 3756
2 22829 98.6180 185.6216 0011683 24.7540 335.4189 14.28073552 81231
KO-25
1 22830U 93061H 95108.56876820 .00000005 00000-0 19355-4 0 3917
2 22830 98.5207 179.8372 0012323 4.7000 355.4300 14.28085174 81286
GPS BIIA-23
1 22877U 93068A 95107.89766165 -.00000012 00000-0 10000-3 0 2634
2 22877 55.4064 66.2114 0038736 297.1269 62.4604 2.00551186 10848
METEOSAT 6
1 22912U 93073B 95110.14743056 -.00000103 00000-0 10000-3 0 2873
2 22912 0.2118 264.8043 0001030 171.7670 174.3633 1.00272096 3603
HST Array
1 22920U 90037C 95110.70106003 .00006671 00000-0 50277-3 0 3096
```

```
2 22920 28.4720 26.8084 0002825 269.8450 90.1828 15.00595720 75665
Meteor 3-6
1 22969U 94003A 95108.24553005 .00000051 00000-0 10000-3 0 1612
2 22969 82.5577 201.0086 0014061 221.8179 138.1847 13.16727729 58991
TUBSAT-B
1 22970U 94003B 95108.74377660 .00000051 00000-0 10000-3 0 1520
2 22970 82.5615 200.6059 0014944 217.5532 142.4552 13.16824713 59067
GPS BIIA-24
1 23027U 94016A 95110.96587970 -.00000088 00000-0 10000-3 0 1949
2 23027 55.0775 6.9885 0063025 193.3749 166.4829 2.00552630 8213
Glonass 62
1 23043U 94021A 95110.80350610 -.00000051 00000-0 00000+0 0 1894
2 23043 64.7755 338.6598 0004742 178.3842 181.6647 2.13102513 7985
Glonass 63
1 23044U 94021B 95108.80917436 -.00000042 00000-0 00000+0 0 1695
2 23044 64.7662 338.7359 0027592 203.1057 156.8223 2.13103205 7941
Glonass 64
1 23045U 94021C 95106.63900777 -.00000027 00000-0 00000+0 0 1799
2 23045 64.7562 338.8220 0011328 35.1165 325.0171 2.13102584 7897
GOES 8
1 23051U 94022A 95108.17407188 -.00000268 00000-0 10000-3 0 2968
2 23051 0.1101 263.9430 0001122 198.0300 92.2506 1.00275313 11097
MSTI 2
1 23101U 94028A 95110.47688724 .00005674 00000-0 10286-3 0 1794
2 23101 97.1034 304.5402 0012970 97.9762 262.2992 15.49920169 53589
STRV-1A
1 23125U 94034B 95107.08692434 .00000861 00000-0 42386-3 0 1387
2 23125 7.4741 56.0952 7256879 70.3358 350.2240 2.29835775 6241
STRV-1B
1 23126U 94034C 95105.42564143 .00000887 00000-0 34519-3 0 1364
2 23126 7.4742 56.8409 7260805 68.8512 350.4940 2.29470894 6253
Nadezhda 4
1 23179U 94041A 95109.20914145 .00000020 00000-0 56628-5 0 939
2 23179 82.9480 191.5638 0034742 230.2724 129.5370 13.75665718 38364
Glonass 65
1 23203U 94050A 95106.77658479 .00000019 00000-0 00000+0 0 1320
2 23203 64.7980 218.4769 0007534 145.0066 215.0526 2.13101539 5296
Glonass 66
1 23204U 94050B 95110.76481766 -.00000007 00000-0 00000+0 0 1405
2 23204 64.7927 218.3739 0015029 347.6144 12.3614 2.13102315 5377
Glonass 67
1 23205U 94050C 95110.17843657 .00000001 00000-0 00000+0 0 1281
2 23205 64.8001 218.3801 0001613 318.5376 41.4662 2.13101957 5366
DMSP B5D2-7
1 23233U 94057A 95110.88228171 .00000116 00000-0 86683-4 0 3088
2 23233 98.8827 169.4772 0011893 305.1027 54.9024 14.12597116 33066
OKEAN 1-7
1 23317U 94066A 95109.00514053 .00000127 00000-0 15906-4 0 573
2 23317 82.5386 90.1294 0027496 25.5229 334.7277 14.73920587 27905
ELEKTRO
```

```
1 23327U 94069A 95099.96090426 -.00000112 00000-0 10000-3 0 588
2 23327 0.9109 264.1867 0002756 111.3773 244.4699 1.00270063 1643
RESURS 1-3
1 23342U 94074A 95108.52337604 .00000104 00000-0 25609-4 0 959
2 23342 98.0216 169.2329 0001039 77.3457 282.7865 14.69725155 24289
Glonass 68
1 23396U 94076A 95105.32924108 .00000066 00000-0 00000+0 0 754
2 23396 64.9287 98.8372 0029724 194.6895 165.2359 2.13102756 3106
Glonass 69
1 23397U 94076B 95110.66648053 .00000059 00000-0 00000+0 0 819
2 23397 64.9160 98.6633 0015032 318.2124 41.6704 2.13102461 3217
Glonass 70
1 23398U 94076C 95105.85724567 .00000062 00000-0 00000+0 0 836
2 23398 64.9026 98.8086 0005154 290.5889 69.3515 2.13102400 3127
RS-15
1 23439U 94085A 95108.98862751 -.00000039 00000-0 10000-3 0 433
2 23439 64.8277 350.7346 0167857 272.4824 85.6888 11.27524813 12840
NOAA 14
1 23455U 94089A 95110.61354277 .00000022 00000-0 36484-4 0 1434
2 23455 98.8980 53.5962 0010026 3.6841 356.4409 14.11504472 15695
ODERACS II A
1 23471U 95004C 95105.38958113 .00021458 00000-0 11458-3 0 514
2 23471 51.6513 101.7437 0013658 210.8100 149.2084 15.80213305 11231
ODERACS II B
1 23472U 95004D 95104.26165430 .00047074 00000-0 20271-3 0 552
2 23472 51.6471 106.1902 0012292 227.8415 132.1551 15.84404560 11072
Glonass 71
1 23511U 95009A 95110.15842926 -.00000049 00000-0 00000+0 0 295
2 23511 64.7782 338.9630 0006483 333.2308 26.7839 2.13102704 930
Glonass 72
1 23512U 95009B 95110.92120758 -.00000052 00000-0 00000+0 0 321
2 23512 64.7861 338.9433 0011419 199.1138 160.8890 2.13102790 959
Glonass 73
1 23513U 95009C 95106.75627290 -.00000028 00000-0 00000+0 0 278
2 23513 64.7877 339.0678 0004606 215.0494 144.9807 2.13102698 861
Soyuz TM-21
1 23519U 95010A 95109.04181118 -.00005556 00000-0 -65163-4 0 431
2 23519 51.6454 93.9855 0005354 25.3063 334.7997 15.58356811 5619
SFU
1 23521U 95011A 95108.22000684 -.00003318 00000-0 -12494-3 0 355
2 23521 28.4607 122.6431 0019822 276.1547 83.6778 15.28141709 4758
GMS 5
1 23522U 95011B 95104.45585090 -.00000125 00000-0 00000+0 0 196
2 23522 1.0348 293.4417 0000661 321.0042 271.4943 1.00273253 145
Cosmos 2310
1 23526U 95012A 95110.85924051 .00007365 00000-0 81984-2 0 203
2 23526 82.9369 247.7606 0020249 182.4419 177.6594 13.71154615 4079
1995012B
1 23527U 95012B 95108.49244899 .00001098 00000-0 11764-2 0 190
2 23527 82.9316 249.4413 0015771 156.7545 203.4321 13.72818396 3759
```

```
Intelsat 705
1 23528U 95013A 95097.60000000 -.00000297 00000-0 00000+0 0 207
2 23528 0.0280 89.3360 0039605 188.3680 77.5640 1.00277117 104
1995013B
1 23529U 95013B 95110.01545768 .00013729 98617-6 87092-3 0 305
2 23529 26.6284 87.4490 7506083 194.8866 115.3765 2.03494680 592
Cosmos 2311
1 23530U 95014A 95111.04982046 .00017816 56419-5 10000-4 0 711
2 23530 67.1429 318.3851 0148179 110.9618 250.8182 15.99934876 4583
1995014B
1 23531U 95014B 95086.19291859 .25635769 64237-5 22696-3 0 196
2 23531 67.1365 42.1022 0025171 80.8209 280.0470 16.49712247 743
DMSP B5D2-8
1 23533U 95015A 95110.90076955 .00000059 00000-0 55249-4 0 379
2 23533 98.8328 114.0821 0006849 167.7566 192.3777 14.12679682 3867
1995015B
1 23534U 95015B 95111.03849780 .00000828 00000-0 46841-3 0 134
2 23534 98.8265 114.2168 0003859 95.8948 264.2638 14.12905280 3880
1995015C
1 23535U 95015C 95108.56334659 -.00000025 00000-0 10000-4 0 109
2 23535 98.8339 111.7801 0009353 158.4018 201.7622 14.12689774 3536
Brasilsat B2
1 23536U 95016A 95110.88589499 -.00000307 00000-0 00000+0 0 155
2 23536 0.0996 246.9902 0004649 33.1798 186.4907 1.00272766 298
Eutelsat HB1
1 23537U 95016B 95110.96916844 .00000060 00000-0 00000+0 0 181
2 23537 0.0523 35.5078 0002153 271.2844 263.1805 1.00273856 286
1995016D
1 23539U 95016 D 95110.64441298 .00114669 00000-0 14021-2 0 119
2 23539 51.6418 85.9367 0008220 84.1060 276.0435 15.59503106523842
ORBCOMM FM1
1 23545U 95017A 95108.91898038 .00000303 00000-0 10379-3 0 169
2 23545 69.9788 76.8257 0009903 66.1383 294.0784 14.45031585 2216
ORBCOMM FM2
1 23546U 95017B 95108.91518669 .00000300 00000-0 10237-3 0 170
2 23546 69.9850 76.8230 0009564 57.3101 302.8951 14.45389360 2212
MICROLAB 1
1 23547U 95017C 95109.05414455 .00000226 00000-0 81443-4 0 136
2 23547 69.9834 76.5007 0009690 59.6768 300.5332 14.45336691 2237
1995017D
1 23548U 95017D 95108.92142097 .00000019 00000-0 22779-4 0 162
2 23548 69.9919 76.8563 0008823 46.1144 314.0709 14.44796078 2212
OFEQ 3
1 23549U 95018A 95110.77278932 .00021241 00000-0 60621-3 0 176
2 23549 143.3693 185.8631 0260666 199.4379 159.6331 15.06573408 2306
1995018B
1 23550U 95018B 95110.86916153 .00212552 -59342-5 96637-3 0 152
2 23550 143.3716 189.8681 0328533 202.9110 155.6363 15.32748267 2356
AMSC-1
1 23553U 95019A 95110.50475311 -.00000134 00000-0 00000+0 0 162
```

```
2 23553 0.0881 34.4525 0004516 214.0181 38.9952 1.00301256 142
1995019B
1 23554U 95019B 95099.54822247 -.00000625 00000-0 10000-4 0 34
2 23554 26.4385 16.3684 7518131 177.2196 33.5180 2.00901653 46
Progress M-27
1 23555U 95020A 95109.04181118 -.00005556 00000-0 -65163-4 0 162
2 23555 51.6454 93.9855 0005354 25.3063 334.7997 15.58356811 1547
1986017JD
1 23557U 86017JD 95110.12996107 .00022769 00000-0 28598-3 0 43
2 23557 51.6483 88.5013 0009568 35.7909 324.3741 15.59557712523761
GFZ-1
1 23558U 86017JE 95111.22109011 -.00003678 00000-0 -38995-4 0 50
2 23558 51.6464 83.0405 0007285 75.4090 284.7701 15.59516852523947
1986017JF
1 23559U 86017JF 95110.96480557 .00106291 00000-0 12997-2 0 31
2 23559 51.6378 84.3392 0005363 122.4558 237.6833 15.59561454523905
1995021A
1 23560U 95021A 95111.14701845 .00000622 00000-0 24570-3 0 26
2 23560 98.5528 186.2575 0000583 237.1647 122.9556 14.32515532 17
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

877. Re: Macintosh Software?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-22 00:00:00 UTC
From: mcfadin@magicnet.net
Message-ID: <mcfadin-2204950348500001@pm1_04.magicnet.net>
Source record: 25177

Try Bill Bard's Orbitrack
Its the best I have seen and its not too expensive. His e-mail at last use
is "75366.2557@compuserve.com"

Lou McFadin W5DID

In article <3n9a9p$7k5$1@mhafc.production.compuserve.com>, John R.
Martinelli <72567.1155@CompuServe.COM> wrote:

> Hi,
> I'm making it to Dayton this year and I am looking for a good Mac
> Sat program. Anyone know of any good ones I might find there?
> Thanks!
> -John WB3FLM
>
> --
> John

878. Re: HAM SPAM Newsletters & other commercial broadcasts

Newsgroup: rec.radio.amateur.space
Date: 1995-04-22 00:00:00 UTC
From: tvr@cnmat.CNMAT.Berkeley.EDU
Message-ID: <TVR.95Apr22005359@cnmat.CNMAT.Berkeley.EDU>
Source record: 25178

Is there a program available (freeware) that would screen out the SPAM
that we are receiving via e-mail?

Ha! I think we need to tell these people directly, and via a suitable forum
such as (perhaps) 'news.admin.net-abuse.misc' that unsolicited e-mail is
most unwelcome and in some cases is abusive. Many of us have to pay for
the junk they send us! We need to stamp this out before it gets out of hand.

How many times have you missed a legal-type deadline because the notice was
buried in a bunch of junk you either threw away or didn't have time to look
at? You get the idea. We don't want that here.

-- Tovar (who apologizes for being somewhat off-topic)

879. Help with WISP

Newsgroup: rec.radio.amateur.space
Date: 1995-04-22 00:00:00 UTC
From: "Lawrence F. Johnston" <ljohnsto@carbon.cudenver.edu>
Message-ID: <Pine.OSF.3.91.950422143730.15366B-100000@carbon.cudenver.edu>
Source record: 25179

Even though the GSC screen shows the schedule of selected satellites, the program takes CAT control of the FT736R, and also correctly operates the G5400B rotator, nothing shows regarding the satellites in the bottom portion of the screen.

Also whenever I clock on any line in the schedule, I get an error message about being unable to find it in the "pass list". I can find no reference in the help screens to any "pass list."

Thanks.

Larry, W0EIE

880. for sale

Newsgroup: rec.radio.amateur.space
Date: 1995-04-22 00:00:00 UTC
From: <>
Message-ID: <3n9q7o$3m0@stellar.comnet.com>
Source record: 25180

```
Newsgroups: sci.electronics
From: levin@utw.com@utw.com
Subject: 72 pin memory for sale
Reply-To: levin@utw.com
X-Newsreader: IBM NewsReader/2 v1.09
Distribution: CA

Hi,

I know this is not generaly a for-sale group but since
I spend lots of time here I thought I would post this
quick for sale message:

I have 2 16meg 72 pin memory chips for sale. They
are new, tested and unused. I have the origonal
invoice as well. Selling them because another
deal fell through and I have no use for them.

The price is $1000.00 If you are interested
please email me at levin@utw.com

Thanks

Chris Levin
```

881. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-23 00:00:00 UTC
From: brucem@eskimo.com
Message-ID: <D7Hzpx.89o@eskimo.com>
Source record: 25181
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

Well, I currently live in an apartment and have been wondering what
to do about antennae, et al, so there might be interest here.

882. Helical Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-04-23 00:00:00 UTC
From: horse1@ix.netcom.com
Message-ID: <3negrh$jhg@ixnews4.ix.netcom.com>
Source record: 25182

Would anyone know of any sources, other than the ARRL Antenna Book, for information on Helical antenna design, construction and applications? I an curious to know if they are usable for Goes sattelite reception. I have the impression that they are, but would like to be certain before starting to construct one.

883. Re: Helical Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-04-23 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3nejuc$ee2@news.doit.wisc.edu>
Source record: 25183

horse1@ix.netcom.com (Leonard L. Winter) wrote:
>Would anyone know of any sources, other than the ARRL Antenna Book, for
>information on Helical antenna design, construction and applications? I
>an curious to know if they are usable for Goes sattelite reception.

Leonard,

The best book would probably be _Antennas_ by John D. Kraus. 2nd Edition.
You can use it for GOES WEFAX, you will lose about 3dB but you won't have to
worry about aligning the antenna with the satellite's antenna's polarity.

--
****
* Kevin G. Shea N9JKP *
* 4460 Dahmen Pass *
* Cross Plains, WI 53528 USA *
* 608.789.4326,voice; 608.798.1747,fax *
****

884. RFD debate belongs on "news.groups", not here

Newsgroup: rec.radio.amateur.space
Date: 1995-04-23 00:00:00 UTC
From: bob@texas.net
Message-ID: <3ndm0d$41b@empire.texas.net>
Source record: 25184

For those of you who feel compelled to debate low profile stations
as worthy of discussion, I reprint for you the following excerpt from
the original RFD posting:

>This message begins a discussion period considering the creation of a
>rec.radio.amateur.low-profile newsgroup. Discussion should take place in
>news.groups. All follow-up posts should be made to news.groups.

"news.groups" is the name of the newsgroup where this discussion has been
requested to occur. Please comply.

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

885. Re: Shuttle/W5YI ?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-23 00:00:00 UTC
From: wday@dfw.net
Message-ID: <wday-2304951014550001@fw8.dfw.net>
Source record: 25185

In article <3muarh$i8r@detroit.freenet.org>, rburgan@detroit.freenet.org (Roland B. Burgan) wrote:

> It seems to me that the W5YI one way broadcast deletion proposal
> before the Commission, would apply equally to the one way
> broadcasts by the Goddard Amateur Radio Club of the Shuttle
> commms. Any thoughts?

Not only does it seem that way to you, Roland, but it seems that way to the rest of us, as well.

So, have you sent in your comments, about this proposal, to the FCC, yet?

73 Wayne KF5ZC

Wayne Day KF5ZC Fort Worth,Texas,USA |
CompuServe: 76703,376 Internet: 76703.376@CompuServe.Com | ,__o
or Internet: wday@dfw.net |--_<,
Member: Bicycle Mobile Hams of America (*)/'(*)
For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net

---

886. FAQ? - QSL Manager for RS-12 Robot contact

Newsgroup: rec.radio.amateur.space
Date: 1995-04-23 00:00:00 UTC
From: bruces@mpd.tandem.com
Message-ID: <1995Apr23.232647.22999@integrity.uucp>
Source record: 25186

I've searched the FAQ for this group and I can't find the QSL Manager for the RS-12 Robot contacts. I sent a message to the RS-group in the CIS, but haven't received a reply. Any help would be appreciated.

Thanks
--
| Bruce Sawtelle AX.25 : W3NJ @ W5SYT.TX.USA.NA |
| Tandem Computers, Inc. Internet : bruces @ mpd.tandem.com |
| 14231 Tandem Blvd. USENET : halley!bruces |
| Austin, Tx 78728 TCP/IP : 44.76.1.42 (w3nj.ampr.org) |

887. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-23 00:00:00 UTC
From: Tony Stalls <ras@us.net>
Message-ID: <Pine.BSI.3.91.950423010225.2431F-100000@laurel.us.net>
Source record: 25187
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

On Fri, 21 Apr 1995, R lindberg + E Winnie wrote:

> I never thought I would say this about an amateur newsgroup, but I
> think this is a BAD idea, too narrow in focus and with too limited a base
> of users.

It's getting to the point that in order to live somewhere these days, it's necessary to waive all kinds of rights and otherwise regular privileges, including those pertaining to antennas that are normally at least partially protected by PRB-1. Condo and apartment living is becoming more common as single family dwellings are becoming less affordable and an increasing number of amateurs are being subjected to these severe restrictions.

The issues that might be addressed go beyond just a type of antenna. A rec.radio.amateur.low-profile newsgroup can deal with and provide help with both "stealth" antennas and the issues that make them necessary.

+---------------------------------+---------------+------------+
| Richard A. (Tony) Stalls, K4KYO | Arlington, VA | ras@us.net |
+---------------------------------+---------------+------------+

888. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: ebowers@ix.netcom.com
Message-ID: <3nervf$opb@ixnews4.ix.netcom.com>
Source record: 25188
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In <D7Hzpx.89o@eskimo.com> brucem@eskimo.com (Bruce Miller) writes:
>
>Well, I currently live in an apartment and have been wondering what
>to do about antennae, et al, so there might be interest here.

As for one who has had to deal with using "hidden attennas" I feel this newsgroup would be highly useful. As for those who might not feel this way, dont knock it until you have had the :pleasure" of working Alaska or Hawaii using 30 ga magnet wire for your attenna. The contacts at times my be rough but just as rewarding as any contact that can be made using Full size attenna's.

Ed - NIHSH
Ct

889. Re: What's up and working?

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: crippel@marlin.exchange.com
Message-ID: <3nf4ir$52k@grouper.exchange.com>
Source record: 25189

crippel@marlin.exchange.com (Crippel) wrote:

>I was quite active on AO10 a few years ago and have been off for a
>"bit." I like to mode "B" birds in that type of orbit and am a little
>confused as to what is up and how it it working.

Test again.

890. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: plaws@comp.uark.edu
Message-ID: <3nglq0$7ps@wizard.uark.edu>
Source record: 25190
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

dmoorman@interaccess.com (Dave Moorman) writes:

>In article
><Pine.LNX.3.91.950421071354.14921A-100000@kendaco.telebyte.com>, R
>lindberg + E Winnie <rlindber@kendaco.telebyte.com> wrote:

>> I never thought I would say this about an amateur newsgroup, but I
>> think this is a BAD idea, too narrow in focus and with too limited a base
>> of users.

>As a condo-dwelling ham, I can see a use for this group. It would be

How about rec.radio.amateur.qrp? That includes those of us in rental
units and CONdos as well as QRP fans (even though I run about 30W ... :).

Peter Laws<plaws@comp.uark.edu>|"Suppose you were a politician. Now suppose you
n5uwy@ka5bml.#nwar.ar.usa.noam |were an idiot. Ah, but I repeat myself."-Twain

891. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: etuggle@dora.auc.trw.com
Message-ID: <3ngvvi$okn@dora.auc.trw.com>
Source record: 25191
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

>On Fri, 21 Apr 1995, R lindberg + E Winnie wrote:
>
>> I never thought I would say this about an amateur newsgroup, but I
> think this is a BAD idea, too narrow in focus and with too limited a base
> of users.

I think it's a great idea!

--
Eddie D. Tuggle, etuggle@dora.auc.trw.com | "There is nothing either good or
TRW Denver Operations | bad, but thinking makes it so."
16201 Centretech Pky / Aurora, CO 80011 | -- SHAKESPEARE
Voice: 303.360.4001 FAX: 303.360.4133 |

892. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: cityfarm@aol.com
Message-ID: <3ng602$fo5@newsbf02.news.aol.com>
Source record: 25192

I believe that this would be as good newgroup for those of us that live in restrictive environments. There are many unique problems that would not be of interest to other newgroup readers.

Steve
Cityfarm

893. Re: Question about STSPLUS Sat Tracker

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: ehw@gdstech.grumman.com
Message-ID: <1995Apr24.115147.29003@gdstech.grumman.com>
Source record: 25193

In article <3ms8lk$p6c@over.mhv.net> Thomas.Randall@bbs.mhv.net (Thomas Randall) writes:
>Jon H. Fuller (FULLER@UWSTOUT.EDU) wrote:
>: Trying out STSPLUS and have a question that I cannot find an answer to in the
>: documentation.
>
>: Does anyone know what the 'highlighed data" in F3 Pass Predictions and Data
>: Output signify. These lines always appear to be the passes with the lowest
>: angle. Does the "highlighted data" mean more than that?
>
>: Thanks in advance!
>
> Jon,
> My take on it is that it's showing the LOWEST altitude passes. I know
>of no other reason why it does that other than maybe it's a bug of some
>sort. Maybe someone else knows or has their own idea. GREAT program!
>
>
>Tom
>
Are you using a VGA Color monitor? On my system some passes are show in
low intensity. I believe those are passes, where the Maximum Elevation is
5 degrees or less. So while techincally visible, in a pratical sense a
sighting or communication is not likely.
Ed, KB2RPZ

894. Re: Helical Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Message-ID: <3ng43g$kb0@niven.ksc.nasa.gov>
Source record: 25194

horse1@ix.netcom.com (Leonard L. Winter) wrote:
>
> Would anyone know of any sources, other than the ARRL Antenna Book, for
> information on Helical antenna design, construction and applications? I
> an curious to know if they are usable for Goes sattelite reception. I
> have the impression that they are, but would like to be certain before
> starting to construct one.

Leonard:
Check out "The Satellite Experimeter's Handbook". It is available
at most Amateur Radio dealers, and also from the ARRL. You might also
check your local library.
73 de Roger, KD4ITU

895. * SpaceNews 24-Apr-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3nh467$jg2@pilot.njin.net>
Source record: 25195
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0424
* SpaceNews 24-Apr-95 *

BID: $SPC0424

=========
SpaceNews
=========

MONDAY APRIL 24, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* OZ7SAT NEWS *
===============
OZ7SAT is the joint effort of a group of Danish hams: OZ1DTI, OZ1LBM, OZ2ABA, OZ2BOA, OZ6BL, OZ9ADL, and OZ9VQ.

OZ7SAT is an automated groundstation and the eventual plan is to become part of the world wide Satellite Gateway (SatGate) project, most likely using LO-19 as the assigned satellite.

The present configuration of OZ7SAT is up- and downlink capability for the 1200 baud birds using a FT-790 on 70 cm and a converted Scanti radiotelephone on 2m. The 70 cm antenna is a 6 element yagi elevated about 30 degrees and the 2m antenna is a 4 element yagi mounted horizontally.

The TNC is presently a loaned DSP-12, but the group has purchased and built a DSP-93 which will be commissioned when the switch to LINUX is made.

The controlling software (PB/PG, WNOS and a lot of batch programs) is presently running under DOS on a 386 PC, but as DOS is a single thredded operating system, the software structure is very complicated and it has been decided to move to a LINUX platform this spring.

OZ7SAT is connected to the Danish terrestrial packet network via OZ2BOA, to which a separate link is established on 70 cm.

More information is available from Bent, OZ6BL.

[Info via OZ7SAT]

* WEBERSAT NEWS *
=================
WEBERSAT (WO-18) is broadcasting new images and light spectrometer data weekly. Software for the extraction, decoding, and display of spectrometer

data, written by Bob (KB7KCL), is available by request on AO-16/KO-23, or directly from Weber State University. Monday UTC, continues to be the day for the broadcast of the most recent spectrum, along with the week's WOD.

WeberWare 1.0, 1.2, 1.3, or a similar program is required for picture extraction, decoding, and display. WeberWare 1.3 is the current software version, and is available from Weber State University, AMSAT-NA, or AMSAT-UK. Photo 8/12 was taken over N. Ethiopia, and Photo 9/13 was taken over N. Chile near the coast.

Henry, ZL1AAN has been uploading JPEG compressed WeberSat images to AO-16 along with some helpful hints on contrast and colorization adjustment. Thanks, Henry!

The satellite now has a weak and relatively steady tone of about 1200 Hz in the downlink signal, which can cause reception problems with some modems. If this problem occurs, a ground-based solution is to adjust the IF-shift of the receiver to suppress the carrier into the skirts of the IF filter.

WO-18 is currently sending BCR +10 volt bus 0x21, BCR set point 0x22, +Y array current 0x29, battery 1 temperature 0x2F, RC transmitter output power 0x33, and +Y array temperature 0x36 whole orbit data (WOD). This is an excellent opportunity for a student, group, or class to use this data in trying to better understand WeberSat's power management system. WOD collection and broadcast will adhere to the following schedule:

17 April/Week3: BCR, 21 22 29 2F 33 36
24 April/Week4: Temperatures and impact detector, Ch# 14 2F 30 35 3B 40
1 May/Week1: Array currents, Ch# 26 27 28 29 2A 2B
8 May/Week2: User requested channels, Ch# ?? ?? ?? ?? ?? ??
15 May/Week3: BCR, 21 22 29 2F 33 36

[Info via IK3WVJ]

* THANKS! *
==========
Thanks to all those who sent messages of appreciation to SpaceNews, especially:

N2LXM G4LPZ F5DGQ KL7QR K8BZ DJ9MJ KB9IQL

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center

Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

896. kep update for Winorb21

Newsgroup: rec.radio.amateur.space
Date: 1995-04-24 00:00:00 UTC
From: rrm@ornews.intel.com
Message-ID: <3nhh62$olu@ornews.intel.com>
Source record: 25196

How do you update the tracking data for Winorb21...?? There seems to be more entries than the 2 line kep data will provide. Is anyone familiar with doing this with this program...?? I am relatively new to the whole satellite world so perhaps I'm overlooking the obvious.

Thanks for the replies in advance.

Robert - KA7JKP

897. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-25 00:00:00 UTC
From: jim@n5ial.mythical.com
Message-ID: <1995Apr25.035714.5840@n5ial.mythical.com>
Source record: 25197
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In article <3nglq0$7ps@wizard.uark.edu> plaws@comp.uark.edu (Peter Laws) writes:

>How about rec.radio.amateur.qrp? That includes those of us in rental
>units and CONdos as well as QRP fans (even though I run about 30W ... :).

I'm undecided as to how I'd vote for the proposed group, but the above suggestion is an entirely different topic. I live in an apartment, and have done so for virtually all of my time as a ham (the other time was in a duplex with a small yard, so it still sort of applies). I haven't run much QRP. In fact, the closest I ever really came to QRP was when I was using a loaner HF rig w/ my 4.5 Amp power supply---I had to limit the transmit power to < 10 watts to avoid going beyond the power supply's limits. Even the 30m xcvr I built once ran about 15 watts....

In my current apartment, I have full-sized dipoles folded along the (wood) stairs (like many buildings along the coast, and particularly here on the island, this apartment building is built on stilts to help protect it from storm surge in a hurricane/himicane). When I run voice (rare) or cw, I run a full 100 watts. When I run AMTOR/PacTOR, my HF rig automatically cuts the power down to about 50 watts due to the high duty cycle.

Do I have RFI problems? Nope. I did, briefly, when a neighbor had a quick-disconnect cable between his TV and VCR, but that took a few seconds to fix, and has never re-appeared.

If anything, though, I think a QRP group would be more fitting than a sub-group for restricted space antennas, which, IMHO, is probably ok right here.

Just my $0.02, all IMHO, of course.

Later,
--jim

--
73 DE N5IAL (/4) MiSTie #49997 < Running Linux 1.0.9 >
jim@n5ial.mythical.com ICBM: 30.23N 86.32W
|| j.graham@ieee.org Packet: --OFFLINE-- (Ft. Walton Beach, FL)
E-mail me for information about KAMterm (host mode for Kantronics TNCs).

898. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-25 00:00:00 UTC
From: rlindberg@kendaco.telebyte.com
Message-ID: <rlindberg-2504950544230001@192.0.2.1>
Source record: 25198
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

> In article <3nglq0$7ps@wizard.uark.edu> plaws@comp.uark.edu (Peter Laws)
> writes:
>
> >How about rec.radio.amateur.qrp? That includes those of us in rental
> >units and CONdos as well as QRP fans (even though I run about 30W ... :).

IMHO this is a much better idea then the current name. My feeling is
there is a much broader base of users for qrp, and it could include the
low profile people also, since they seldom run 1000 watts.

Ralph

--
Ralph Lindberg N7BSN
email to: dragonsl@scn.org (best address, read daily)
rlindberg@kpt.nuwc.navy.mil (last resort only, please)
They call it "Surfin the Net" beacuse you can wipe out so easy

899. sts-64

Newsgroup: rec.radio.amateur.space
Date: 1995-04-25 00:00:00 UTC
From: Colin Carson <carson@MBnet.MB.CA>
Message-ID: <Pine.SUN.3.91.950425062033.17588A-100000@access.mbnet.mb.ca>
Source record: 25199

Anyone know where i can get a confirmation report of the Hams that contacted
STS-64.I sent in my QSL for voice but as yet no card recieved.
Colin Carson VE4CSN
carson@mbnet.mb.ca

900. Hello

Newsgroup: rec.radio.amateur.space
Date: 1995-04-25 00:00:00 UTC
From: steve.meyerpeter@digcir.cts.com
Message-ID: <950424223845139@digcir.cts.com>
Source record: 25200

Hi Jim,
Just a quick note to see if thie E-Mail thing works and to wish good health and recovery to Mary and Jake. We have a mild Santa Anna going on here the last two days so its been in the 80s'. Feels like spring is finally here although I suppose we could have a few more storms before the season is over. I've been planting a garden so Jerri can have all the organic vegitables the Doctor has been telling her to eat. We hear you've had another snow storm since we last talked. Those wet spring storms can be some of the worst in your part of the country. I can remember my Dad waking me up in the middle of the night to go outside with him and climb the trees to shake the branches free of snow so they wouldn't break under the weight. Actually, once I was awake it was kind of fun. Well, talk to you later.

Steve

901. Re: kep update for Winorb21

Newsgroup: rec.radio.amateur.space
Date: 1995-04-25 00:00:00 UTC
From: jeg@mariah.jhuapl.edu
Message-ID: <jeg.798827677@mariah.jhuapl.edu>
Source record: 25201

In <3nhh62$olu@ornews.intel.com> rrm@ornews.intel.com (Robert Miller) writes:

>How do you update the tracking data for Winorb21...?? There seems to be
>more entries than the 2 line kep data will provide. Is anyone familiar with
>doing this with this program...?? I am relatively new to the whole
>satellite world so perhaps I'm overlooking the obvious.

>Thanks for the replies in advance.

>Robert - KA7JKP

Greetings Robert,

I am currently running Winorb2.3 (I think it's on ftp.ucsd.edu) and this is what I do. First I anonymous ftp archive.afit.af.mil, cd to the space directory and get the file; tle.new (this is updated ~ 24HR). I copy the tle file to the winorb directory and rename it to tle.2li. After firing up winorb I select "Satellite Info..." from the main satellite window. When the "Satellite Info..." dialog appears I select "File" from the dialog window menu, one selection this menu caontains is the "New 2li" command, I selcect it and then select the tle.2li file. Once that is done I can scroll through the satellite selector window and double click to choose any listed satellite to view. OBTW, you can also type the name of the satellite you wish to view in the current satellite box in the dialog box to select a new satellite. Hope this helps.

John, kd3wy
grimes@cape.jhuapl.edu

#include<Standard.Disclaimers>

902. Re: Helical Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-04-25 00:00:00 UTC
From: demerson@bass.tuc.NRAO.EDU
Message-ID: <3nhlrf$e6t@solitaire.cv.nrao.edu>
Source record: 25202

There is a detailed article on helical antennas in Volume IV of
the ARRL Antenna Compendium series, just published.

73
Darrel, aa7fv

903. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-25 00:00:00 UTC
From: R lindberg + E Winnie <rlindber@kendaco.telebyte.com>
Message-ID: <Pine.LNX.3.91.950425115930.18970B-100000@kendaco.telebyte.com>
Source record: 25203
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

On Sun, 23 Apr 1995, Bruce Miller wrote:

> Well, I currently live in an apartment and have been wondering what
> to do about antennae, et al, so there might be interest here.

Hi, the best place would probibly be in the existing newsgroup,
rec.radio.amateur.antenna.

Ralph Lindberg N7BSN Ellen Winnie N7PYK
e-mail => dragonsl@scn.org (best address, read daily, forwards to find us)
rlindberg@kpt.nuwc.navy.mil (last resort only)

904. Europe via RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: dbcntcas@teleport.com
Message-ID: <dbcntcas-2604951429240001@ip-pdx7-21.teleport.com>
Source record: 25111

I hope a few Western European operators are watching this news group who are on RS-15. I am a bit discouraged with trying to work into Europe from here (CN85). I have a fairly short window into Europe and signals are pretty weak with QSB. I have one partial QSO with an SM4 on SSB, but not sure of his call. For those who would like to try to work the West Coast of the US, please use CW. I do not know how it is across the Atlantic, but there seems to be some kind of birdie around 29.360. Almost impossible to copy thru it here. I will try to be between 29.370-80 on CW from this end. I can usually copy my CW til about one minuite before I lose the RS-15 beacon, so I can get pretty close to the horizon from here. Very frustrating from this end my friends. Hope to catch some of you on RS-15. 73's de Dave, N7DB (CN85)

--
Dave Bernhardt dbcntcas@teleport.com

905. Re: MIR FREQUENCY

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: dsantoro@pipeline.com
Message-ID: <3nlmq0$t2k@news.nyc.pipeline.com>
Source record: 25112

ericksco@mhd.moorhead.msus.edu wrote:

>Can anyone tell me what the UPLINK frequency is to the Russian Space Station
>MIR is?? I know the downlink is 145.550, but what is the UPLINK???

Mir operates on that frequency SIMPLEX. (ie the upling freq. is also
145.55)

Hope this helps,
Dave N2VYP

906. Re: sts-64

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3nkeoo$6v@news.onramp.net>
Source record: 25204

>>Anyone know where i can get a confirmation report of the Hams that
>>contacted
>>STS-64.I sent in my QSL for voice but as yet no card recieved.

I think STS-64 was about Sept 94
I am still waiting for STS-65 which was in July 94

BOb KC5EJK Dallas

907. MIR FREQUENCY

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: ericksco@mhd.moorhead.msus.edu
Message-ID: <3nkpub$cpl@urvile.MSUS.EDU>
Source record: 25205

Can anyone tell me what the UPLINK frequency is to the Russian Space Station
MIR is?? I know the downlink is 145.550, but what is the UPLINK???
Thanks
Cory ericksco@mhd1.moorhead.msus.edu

908. Re: sts-64

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: ericksco@mhd.moorhead.msus.edu
Message-ID: <3nkos1$cgo@urvile.MSUS.EDU>
Source record: 25206

STS 64 was only last Sept. It will take you a little while yet to get your card. I also contacted that mission, and have not recieved a card yet. THE KEY TO GETTING A QSL CARD is to be sure you enclose a S.A.S.E. or you will not get one.

Congrats to you on your contact.

909. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: mark@ve6mgs.ampr.ab.ca
Message-ID: <D7n9p3.K8@ve6mgs.ampr.ab.ca>
Source record: 25207
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

rlindberg@kendaco.telebyte.com (R. Lindberg & E. Winnie) writes:

>> In article <3nglq0$7ps@wizard.uark.edu> plaws@comp.uark.edu (Peter Laws)
>> writes:
>> >How about rec.radio.amateur.qrp? That includes those of us in rental
>> >units and CONdos as well as QRP fans (even though I run about 30W ... :).
> IMHO this is a much better idea then the current name. My feeling is
>there is a much broader base of users for qrp, and it could include the
>low profile people also, since they seldom run 1000 watts.

Gohd, I hate being prototypical, but a `me too' for this one. When we were creating the new rec.radio.amateur.* heirarchy, this (*.qrp) was one of the proposed groups that disappeared because of not enough support though ..., but I would expect more support for the slightly broader *.qrp group than for the badly named *.low-profile (my prior comments about low-profile surface mount components).

Ciao -- Mark

910. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: mc@shore.net
Message-ID: <3nldue$sbj@shore.shore.net>
Source record: 25208
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

e-mail => dragonsl@scn.org (best address, read daily, forwards to find us)
rlindberg@kpt.nuwc.navy.mil (last resort only)

On Fri, 21 Apr 1995, R lindberg + E Winnie wrote:

>> I never thought I would say this about an amateur newsgroup, but I
>> think this is a BAD idea, too narrow in focus and with too limited a base
>> of users.

And Tony Stalls replied:

>It's getting to the point that in order to live somewhere these days, it's
>necessary to waive all kinds of rights and otherwise regular privileges,
>including those pertaining to antennas that are normally at least
>partially protected by PRB-1. Condo and apartment living is becoming more
>common as single family dwellings are becoming less affordable and an
>increasing number of amateurs are being subjected to these severe
>restrictions.

>The issues that might be addressed go beyond just a type of antenna. A
>rec.radio.amateur.low-profile newsgroup can deal with and provide help
>with both "stealth" antennas and the issues that make them necessary.
>
> +---------------------------------+---------------+------------+
> | Richard A. (Tony) Stalls, K4KYO | Arlington, VA | ras@us.net |
> +---------------------------------+---------------+------------+

And some wisdom from davev@atkc.COM (Dave van De Kerk)

:As an apartment dweller and a radio amateur interested in
:HF CW, this group is exactly what I am looking for. It is
:not just limited to discussion about antennas. Topics I
:forsee include:

* dealing with landlords and covenants
* TVI and RFI to others
* TVI and RFI interference to your operation from
others.
* negotiations with neighbors on operating
* strategies for HF operations to stations out of
your own state on extremely ineffecient antennas
and low power.
* RF safety in extreme proximity.
* operating satellites with low profile equipment.
* Urban emergency operations using rapidly deployed,

improvised installations.
* Care and feeding of the older, less expensive
equipment us "stealth" operators seem to use.
* Installation of the shack in very space challenged
areas that the XYL or other significant other
lets us use.
* How to get a good ground on the 27th story.

:None of those topics are related to antennas. Of course, I
:also would include:

* help with making an HF antenna that is nearly
invisible and gets out.
* invisible commercial HF antennas.
* help with making a VHF or UHF antenna that is nearly
invisible and gets out.
* invisible commercial VHF/UHF antennas.
* antenna modeling
* antenna installation tips and hints

:For those of us who are not rich, never will be rich, and have
:less space to work with all the time, this group looks wonderful.
:Please vote yes.

Low-profile ham radio is an extremely challanging and highly specialized
pursuit of the Hobby. As quoted herein, there are a myriad of subjects
that need to be cussed and discussed. I have been a fan of operating
my HF station under all kinds of conditions, mobile and portable and
I highly endorse this newsgroup. Just because some of us are fortunate
enough to have full-size dipoles and gain antennas NOW, remember that it
wasn't always this way and that there are others who need this exchange of
specialized information to learn and experiment to improve their skills
and talents in this area.

If the Net can support 8,000 + newsgroups, would one more really make a
difference? Next tine you take a trip, try taking along a 40M QRP
transciever and some magnet wire and try to make a contact or two.
This kind of activity can be great therapy after a day full of snake-pit
business meetings. Try working some of your buddies back home from your
Company-paid hotel room. Its a lot of fun! At least if you are not into
trying this, you may find it enjoyable and entertaining to read the experience
of others. Remember, the basis of our Hobby and license is EXPERIMENTATION!
With the proliferation of consumer-grade transcievers and "rice rockets"
which are not generally user-servicable, can any of you tell me any areas
of research and experimentation other than antennas and operating under
low-profile conditions? So, loosen up you detractors, and think before
you condemn! No one's twisting your arm to read or participate in this
proposed newsgroup. You probably wouldn't have much to contribute anyways!

Donning asbestos suit! Fire away! But no replies until after Dayton!

73,

H Michael Crestohl KH6KD/W1
Nahant Massachusetts U.S.A.
mc@shore.net

911. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: mark@ve6mgs.ampr.org
Message-ID: <1995Apr26.154137.3536@ve6mgs.ampr.org>
Source record: 25209
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

mc@shore.net (Michael Crestohl) writes:

>If the Net can support 8,000 + newsgroups, would one more really make a
>difference?

?

The reason for a group is to be if there will be sustainable discussions. This group is being proposed has a *lot* to do with rec.radio.amateur.antenna with a bit of the inflamatory rec.radio.amateur.policy thrown in to boot. If the existing group structure can support discussions proposed in the group, then one should ask `Why do some people feel the existing group is inappropriate for this discussion'.

>Next tine you take a trip, try taking along a 40M QRP
>transciever and some magnet wire and try to make a contact or two.
>This kind of activity can be great therapy after a day full of snake-pit
>business meetings.

You just described the entire rec.radio.amateur.* hierarchy, minus the previously proposed (and failed) group rec.radio.amateur.qrp ...

Ciao -- Mark

912. Re: MIR FREQUENCY

Newsgroup: rec.radio.amateur.space
Date: 1995-04-26 00:00:00 UTC
From: maenpaa@rtsg.mot.com
Message-ID: <3nlfek$evj@newdelph.cig.mot.com>
Source record: 25210

In article <3nkpub$cpl@urvile.MSUS.EDU>, ericksco@mhd.moorhead.msus.edu writes:
|> Can anyone tell me what the UPLINK frequency is to the Russian Space Station
|> MIR is?? I know the downlink is 145.550, but what is the UPLINK???

MIR operates simplex. The uplink frequency is also 145.550.
--

John Maenpaa WB9JEJ
maenpaa@cig.mot.com

913. Re: Help with WISP

Newsgroup: rec.radio.amateur.space
Date: 1995-04-27 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3nobvc$23b@newshost.lanl.gov>
Source record: 25113

You have to set the priorities for the satellites. If there
is a priority conflict or a priority has not been set this
seems to happen. You can put a satellite in the list with
a priority of 0 and it will show up in the pass list but you
will not get the radio tuned. I

914. Re: sts-64

Newsgroup: rec.radio.amateur.space
Date: 1995-04-27 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3nn4pd$b5s@news.onramp.net>
Source record: 25114

Now How do we send the extra postage because what we sent last year will be too little. Or do old stamps pay interest :-)

Bob KC5EJK Dallas

915. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-04-28 00:00:00 UTC
From: rwa@cs.athabascau.ca
Message-ID: <rwa.799088205@atha>
Source record: 25115
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

mark@ve6mgs.ampr.ab.ca (Mark Gregory Salyzyn) writes:

>rlindberg@kendaco.telebyte.com (R. Lindberg & E. Winnie) writes:

>>> In article <3nglq0$7ps@wizard.uark.edu> plaws@comp.uark.edu (Peter Laws)
>>> writes:
>>> >How about rec.radio.amateur.qrp? That includes those of us in rental
>>> >[...]

>Gohd, I hate being prototypical, but a `me too' for this one. When we were
>[...]

I also support .qrp rather than .low-profile. For a start, it's shorter :).

regards,
Ross ve6pdq
--
Ross Alexander, ve6pdq -- (403) 675 6311 -- rwa@cs.athabascau.ca

916. Re: MIR FREQUENCY

Newsgroup: rec.radio.amateur.space
Date: 1995-04-28 00:00:00 UTC
From: mckee@fc.hp.com
Message-ID: <3nr83d$jso@tadpole.fc.hp.com>
Source record: 25116

ericksco@mhd.moorhead.msus.edu wrote:
: Can anyone tell me what the UPLINK frequency is to the Russian Space Station
: MIR is?? I know the downlink is 145.550, but what is the UPLINK???

145.550. Mir is not split..

Bret

917. Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-04-29 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.799126925@dolphin>
Source record: 25117

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated several times weekly. Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated weekly) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

918. Two-Line Orbital Element Sets (TLE595)

Newsgroup: rec.radio.amateur.space
Date: 1995-04-29 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.799128428@dolphin>
Source record: 25118

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #595 -
Alouette 1
1 00424U 62049A 95116.12333491 .00000111 00000-0 12055-3 0 1002
2 00424 80.4623 336.2512 0024313 30.8691 329.3876 13.67839603625183
ATS 1
1 02608U 66110A 95104.44575540 -.00000064 00000-0 10000-3 0 9279
2 02608 14.6308 357.3263 0009845 57.0437 303.0338 1.00315398 20553
ATS 3
1 03029U 67111A 95111.24514148 -.00000129 00000-0 10000-3 0 3526
2 03029 14.8008 4.2800 0008766 276.1841 271.2691 1.00272828100523
Cosmos 398
1 04966U 71016A 95117.05254021 .00112381 81724-5 13600-3 0 8278
2 04966 51.4224 99.8349 0658662 274.6840 77.9172 14.76741676817593
Starlette
1 07646U 75010A 95111.15362365 -.00000147 00000-0 -52700-5 0 8794
2 07646 49.8285 18.0662 0205739 273.2855 84.4525 13.82188292 20455
LAGEOS
1 08820U 76039A 95111.43393371 .00000010 00000-0 10000-3 0 999
2 08820 109.8377 241.1560 0044146 219.2774 140.4523 6.38664296186830
ETS-2
1 09852U 77014A 95097.35227856 -.00000053 00000-0 10000-3 0 210
2 09852 12.6382 38.0039 0002444 46.6282 313.3665 0.99994637 13279
GOES 2
1 10061U 77048A 95113.49422958 .00000052 00000-0 10000-3 0 5184
2 10061 11.7286 42.0054 0010218 122.0759 51.0411 1.00248687 10221
IUE
1 10637U 78012A 95116.11857868 -.00000233 00000-0 10000-3 0 1299
2 10637 35.1089 89.8314 1324775 45.0542 66.1337 1.00239592 15741
GPS BI-01
1 10684U 78020A 95111.20929854 -.00000050 00000-0 10000-3 0 3503
2 10684 64.8141 36.3791 0060925 163.7633 196.4384 1.98069491111033
```

```
GPS BI-02
1 10893U 78047A 95098.35187616 .00000031 00000-0 10000-3 0 1568
2 10893 63.3660 274.9751 0221444 14.3536 346.2599 2.01627358124022
GOES 3
1 10953U 78062A 95113.49592519 .00000060 00000-0 10000-3 0 4809
2 10953 10.6976 44.7835 0003221 93.8538 77.5503 1.00294595 14832
SeaSat 1
1 10967U 78064A 95110.73560940 .00000004 00000-0 45822-4 0 3902
2 10967 107.9995 18.6281 0001724 251.8351 108.2609 14.38027364880572
GPS BI-03
1 11054U 78093A 95102.46301566 .00000020 00000-0 10000-3 0 2760
2 11054 63.0618 272.9100 0044686 177.0368 182.9757 1.93505222120302
Nimbus 7
1 11080U 78098A 95108.16154492 -.00000108 00000-0 -59856-4 0 4934
2 11080 99.0122 344.7137 0009586 37.3846 322.7972 13.83711982832258
GPS BI-04
1 11141U 78112A 95115.96773154 -.00000089 00000-0 10000-3 0 9701
2 11141 64.8133 37.9860 0048193 26.2131 334.0359 1.92894915 9811
GPS BI-05
1 11690U 80011A 95111.04985544 -.00000045 00000-0 10000-3 0 9021
2 11690 65.1428 38.0269 0145221 195.1352 164.4512 2.00562991125717
GPS BI-06
1 11783U 80032A 95116.57494612 -.00000050 00000-0 10000-3 0 714
2 11783 62.4873 267.6986 0217739 29.4705 331.7148 2.03456627110332
GOES 5
1 12472U 81049A 95111.76268793 -.00000294 00000-0 10000-3 0 8521
2 12472 7.4240 54.6747 0005904 11.1947 348.7602 1.00296064 8869
Cosmos 1383
1 13301U 82066A 95109.03666314 -.00000001 00000-0 -18724-4 0 3974
2 13301 82.9282 85.5203 0027214 335.5605 24.4250 13.68064809639243
LandSat 4
1 13367U 82072A 95115.15947166 .00000034 00000-0 17494-4 0 6611
2 13367 98.1340 172.2891 0007355 12.1972 347.9404 14.57152717679495
DMSP B5D2-1
1 13736U 82118A 95105.50950276 .00000074 00000-0 49734-4 0 7039
2 13736 98.6305 295.7003 0007897 192.8091 167.2890 14.25725375639989
IRAS
1 13777U 83004A 95117.04877525 -.00000032 00000-0 79230-5 0 9409
2 13777 98.9677 306.4150 0011859 165.7485 194.4009 13.99234027295038
Cosmos 1447
1 13916U 83021A 95108.60932666 .00000033 00000-0 19607-4 0 4948
2 13916 82.9434 145.8165 0036195 258.6941 101.0148 13.74324153605280
TDRS 1
1 13969U 83026B 95112.80944370 -.00000207 00000-0 10000-3 0 4090
2 13969 8.2839 47.8628 0004363 293.3691 245.3402 1.00264519 17156
GOES 6
1 14050U 83041A 95115.24111164 .00000007 00000-0 10000-3 0 3879
2 14050 6.2448 57.7823 0005569 350.4423 126.2677 1.00312295101998
OSCAR 10
1 14129U 83058B 95113.84541411 -.00000257 00000-0 10000-3 0 3474
```

```
2 14129 26.4940 271.6858 6010172 270.9642 24.9868 2.05878548 61212
LandSat 5
1 14780U 84021A 95115.19555626 .00000022 00000-0 14784-4 0 2293
2 14780 98.1181 172.9653 0005182 20.5229 339.6177 14.57158920592913
UoSat 2
1 14781U 84021B 95105.53478433 .00000168 00000-0 36203-4 0 7893
2 14781 97.7823 111.0171 0012549 27.4078 332.7787 14.69330689594701
GPS BI-09
1 15039U 84059A 95102.11886673 -.00000047 00000-0 10000-3 0 2833
2 15039 64.4715 32.7756 0082315 16.2013 344.0499 1.92302311 79123
Cosmos 1574
1 15055U 84062A 95109.22539320 .00000038 00000-0 24277-4 0 6956
2 15055 82.9569 199.3401 0029161 83.9443 276.5042 13.73620162542642
GPS BI-10
1 15271U 84097A 95114.22761370 -.00000027 00000-0 10000-3 0 9637
2 15271 62.2041 268.0932 0155341 353.4982 6.2469 2.00596455 76844
Cosmos 1602
1 15331U 84105A 95108.58122391 .00000269 00000-0 28906-4 0 3827
2 15331 82.5350 151.7338 0018400 276.9575 82.9556 14.84603117569820
NOAA 9
1 15427U 84123A 95117.84851813 .00000033 00000-0 41455-4 0 2271
2 15427 99.0004 176.2589 0015992 52.5926 307.6684 14.13701108534806
GPS BI-11
1 16129U 85093A 95110.24874975 -.00000045 00000-0 10000-3 0 6470
2 16129 65.1456 35.5757 0153652 87.1106 274.6462 1.89368093 13894
Mir
1 16609U 86017A 95114.23599939 .00004625 00000-0 66062-4 0 74
2 16609 51.6459 67.9249 0005387 44.8431 315.2996 15.58427643524548
SPOT 1
1 16613U 86019A 95110.82802429 .00000090 00000-0 62356-4 0 8020
2 16613 98.6532 183.4462 0001881 62.2156 297.9110 14.20053920160226
Cosmos 1766
1 16881U 86055A 95109.24065463 .00000231 00000-0 25103-4 0 2974
2 16881 82.5197 208.9764 0018269 303.3780 56.5700 14.83610793470831
EGP
1 16908U 86061A 95110.75964951 -.00000083 00000-0 10000-3 0 9915
2 16908 50.0093 218.7969 0011144 16.2425 343.8765 12.44412052 63680
NOAA 10
1 16969U 86073A 95117.88196743 .00000042 00000-0 35906-4 0 1371
2 16969 98.5092 122.2836 0013733 125.8544 234.3909 14.24932563447314
MOS-1
1 17527U 87018A 95116.22121355 -.00000072 00000-0 -21503-4 0 2000
2 17527 98.9889 182.7136 0001142 107.0120 253.1161 13.94923996416580
GOES 7
1 17561U 87022A 95114.37454822 .00000069 00000-0 10000-3 0 3548
2 17561 2.2195 72.8422 0004048 356.0250 141.4721 1.00281848 13098
Kvant-1
1 17845U 87030A 95117.05746172 -.00013328 00000-0 -16520-3 0 2313
2 17845 51.6468 53.7760 0005556 51.4480 308.7040 15.58431652524900
DMSP B5D2-3
```

```
1 18123U 87053A 95114.76269661 .00000043 00000-0 44575-4 0 9470
2 18123 98.7801 306.7528 0014956 15.0818 345.0799 14.15400530405165
RS-10/11
1 18129U 87054A 95111.03733503 .00000049 00000-0 37110-4 0 503
2 18129 82.9206 101.3117 0010019 247.4679 112.5413 13.72351365392135
Meteor 2-16
1 18312U 87068A 95112.06526730 .00000070 00000-0 49565-4 0 3894
2 18312 82.5539 326.8909 0012259 333.1899 26.8624 13.84055520387785
Meteor 2-17
1 18820U 88005A 95117.77418823 .00000108 00000-0 82838-4 0 6037
2 18820 82.5505 18.3583 0017803 19.6357 340.5479 13.84737340365897
DMSP B5D2-4
1 18822U 88006A 95105.10966556 .00000008 00000-0 21918-4 0 9152
2 18822 98.4098 312.0839 0005700 172.2947 187.8319 14.23149321373540
Glonass 34
1 19163U 88043A 95111.25405195 .00000064 00000-0 10000-3 0 9849
2 19163 65.1136 100.0852 0005989 158.0325 201.9845 2.13102639 53223
Glonass 36
1 19165U 88043C 95110.84104797 .00000062 00000-0 10000-3 0 3852
2 19165 65.0906 100.0687 0002226 299.0199 60.9564 2.13102091 53831
METEOSAT 3
1 19215U 88051A 95114.41042193 -.00000293 00000-0 10000-3 0 1131
2 19215 2.3953 70.1526 0002384 38.8401 182.1272 1.00272262 13036
AO-13
1 19216U 88051B 95113.18323622 -.00000453 00000-0 10000-4 0 299
2 19216 57.5577 191.4914 7283147 7.2104 359.2988 2.09724230 21019
OKEAN 1
1 19274U 88056A 95105.09450107 .00000232 00000-0 25873-4 0 9969
2 19274 82.5147 313.1919 0021717 94.6656 265.7039 14.82323988365805
Meteor 3-2
1 19336U 88064A 95111.00125950 .00000051 00000-0 10000-3 0 3867
2 19336 82.5366 105.8832 0015429 210.2054 149.8165 13.16972551323772
Glonass 39
1 19503U 88085C 95111.80750873 -.00000051 00000-0 10000-3 0 2738
2 19503 65.7014 338.9577 0009448 164.4719 195.5979 2.13101855 51346
NOAA 11
1 19531U 88089A 95117.88871119 .00000040 00000-0 46594-4 0 399
2 19531 99.1917 119.8910 0011631 334.3099 25.7544 14.13048252339652
TDRS 2
1 19548U 88091B 95110.48366509 .00000078 00000-0 10000-3 0 1160
2 19548 1.6449 74.7421 0003204 351.8622 144.5088 1.00263329 11282
Glonass 40
1 19749U 89001A 95116.06942149 .00000049 00000-0 10000-3 0 4919
2 19749 65.0606 99.4787 0017332 88.2011 272.0033 2.13101391 48948
Glonass 41
1 19750U 89001B 95114.24801062 .00000066 00000-0 10000-3 0 4062
2 19750 65.0722 99.5995 0005705 238.3783 121.5636 2.13101840 48920
GPS BII-01
1 19802U 89013A 95114.83651459 .00000068 00000-0 10000-3 0 452
2 19802 55.1816 127.3279 0027151 185.5149 174.5045 2.00574906 45309
```

```
Akebono
1 19822U 89016A 95117.70592700 .00014987 00000-0 80192-3 0 4840
2 19822 75.0870 4.0528 3782064 58.4788 333.1026 7.85207017133855
Meteor 2-18
1 19851U 89018A 95111.47650211 -.00000007 00000-0 -19416-4 0 3878
2 19851 82.5140 258.1074 0015787 79.7669 280.5266 13.84387215310347
MOP-1
1 19876U 89020B 95112.65662968 -.00000091 00000-0 10000-3 0 1106
2 19876 1.1056 70.9181 0001380 356.4271 11.3424 1.00272211 2465
TDRS 3
1 19883U 89021B 95113.13686634 -.00000289 00000-0 10000-3 0 664
2 19883 0.0191 283.3160 0002539 85.1751 210.5863 1.00272340194896
GPS BII-02
1 20061U 89044A 95115.67806930 -.00000054 00000-0 10000-3 0 551
2 20061 54.5036 303.6074 0143705 214.9690 144.0583 2.00563613 43062
Nadezhda 1
1 20103U 89050A 95114.79128472 .00000043 00000-0 29495-4 0 3699
2 20103 82.9594 57.9681 0038073 139.6775 220.7215 13.73852357291094
GPS BII-03
1 20185U 89064A 95105.05273503 .00000077 00000-0 10000-3 0 784
2 20185 55.0164 128.3132 0105977 317.6868 41.4463 2.00546898 41422
GMS 4
1 20217U 89070A 95113.42338044 -.00000305 00000-0 10000-3 0 1820
2 20217 0.9320 75.7085 0000602 89.8532 338.1088 1.00268458 21203
INTERCOSMOS 24
1 20261U 89080A 95116.24618451 .00000132 00000-0 41094-4 0 4048
2 20261 82.5965 177.6595 1240465 271.9839 73.9998 12.47241513253802
GPS BII-04
1 20302U 89085A 95113.55579617 -.00000055 00000-0 10000-3 0 559
2 20302 53.4166 243.7849 0008693 186.8804 173.1565 2.00554806 40396
Meteor 3-3
1 20305U 89086A 95117.02154335 .00000044 00000-0 10000-3 0 3005
2 20305 82.5475 53.0024 0005452 270.1335 89.9031 13.04411411263814
COBE
1 20322U 89089A 95116.03618753 .00000362 00000-0 25948-3 0 1149
2 20322 98.9639 132.8501 0009410 116.7653 243.4490 14.03450943278273
Kvant-2
1 20335U 89093A 95117.05746172 -.00013328 00000-0 -16520-3 0 2446
2 20335 51.6468 53.7760 0005556 51.4480 308.7040 15.58431652308111
GPS BII-05
1 20361U 89097A 95117.05969662 -.00000047 00000-0 10000-3 0 9144
2 20361 55.7331 69.8134 0078037 123.8339 236.9183 2.00561456 29948
SPOT 2
1 20436U 90005A 95110.88256491 -.00000044 00000-0 00000+0 0 9211
2 20436 98.7405 185.6926 0001794 84.2831 275.8565 14.20021565271761
UO-14
1 20437U 90005B 95108.18345953 .00000021 00000-0 25233-4 0 893
2 20437 98.5695 193.5167 0011755 18.7321 341.4292 14.29882591273177
UO-15
1 20438U 90005C 95108.75338136 .00000005 00000-0 19028-4 0 8864
```

```
2 20438 98.5631 192.6706 0010609 22.4383 337.7259 14.29203667273154
PACSAT
1 20439U 90005D 95111.72614765 .00000005 00000-0 18792-4 0 8880
2 20439 98.5800 198.5962 0011839 9.8006 350.3408 14.29936853273695
DO-17
1 20440U 90005E 95111.86013667 -.00000032 00000-0 46246-5 0 8888
2 20440 98.5815 199.1668 0011825 9.0450 351.0917 14.30077381273735
WO-18
1 20441U 90005F 95112.19112184 -.00000002 00000-0 16296-4 0 8923
2 20441 98.5813 199.4705 0012521 7.4770 352.6600 14.30049445273781
LO-19
1 20442U 90005G 95111.72819657 .00000019 00000-0 24064-4 0 8885
2 20442 98.5816 199.3551 0012846 8.0084 352.1301 14.30151165273739
GPS BII-06
1 20452U 90008A 95111.47397571 -.00000018 00000-0 10000-3 0 221
2 20452 54.0228 183.9780 0069605 83.9984 276.5848 2.00564315 38332
MOS-1B
1 20478U 90013A 95117.19973585 .00000091 00000-0 10000-3 0 7727
2 20478 98.9919 187.9377 0000420 144.3444 215.7746 13.94918472186421
DEBUT
1 20479U 90013B 95112.27176762 -.00000059 00000-0 -57906-4 0 8874
2 20479 99.0685 211.4119 0540875 359.4814 0.5669 12.83327816243784
FO-20
1 20480U 90013C 95108.29766810 -.00000026 00000-0 15490-4 0 7843
2 20480 99.0691 208.0347 0541079 8.8460 352.1726 12.83229156243268
MOS-1B R/B
1 20491U 90013D 95116.96638287 -.00000203 00000-0 -31886-3 0 1268
2 20491 99.0354 267.9545 0469867 191.5466 167.4560 13.02978714247529
LACE
1 20496U 90015A 95114.28465450 .00001969 00000-0 66205-4 0 5286
2 20496 43.1031 78.1453 0010104 222.4228 137.5847 15.34415157289292
Nadezhda 2
1 20508U 90017A 95114.74142786 .00000044 00000-0 29782-4 0 3670
2 20508 82.9563 192.5848 0046213 92.9366 267.7079 13.73492319258317
OKEAN 2
1 20510U 90018A 95105.38365448 .00000221 00000-0 27204-4 0 3962
2 20510 82.5201 264.1644 0017682 285.6035 74.3199 14.78475688276318
GPS BII-07
1 20533U 90025A 95111.38472490 -.00000038 00000-0 10000-3 0 372
2 20533 54.8318 304.4153 0049091 79.0089 281.5465 2.00561555 37101
PegSat
1 20546U 90028A 95110.43450470 .00004940 00000-0 10469-3 0 7852
2 20546 94.1107 111.5768 0066057 197.1255 162.7802 15.42841172279575
HST
1 20580U 90037B 95104.22980700 .00000369 00000-0 21458-4 0 6114
2 20580 28.4682 101.8860 0006119 358.7055 1.3508 14.90851945 74353
MACSAT 2
1 20608U 90043B 95111.64738063 .00000213 00000-0 33601-4 0 888
2 20608 89.9324 176.9834 0108506 92.5653 268.7994 14.64824376264430
Glonass 44
```

```
1 20619U 90045A 95107.52223810 -.00000032 00000-0 10000-3 0 1814
2 20619 65.3035 338.5444 0024067 210.9620 148.9555 2.13102459 38210
Glonass 45
1 20620U 90045B 95117.49549141 -.00000043 00000-0 10000-3 0 1925
2 20620 65.2975 338.1974 0009826 47.1510 312.9864 2.13102643 38460
Glonass 46
1 20621U 90045C 95110.52272942 -.00000049 00000-0 10000-3 0 7893
2 20621 65.3213 338.4698 0014131 192.4754 167.5295 2.13101568 38313
Kristall
1 20635U 90048A 95117.05746172 -.00013328 00000-0 -16520-3 0 382
2 20635 51.6468 53.7760 0005556 51.4480 308.7040 15.58431652524855
ROSAT
1 20638U 90049A 95106.09298919 -.00000036 00000-0 16494-4 0 4071
2 20638 52.9904 66.5618 0010404 265.0672 94.9121 15.07146191267757
Meteor 2-19
1 20670U 90057A 95112.10901087 -.00000030 00000-0 -40030-4 0 8872
2 20670 82.5458 323.1120 0016852 5.5822 354.5523 13.84162866243354
CRRES
1 20712U 90065A 95115.12119705 .00000194 00000-0 28193-3 0 811
2 20712 18.0221 60.4358 7180497 64.2639 351.0558 2.35393529 33239
GPS BII-08
1 20724U 90068A 95110.20866409 .00000040 00000-0 10000-3 0 8952
2 20724 54.8202 125.6958 0117118 172.2452 187.9732 2.00559984 32943
Feng Yun1-2
1 20788U 90081A 95117.77296418 -.00000027 00000-0 10000-4 0 3641
2 20788 98.8128 132.5294 0014553 208.7349 151.3015 14.01339394237779
Meteor 2-20
1 20826U 90086A 95111.81038476 .00000029 00000-0 12798-4 0 8985
2 20826 82.5223 260.4073 0011916 266.5486 93.4313 13.83605408230432
GPS BII-09
1 20830U 90088A 95104.27370534 -.00000000 00000-0 10000-3 0 9027
2 20830 55.6473 68.3018 0064245 100.6626 260.0445 2.00570268 33460
GPS BIIA-10
1 20959U 90103A 95117.14374241 .00000063 00000-0 10000-3 0 8540
2 20959 55.0310 127.3902 0096602 230.0082 129.1827 2.00554187 32314
DMSP B5D2-5
1 20978U 90105A 95114.62050182 .00000102 00000-0 52365-4 0 1704
2 20978 98.6431 183.0259 0079044 328.4445 31.2006 14.32536965229640
Glonass 47
1 21006U 90110A 95110.07983393 .00000057 00000-0 10000-3 0 7532
2 21006 65.0344 99.0294 0059595 187.7573 172.1303 2.13102879 33979
Glonass 48
1 21007U 90110B 95114.02203984 .00000066 00000-0 10000-3 0 8893
2 21007 65.0536 98.9603 0037735 180.7283 179.2857 2.13101129 34046
Glonass 49
1 21008U 90110C 95115.78924463 .00000051 00000-0 00000+0 0 611
2 21008 65.0372 98.8532 0011803 280.1518 79.7067 2.13098746 34079
AO-21
1 21087U 91006A 95108.90642991 .00000093 00000-0 82657-4 0 5852
2 21087 82.9338 276.4363 0034242 313.8915 45.9413 13.74553734211584
```

```
RS-12/13
1 21089U 91007A 95116.13900511 .00000019 00000-0 45267-5 0 7930
2 21089 82.9205 139.3804 0028357 320.7012 39.2077 13.74056544211625
MOP-2
1 21140U 91015B 95116.05006366 -.00000019 00000-0 00000+0 0 9734
2 21140 0.2064 99.8240 0003398 327.4412 164.7756 1.00283757 17412
Nadezhda 3
1 21152U 91019A 95114.85826826 .00000023 00000-0 75605-5 0 574
2 21152 82.9213 96.3807 0043662 69.1171 291.4690 13.73517583206188
Glonass 50
1 21216U 91025A 95111.50608460 -.00000051 00000-0 10000-3 0 4014
2 21216 65.0519 338.0855 0007911 204.5691 155.4370 2.13102788 31514
Glonass 51
1 21217U 91025B 95105.94341339 -.00000023 00000-0 10000-3 0 8074
2 21217 65.0462 338.2677 0010570 243.7993 116.1630 2.13101486 31383
Glonass 52
1 21218U 91025C 95115.91033525 -.00000044 00000-0 10000-3 0 2862
2 21218 65.0112 337.9278 0006759 309.0040 50.9882 2.13102555 31609
GRO
1 21225U 91027B 95111.47337898 .00002562 00000-0 51478-4 0 2264
2 21225 28.4753 249.7038 0003316 98.3415 261.7480 15.42479626104569
Meteor 3-4
1 21232U 91030A 95116.06649055 .00000051 00000-0 10000-3 0 7987
2 21232 82.5405 308.3983 0013936 120.7819 239.4673 13.16467031192525
NOAA 12
1 21263U 91032A 95117.89629678 .00000106 00000-0 66627-4 0 4608
2 21263 98.5863 143.2448 0013958 46.6788 313.5547 14.22511370205276
OKEAN 3
1 21397U 91039A 95105.17889507 .00000188 00000-0 23694-4 0 962
2 21397 82.5251 177.2408 0023667 359.6061 0.5186 14.76356499208060
GPS BIIA-11
1 21552U 91047A 95110.93123684 -.00000009 00000-0 10000-6 0 8444
2 21552 55.9652 65.7278 0063741 242.8840 116.4404 2.00569740 27780
ERS-1
1 21574U 91050A 95107.20266316 .00000042 00000-0 31943-4 0 1309
2 21574 98.5544 182.3710 0001331 64.1290 296.0031 14.32246022196326
UO-22
1 21575U 91050B 95111.18933953 .00000016 00000-0 19752-4 0 5949
2 21575 98.4005 183.9064 0008653 88.9354 271.2820 14.36970693197319
ORBCOMM-X
1 21576U 91050C 95112.22876535 .00000035 00000-0 26452-4 0 6899
2 21576 98.3997 183.4117 0004656 86.2772 273.8944 14.36376343197370
TUBSAT-A
1 21577U 91050D 95112.22880590 .00000018 00000-0 20841-4 0 5881
2 21577 98.3995 183.9257 0007381 86.4943 273.7086 14.36479895197405
SARA
1 21578U 91050E 95112.20364384 .00000283 00000-0 10555-3 0 7884
2 21578 98.4156 188.9553 0005929 85.9708 274.2158 14.38986626197648
TDRS 4
1 21639U 91054B 95113.46412153 .00000060 00000-0 10000-3 0 8837
```

```
2 21639 0.0450 117.9872 0003473 247.0438 198.7872 1.00277141107678
Meteor 3-5
1 21655U 91056A 95105.45646756 .00000051 00000-0 10000-3 0 7935
2 21655 82.5492 263.2490 0014084 158.0965 202.0757 13.16838793176240
UARS
1 21701U 91063B 95105.87484509 .00000096 00000-0 29519-4 0 6649
2 21701 56.9855 26.2783 0005387 110.7870 249.3730 14.96371701196245
DMSP B5D2-6
1 21798U 91082A 95114.75461101 .00000107 00000-0 80408-4 0 8139
2 21798 98.9608 126.3819 0012981 341.0537 19.0151 14.13880181175659
Glonass 53
1 21853U 92005A 95111.89873032 .00000066 00000-0 10000-3 0 9921
2 21853 64.9808 98.6575 0007113 204.1433 155.8288 2.13102283 25124
Glonass 54
1 21854U 92005B 95117.35084714 .00000032 00000-0 00000+0 0 1234
2 21854 64.9950 98.4798 0016834 11.1677 348.8578 2.13104208 25220
Glonass 55
1 21855U 92005C 95111.31394668 .00000063 00000-0 00000+0 0 1107
2 21855 64.9885 98.6787 0008019 221.5041 138.4323 2.13101995 25081
JERS-1
1 21867U 92007A 95112.22494139 .00001102 00000-0 96647-4 0 5620
2 21867 97.7176 189.6113 0001619 93.6179 266.5230 14.98647087174666
GPS BIIA-12
1 21890U 92009A 95117.38071741 -.00000067 00000-0 10000-3 0 6483
2 21890 54.0001 243.8656 0057489 177.9345 182.0615 2.00544700 23285
GPS BIIA-13
1 21930U 92019A 95110.60322108 -.00000085 00000-0 10000-3 0 6214
2 21930 55.7084 5.5437 0040029 166.3549 193.7928 2.00566176 22072
EUVE
1 21987U 92031A 95104.35250777 .00001084 00000-0 40671-4 0 3996
2 21987 28.4345 191.7779 0009745 32.0292 328.0880 15.19210399158237
SAMPEX
1 22012U 92038A 95108.33480115 .00000865 00000-0 72953-4 0 6229
2 22012 81.6723 208.8628 0119946 122.6584 238.6263 14.91394518151752
GPS BIIA-14
1 22014U 92039A 95106.16121495 .00000035 00000-0 10000-3 0 5361
2 22014 54.8378 185.6552 0088350 310.7064 48.5956 2.00546698 13824
Glonass 56
1 22056U 92047A 95116.84500144 -.00000043 00000-0 00000+0 0 274
2 22056 64.8820 338.0280 0003663 293.8691 66.1480 2.13102741 21295
Glonass 57
1 22057U 92047B 95117.14005217 -.00000044 00000-0 00000+0 0 282
2 22057 64.9007 338.0535 0008181 335.6431 24.3693 2.13102660 21274
Glonass 58
1 22058U 92047C 95113.79547784 -.00000049 00000-0 10000-3 0 134
2 22058 64.8950 338.1632 0009124 273.9218 86.0311 2.13102963 21251
TOPEX
1 22076U 92052A 95115.03083333 -.00000061 00000-0 00000+0 0 8704
2 22076 66.0427 3.2812 0007640 271.1914 88.8576 12.80930823126436
KO-23
```

```
1 22077U 92052B 95108.72290918 -.00000037 00000-0 10000-3 0 4852
2 22077 66.0906 0.2735 0009489 216.0507 143.9873 12.86290056126086
S80/T
1 22078U 92052C 95111.69533159 -.00000037 00000-0 10000-3 0 4838
2 22078 66.0895 353.0075 0010150 206.2616 153.7899 12.86574268126547
GPS BIIA-15
1 22108U 92058A 95107.61469600 -.00000006 00000-0 10000-3 0 5550
2 22108 54.1927 244.9908 0119346 148.4302 212.2644 2.00565420 19033
FREJA
1 22161U 92064A 95114.38424570 -.00000047 00000-0 25760-4 0 5055
2 22161 62.9965 225.0019 0806097 342.2354 15.1900 13.21829479122932
LAGEOS II
1 22195U 92070B 95104.79601046 -.00000009 00000-0 10000-3 0 3931
2 22195 52.6533 263.0578 0138368 248.9619 109.6094 6.47293824 58472
GPS BIIA-16
1 22231U 92079A 95110.28961204 -.00000007 00000-0 10000-3 0 5263
2 22231 54.6654 186.6591 0033558 288.6366 71.0311 2.00567386 17661
GPS BIIA-17
1 22275U 92089A 95113.43087000 -.00000020 00000-0 10000-3 0 5484
2 22275 54.6277 184.0825 0052559 254.3457 105.1286 2.00557117 17138
TDRS 5
1 22314U 93003B 95115.51596644 -.00000299 00000-0 10000-3 0 4998
2 22314 1.7539 71.7322 0001961 313.1293 327.4938 1.00260010 8385
GPS BIIA-18
1 22446U 93007A 95117.49182419 -.00000065 00000-0 10000-3 0 5327
2 22446 54.4924 304.4129 0081385 357.3541 2.6004 2.00547975 16204
Glonass 59
1 22512U 93010A 95117.06194761 .00000035 00000-0 10000-3 0 6979
2 22512 64.9999 98.3344 0009262 193.9747 165.9886 2.13102003 16800
Glonass 60
1 22513U 93010B 95117.93989702 .00000026 00000-0 00000+0 0 7441
2 22513 65.0071 98.3173 0006744 208.7890 151.1663 2.13103809 17019
Glonass 61
1 22514U 93010C 95117.76420275 .00000028 00000-0 00000+0 0 7439
2 22514 65.0203 98.3152 0010529 199.7148 160.2336 2.13102813 17017
ASTRO-D
1 22521U 93011A 95105.66384969 .00001566 00000-0 10552-3 0 3984
2 22521 31.1078 275.8961 0056945 238.9790 120.5195 15.02168560117960
UFO F1
1 22563U 93015A 95105.21145279 .00000053 00000-0 10000-3 0 4040
2 22563 26.1060 295.2683 0002738 341.4103 236.8181 0.99248491 11834
GPS BIIA-19
1 22581U 93017A 95113.64523913 -.00000100 00000-0 10000-3 0 4216
2 22581 55.2004 5.0154 0058554 36.1107 324.2853 2.00551787 15183
ARSENE
1 22654U 93031B 95098.10546024 -.00000095 00000-0 10000-3 0 3092
2 22654 2.4457 86.7268 2901770 207.9227 133.2995 1.42203107 5394
GPS BIIA-20
1 22657U 93032A 95114.77373238 -.00000101 00000-0 10000-3 0 4609
2 22657 55.2372 4.8272 0065605 212.6027 147.0490 2.00566668 10536
```

```
RADCAL
1 22698U 93041A 95116.90580270 .00000063 00000-0 22673-4 0 3949
2 22698 89.5395 293.1859 0090135 246.5881 112.5829 14.21343010 95154
GPS BIIA-21
1 22700U 93042A 95113.24484768 -.00000049 00000-0 10000-3 0 4062
2 22700 54.3595 245.5303 0036126 342.5923 17.2492 2.00562420 13305
NOAA-13
1 22739U 93050A 95117.86796900 .00000054 00000-0 55098-4 0 7873
2 22739 98.9882 66.6627 0009535 320.0717 39.9737 14.10931753 88349
GPS BIIA-22
1 22779U 93054A 95115.82344482 -.00000055 00000-0 10000-3 0 4602
2 22779 54.6231 304.4620 0019196 245.6014 114.2078 2.00565461 12114
Meteor 2-21
1 22782U 93055A 95116.04820990 .00000056 00000-0 37851-4 0 3967
2 22782 82.5480 318.5164 0024181 69.0593 291.3155 13.83031320 83333
UFO F2
1 22787U 93056A 95115.76146230 -.00000090 00000-0 00000+0 0 4195
2 22787 4.5513 324.1624 0004222 78.0431 156.8703 1.00270945 4632
SPOT 3
1 22823U 93061A 95111.55740934 -.00000006 00000-0 17826-4 0 4282
2 22823 98.7408 186.3800 0001672 92.2049 267.9319 14.20020156 81257
STELLA
1 22824U 93061B 95108.73875919 -.00000011 00000-0 13553-4 0 3829
2 22824 98.6221 185.6932 0007198 37.7455 322.4230 14.27100859 81257
AO-27
1 22825U 93061C 95117.14877107 .00000009 00000-0 21286-4 0 3868
2 22825 98.6205 194.2725 0009679 14.8007 345.3458 14.27659505 82480
IO-26
1 22826U 93061D 95112.20098824 -.00000001 00000-0 17234-4 0 3830
2 22826 98.6217 189.4798 0010273 27.9738 332.1999 14.27766119 81784
HEATHSAT
1 22827U 93061E 95117.20184770 .00000031 00000-0 30154-4 0 4460
2 22827 98.6189 194.3538 0009972 4.4046 355.7209 14.27888747 82504
ITAMSAT
1 22828U 93061F 95117.18489287 .00000004 00000-0 19361-4 0 3634
2 22828 98.6177 194.4310 0011112 359.8589 0.2611 14.28096001 50597
PO-28
1 22829U 93061G 95117.19576894 .00000043 00000-0 34715-4 0 3775
2 22829 98.6170 194.4680 0010956 2.3241 357.8020 14.28074819 82516
KO-25
1 22830U 93061H 95108.56876820 .00000005 00000-0 19355-4 0 3917
2 22830 98.5207 179.8372 0012323 4.7000 355.4300 14.28085174 81286
GPS BIIA-23
1 22877U 93068A 95116.87269651 -.00000054 00000-0 10000-3 0 2670
2 22877 55.4158 65.8681 0041417 300.5105 59.0270 2.00550613 11020
METEOSAT 6
1 22912U 93073B 95117.13535880 -.00000100 00000-0 00000+0 0 2954
2 22912 0.2155 267.8282 0001174 205.4622 140.1224 1.00270902 3671
HST Array
1 22920U 90037C 95115.42312345 .00007052 00000-0 53132-3 0 3118
```

```
2 22920 28.4707 355.9934 0002962 320.4725 39.5670 15.00661384 76372
Meteor 3-6
1 22969U 94003A 95108.24553005 .00000051 00000-0 10000-3 0 1612
2 22969 82.5577 201.0086 0014061 221.8179 138.1847 13.16727729 58991
TUBSAT-B
1 22970U 94003B 95116.26584500 .00000051 00000-0 10000-3 0 1541
2 22970 82.5596 195.2970 0014746 198.6644 161.3934 13.16824646 60059
GPS BIIA-24
1 23027U 94016A 95113.95756157 -.00000102 00000-0 10000-3 0 1965
2 23027 55.0785 6.8657 0062833 193.2356 166.6539 2.00552849 8277
Glonass 62
1 23043U 94021A 95116.90383282 -.00000044 00000-0 00000+0 0 1940
2 23043 64.7721 338.4503 0004662 181.5107 178.5246 2.13103133 8118
Glonass 63
1 23044U 94021B 95112.09397377 -.00000053 00000-0 00000+0 0 1701
2 23044 64.7641 338.6215 0027841 202.9131 157.0068 2.13103117 8016
Glonass 64
1 23045U 94021C 95106.63900777 -.00000027 00000-0 00000+0 0 1799
2 23045 64.7562 338.8220 0011328 35.1165 325.0171 2.13102584 7897
GOES 8
1 23051U 94022A 95116.16874157 -.00000273 00000-0 10000-3 0 3013
2 23051 0.0922 263.7554 0001471 204.3759 92.0924 1.00272511 11176
MSTI 2
1 23101U 94028A 95110.47688724 .00005674 00000-0 10286-3 0 1794
2 23101 97.1034 304.5402 0012970 97.9762 262.2992 15.49920169 53589
STRV-1A
1 23125U 94034B 95117.09163616 .00001470 00000-0 64990-3 0 1410
2 23125 7.4795 52.0986 7255404 78.3357 348.3623 2.29852493 6477
STRV-1B
1 23126U 94034C 95117.18898402 .00001205 00000-0 48856-3 0 1395
2 23126 7.4895 52.1274 7259974 78.2874 348.4151 2.29490820 6524
Nadezhda 4
1 23179U 94041A 95116.26427097 .00000045 00000-0 31341-4 0 951
2 23179 82.9484 186.3388 0034933 209.4293 150.4896 13.75666243 39331
Glonass 65
1 23203U 94050A 95115.69251336 -.00000045 00000-0 00000+0 0 1355
2 23203 64.7973 218.1746 0007319 145.6559 214.4017 2.13101941 5480
Glonass 66
1 23204U 94050B 95116.86519851 -.00000036 00000-0 00000+0 0 1456
2 23204 64.7833 218.1731 0014993 347.0404 12.9337 2.13102187 5505
Glonass 67
1 23205U 94050C 95117.21731713 -.00000032 00000-0 00000+0 0 1322
2 23205 64.7937 218.1402 0001802 304.1591 55.8338 2.13102025 5511
DMSP B5D2-7
1 23233U 94057A 95114.56549310 .00000072 00000-0 62835-4 0 3138
2 23233 98.8815 173.1287 0011529 293.3451 66.6515 14.12597633 33587
OKEAN 1-7
1 23317U 94066A 95109.00514053 .00000127 00000-0 15906-4 0 573
2 23317 82.5386 90.1294 0027496 25.5229 334.7277 14.73920587 27905
ELEKTRO
```

```
1 23327U 94069A 95111.82419484 -.00000126 00000-0 10000-3 0 605
2 23327 0.8823 264.3351 0005513 162.8078 155.2917 1.00270512 1762
RESURS 1-3
1 23342U 94074A 95118.25892605 .00000135 00000-0 30749-4 0 996
2 23342 98.0206 178.7998 0001074 86.5911 273.5445 14.69729125 25713
Glonass 68
1 23396U 94076A 95114.71440602 .00000060 00000-0 00000+0 0 809
2 23396 64.9297 98.5074 0029790 194.4731 165.4401 2.13102445 3300
Glonass 69
1 23397U 94076B 95115.82834539 .00000050 00000-0 00000+0 0 831
2 23397 64.9187 98.4865 0014980 318.7511 41.1356 2.13102284 3320
Glonass 70
1 23398U 94076C 95117.11948789 .00000035 00000-0 00000+0 0 900
2 23398 64.9094 98.4233 0005367 290.2827 69.6480 2.13102053 3361
RS-15
1 23439U 94085A 95108.98862751 -.00000039 00000-0 10000-3 0 433
2 23439 64.8277 350.7346 0167857 272.4824 85.6888 11.27524813 12840
NOAA 14
1 23455U 94089A 95114.44136634 .00000098 00000-0 78651-4 0 1484
2 23455 98.8983 57.3911 0009893 353.5200 6.5834 14.11506194 16239
ODERACS II A
1 23471U 95004C 95115.19022666 .00030851 00000-0 15930-3 0 818
2 23471 51.6477 50.9507 0012316 247.0573 112.9168 15.80731093 12789
ODERACS II B
1 23472U 95004D 95115.04342874 .00065050 00000-0 26381-3 0 854
2 23472 51.6461 49.9239 0011314 269.4092 90.5805 15.85537634 12783
Glonass 71
1 23511U 95009A 95115.32029221 -.00000046 00000-0 00000+0 0 314
2 23511 64.7782 338.7764 0006233 333.5664 26.4487 2.13102429 1040
Glonass 72
1 23512U 95009B 95117.02159717 -.00000044 00000-0 00000+0 0 372
2 23512 64.7837 338.7298 0011375 198.1827 161.8255 2.13102615 1081
Glonass 73
1 23513U 95009C 95115.20295750 -.00000047 00000-0 00000+0 0 305
2 23513 64.7837 338.7697 0004511 211.6646 148.3578 2.13102243 1040
Soyuz TM-21
1 23519U 95010A 95117.05746172 -.00013328 00000-0 -16520-3 0 515
2 23519 51.6468 53.7760 0005556 51.4480 308.7040 15.58431652 6865
GMS 5
1 23522U 95011B 95111.55339848 -.00000141 00000-0 00000+0 0 203
2 23522 1.0207 293.2528 0000582 319.4817 315.3454 1.00272920 216
DMSP B5D2-8
1 23533U 95015A 95114.86708126 .00000026 00000-0 37584-4 0 422
2 23533 98.8337 117.9937 0007100 156.1565 203.9932 14.12680054 4429
Brasilsat B2
1 23536U 95016A 95115.15429388 -.00000307 00000-0 00000+0 0 194
2 23536 0.0867 245.6641 0004463 35.4336 286.3810 1.00270896 338
Eutelsat HB1
1 23537U 95016B 95115.93875515 .00000063 00000-0 00000+0 0 219
2 23537 0.0509 30.1856 0002086 291.7339 242.0631 1.00275934 334
```

```
1995016D
1 23539U 95016 D 95110.64441298 .00114669 00000-0 14021-2 0 119
2 23539 51.6418 85.9367 0008220 84.1060 276.0435 15.59503106523842
ORBCOMM FM1
1 23545U 95017A 95116.18720971 .00000324 00000-0 11000-3 0 195
2 23545 69.9772 59.9660 0010589 52.7017 307.5079 14.45036932 3260
ORBCOMM FM2
1 23546U 95017B 95111.33733406 .00000281 00000-0 96876-4 0 181
2 23546 69.9847 71.2037 0009586 53.5062 306.6954 14.45390792 2564
MICROLAB 1
1 23547U 95017C 95111.33796628 .00000220 00000-0 79535-4 0 149
2 23547 69.9829 71.2027 0009733 55.2269 304.9777 14.45337895 2565
1995017D
1 23548U 95017D 95111.34456398 .00000001 00000-0 17458-4 0 174
2 23548 69.9925 71.2421 0008844 41.9868 318.1942 14.44796241 2564
OFEQ 3
1 23549U 95018A 95116.20652033 .00024732 00000-0 70343-3 0 202
2 23549 143.3700 218.5502 0260551 244.4545 112.9025 15.06821016 3129
1995018B
1 23550U 95018B 95117.11715973 .00171760 -88750-5 74609-3 0 261
2 23550 143.3691 229.0954 0320115 257.1592 99.2871 15.35161753 3318
AMSC-1
1 23553U 95019A 95114.22615471 -.00000139 00000-0 00000+0 0 196
2 23553 0.0836 35.1110 0004438 208.5036 307.6686 1.00304016 181
1995019B
1 23554U 95019 95116.58355595 .00023761 20958-5 16892-2 0 87
2 23554 26.4912 10.7277 7517852 186.5761 149.5502 2.01928365 370
Progress M-27
1 23555U 95020A 95117.05746172 -.00013328 00000-0 -16520-3 0 246
2 23555 51.6468 53.7760 0005556 51.4480 308.7040 15.58431652 2793
GFZ-1
1 23558U 86017JE 95117.69298041 .00004547 00000-0 62346-4 0 140
2 23558 51.6485 50.5149 0007771 103.1477 257.0385 15.59589445524953
1986017JF
1 23559U 86017JF 95117.69257400 .00026802 00000-0 33197-3 0 76
2 23559 51.6458 50.5103 0006966 97.1278 262.9682 15.59847604524959
ERS-2
1 23560U 95021A 95117.77356989 -.00000017 00000-0 10000-4 0 175
2 23560 98.5521 192.8103 0001436 96.4323 263.6813 14.32221779 965
1995021B
1 23561U 95021B 95116.17358646 .00000002 00000-0 16521-4 0 134
2 23561 98.4774 191.3196 0006212 236.1393 123.9202 14.33193389 739
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

919. Ham-space digest v95 #117

Newsgroup: rec.radio.amateur.space
Date: 1995-04-29 00:00:00 UTC
From: edward.wagner@torii.COM
Message-ID: <9504291105.0FL1L00@torii.com>
Source record: 25119

The Mir Uplink is 145.550 and the downlink is 145.550. It is a simplex frequency. You need about 20 watts on a dipole to hit them. But if you want to listen to them, all you need is an outside dipole. Remember they are Russians and they run buy Moscow's time.

Edward KC5MWY

920. Re: Ham-space digest v95 #117

Newsgroup: rec.radio.amateur.space
Date: 1995-04-29 00:00:00 UTC
From: copeland@fohnix.metronet.com
Message-ID: <3nttap$cpi@fohnix.metronet.com>
Source record: 25120

In article <9504291105.0FL1L00@torii.com>, <edward.wagner@torii.COM> wrote:
>
>The Mir Uplink is 145.550 and the downlink is 145.550. It is a simplex
>frequency. You need about 20 watts on a dipole to hit them. But if you want to
>listen to them, all you need is an outside dipole. Remember they are Russians
>and they run buy Moscow's time.

I made contact with MIR using 5w (HTX-202 @ 12v) with a 1/4 wave ground
plane antenna made out of coat hangers. I know others have heard MIR with
just a rubber ducky.

--

| There are two types of people in this world, those who separate |
| people into groups,and those who don't. KC5LWF copeland@metronet.com|
---

921. some sat freq please

Newsgroup: rec.radio.amateur.space
Date: 1995-04-29 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3ntutu$1c9k@ns3-1.CC.Lehigh.EDU>
Source record: 25121

well, this is the best i can find, but
whtat are the freq of Meteosat3 ? is it 137.xx or 1691?

thanks

DAVid

|--|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

922. Re: Help with WISP

Newsgroup: rec.radio.amateur.space
Date: 1995-04-29 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3ntu45$c8@sandra.teleport.com>
Source record: 25122

In article <Pine.OSF.3.91.950422143730.15366B-100000@carbon.cudenver.edu>,
ljohnsto@carbon.cudenver.edu said...
>
>Even though the GSC screen shows the schedule of selected satellites, the
>program takes CAT control of the FT736R, and also correctly operates the
>G5400B rotator, nothing shows regarding the satellites in the bottom
>portion of the screen.

The bottom part is an informational text box. To have it list a satellite, click on
"TRACKING" on the menu bar, then "Track" and you will be given the choice of a
satellite to add.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

923. looking for a sattrak in ftp

Newsgroup: rec.radio.amateur.space
Date: 1995-04-29 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3num6u$14h3@ns3-1.CC.Lehigh.EDU>
Source record: 25123

```
i'm looking for a sat. trak program that HAS A ROTOR control on it
somewhere in a ftp site...

thanks

DAvid
|-------------------------------------------------------------------------|
| David Roseman | c002@lehigh.edu |
| SysOp of NODE 3 BBS | The Flying HAm - BBS |
| Running OBV/2 Software | TechnoMage - BBS |
| | N3SQE/SVARC - Ham |
| HAmmy in IRC | N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet |
|------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----|
```

924. WTB elevation rotor

Newsgroup: rec.radio.amateur.space
Date: 1995-04-30 00:00:00 UTC
From: drayegon@america.com
Message-ID: <NEWTNews.31507.799283614.drayegon@drayegon.america.com>
Source record: 25124
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.antenna

I need some form of elevation rotor. Would like a Yaesu 5400 but I dont think I can afford one unless the price is right. Will settle for an alliance that has the mast thru the center. This will be used for small sattelite system so I am not worried about it being too small. Please email me. with Price,specs and how to get in touch with you by phone.

73 AD4RR dray

drayegon@america.com
AD4RR@amsat.org
drayegon@msn.com<--------this one is free for now HIHIHI

925. where are arlk bulletins

Newsgroup: rec.radio.amateur.space
Date: 1995-04-30 00:00:00 UTC
From: ab5sm@netcom.com
Message-ID: <ab5smD7uuzJ.HqG@netcom.com>
Source record: 25125

i have not seen any arrl kep bulletins posted to the newsgroups in several weeks now ..

does anyone know what has happened to them or where i can get them .. they do not appear to be coming through the arrl list server either

--

lee - ab5sm Ham Distribution Net ab5sm@netcom.com
P.O. Box 50003 ab5sm@txnp.uscourts.gov
Dallas, Tx 75250-0003

Ham Distribution Net BBS - (214) 226-1181 - Login: Guest;guest

--

926. 2nd try - Where to get QSL for RS-12 Robot contact...

Newsgroup: rec.radio.amateur.space
Date: 1995-04-30 00:00:00 UTC
From: bruces@mpd.tandem.com
Message-ID: <1995Apr30.214803.26527@integrity.uucp>
Source record: 25126

I recently received a QSO number from the RS-12 Robot and need
to know where I can obtain a QSL card. I sent a message to the
"RS group" in Russia, but haven't received a reply.

Please reply at one of the addresses below.

Thanks
--
| Bruce Sawtelle AX.25 : W3NJ @ W5SYT.TX.USA.NA |
| Tandem Computers, Inc. Internet : bruces @ mpd.tandem.com |
| 14231 Tandem Blvd. USENET : halley!bruces |
| Austin, Tx 78728 TCP/IP : 44.76.1.42 (w3nj.ampr.org) |

927. Re: help getting 2 line keps...

Newsgroup: rec.radio.amateur.space
Date: 1995-04-30 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3nur6j$c34@over.mhv.net>
Source record: 25127

LEAVITDG@splava.cc.PLattsburgh.EDU wrote:
: I am trying to find the current larger list of 2 line keps for all sats
: for a friend. Does anyone remember a good site, fillname/s , and
: directory?
: thankyou.
: ..Darrell
: leavitdg@splava.cc.plattsburgh.edu

Darrell,
FTP to archive.afit.af.mil and go to Pub/space and get the highest
tle file. As of this minute it's tle.595

Tom Randall - KB2SMS

928. Re: MIR FREQUENCY

Newsgroup: rec.radio.amateur.space
Date: 1995-04-30 00:00:00 UTC
From: plaws@comp.uark.edu
Message-ID: <3nut0e$ro2@wizard.uark.edu>
Source record: 25128

mckee@fc.hp.com (Bret McKee) writes:

>145.550. Mir is not split..

And Norm Thaggard is active as R0MIR. I heard him about 0600 UTC on 4/25
or 26 ... working a terrestrial mobile.

Peter Laws<plaws@comp.uark.edu>|"Suppose you were a politician. Now suppose you
n5uwy@ka5bml.#nwar.ar.usa.noam |were an idiot. Ah, but I repeat myself."-Twain

929. PacComm GPS/TNC

Newsgroup: rec.radio.amateur.space
Date: 1995-04-30 00:00:00 UTC
From: Dennis Erwin Thurlow <geosynq@indy.net>
Message-ID: <3nv7ic$pli@indy-backup.indy.net>
Source record: 25129

Has anyone used one of these yet?
Does the TNC automatically packetize ASCII strings from the GPS?

930. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-01 00:00:00 UTC
From: dmoorman@interaccess.com
Message-ID: <dmoorman-0105952002290001@nb-dyna82.interaccess.com>
Source record: 25130
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In article <rwa.799088205@atha>, rwa@cs.athabascau.ca (Ross Alexander) wrote:

> I also support .qrp rather than .low-profile. For a start, it's shorter :).

How about .qrp/low profile so everyone would know what the newsgroup
is about?

Dave, K9SW

931. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-01 00:00:00 UTC
From: s2202629@np.ac.sg
Message-ID: <3o2k0e$hdn@nova.np.ac.sg>
Source record: 25131
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In article <dmoorman-2204952104340001@nb-dyna71.interaccess.com>,
Dave Moorman <dmoorman@interaccess.com> wrote:

>As a condo-dwelling ham, I can see a use for this group. It would be
>handy to be able to exchange information about invisible antennas and
>RFI/TVI type problems, etc., in a focused group. I couldn't say how many
>people woudlpost to it, though. Anyone else interested?

Due to it's (very) small scope, I would also say that this isn't a good
idea. Perhaps a maillist could better serve this focus.

932. Re: M2 Eggbeater Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-05-01 00:00:00 UTC
From: "Walt (N3JPR)" <lrpst5@pitt.edu>
Message-ID: <3o3ikg$56a@usenet.srv.cis.pitt.edu>
Source record: 25132

Ed,I have been using the 2 meter version of the Eggbeater for 5 months now and I have compared it's preformance with my stacked 13's Cushcraft beams for working RS-10,RS-15 and AO-27.When the sats are at a low angle both antennas preform about the same however I must use more power with the Eggbeater because of it's gain of 1. When the sats get near overhead the Eggbeater really shines,I cannot get into the sats with the beams but the Eggbeater does the job with ease. I have tried recieving the oscars with both antennas and the results are the same.The M2 also works pretty well on 2 meter SSB.
Hope that helps.
73 Walt N3JPR

933. 2 m radio for balloon project

Newsgroup: rec.radio.amateur.space
Date: 1995-05-01 00:00:00 UTC
From: Iver@ksu.ksu.edu
Message-ID: <3o2lav$t94@fox.ksu.ksu.edu>
Source record: 25133

Has anyone in this group designed telemetry for the Ham Radio Balloon projects? I'm looking at doing one here in Manhattan Kansas and have an idea I'd like to discuss.

The balloon will be operated from a Basic Stamp (microprocessor programmed in Basic) that has a command for sending data via serial. My question is can I send serial data to a little Baycom modem (used as a cheap TNC for things like laptops) and then to a 2 m radio to do packet?

Just what does the software for the Baycom do? And can this be programmed in the Basic Stamp?

I was thinking the software just puts headers on the data before sending it out the com port. It would seem I could do the same for the Basic Stamp. I don't want the balloon to be receiving data from the ground, I just want it to transmit telemetry data in packet that anyone can listen to with packet.

Am I off base here?
Thanks

934. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-05-01 00:00:00 UTC
From: kdh@cimtek.on.CA
Message-ID: <199505011306.JAA18105@apollo.cimtek.on.ca>
Source record: 25134

```
subscribe
```

935. * SpaceNews 01-May-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-05-01 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3o321i$qe0@pilot.njin.net>
Source record: 25135
Cross-posted to: rec.radio.amateur.space,rec.radio.info

```
SB NEWS @ AMSAT $SPC0501
* SpaceNews 01-May-95 *

BID: $SPC0501

=========
SpaceNews
=========

MONDAY MAY 1, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* MIR NEWS *
============
It took a few weeks, but the crew finally had time to work on their
Personal Mail System (PMS) which allows Amateur Packet Radio messages to
be exchanged with Amateur Radio Operators on the ground. The crew thought
the problem was with the Lap-top running the TNC. The problem turned out
to be some incorrectly set TNC parameters. The TXDELAY parameter was set
for zero delay. It should have been 300 milliseconds. Dave Larson
(N6JLH), spent many hours waiting for the crew of Mir to come on the air
to assist them in adjusting the TNC parameters. The PMS is now working,
but the tiny 22 kilobyte mail buffer is filling up fast.

The Mir crew found out that Russia and the USA do not have a full time
Third Party Agreement. There was a temporary agreement when STS-60 was in
space, but that one expired. There are plans to put another temporary
Third Party Agreement in place, during the STS-71 mission (the docking of a
shuttle with Mir), but this agreement will also expire at the end of the
STS-71 mission. Since there are no permanent agreements between the USA
and Russia, this will limit some of the message forwarding and telephone
patches with the Mir crew and may affect some schedules with school
students. A permanent Third-Party agreement would be very advantageous to
have in place for future radio contacts with the cosmonauts on the Mir
space station.

Remember, only 1 station can connect to MIR's PMS at a time, ALL others
must wait.

[Info via G. Miles Mann, WF1F]

* AO-13 SCHEDULE *
==================
L QST *** AO-13 TRANSPONDER SCHEDULE *** 1995 May 22 - Jul 31
```

Mode-B : MA 0 to MA 70 | Omnis : MA 230 to MA 25
Mode-BS : MA 70 to MA 110 |
Mode-S : MA 110 to MA 112 |<- S beacon only
Mode-S : MA 112 to MA 135 |<- S transponder; B trsp. is OFF
Mode-S : MA 135 to MA 140 |<- S beacon only
Mode-BS : MA 140 to MA 180 | Alon/Alat 180/0
Mode-B : MA 180 to MA 256 | Move to attitude 225/0, Jul 31

[Info via James Miller, G3RUH]

* SOFTWARE ANNOUNCEMENT *
==========
The latest version of WinOrbit (2.4) is now available on oak.oakland.edu
(see below). A description of changes, and an overview of the program,
are given below:

Major Improvements in 2.4

- "View from Space" orthographic projection (slow - not in real time).
- Sun and terminator line now move automatically in real time (if displayed)
- Fixed European (esp. German) number format bug (",").
- "Print to File" option for ephemerides.

Program Overview

WinOrbit is a program for computing artificial Earth-satellite position and
visibility, with the Amateur Radio satellite operator in mind. It was
written for the Microsoft Windows 3.1 operating system. WinOrbit is FREE
(not shareware). The latest version is 2.4.

The principal feature of the program is a series of tracking windows, one
per satellite, which display the current position of the satellite and the
observer on a simple world map, together with information such as
footprint, past ground track, bearing (azimuth), distance, and elevation
above the observer's horizon.

Additional features include:

* Real-time, pseudo-real-time, and manual calculation modes.
* 4 different orbital calculation algorithms (selectable).
* DDE server interface to tracking-antenna hardware controllers.
* Simultaneous tracking of up to 20 satellites.
* Selectable tracking detail, including doppler shift and free-space path
loss, for a single satellite.
* Display sun position for eclipse determination, and other observers for
mutual visibility.
* Tracking data (Keplerian element sets) read directly from standard, off-
the-air bulletins in two different formats (up to 200 satellites). No
pre-processing is needed.
* Propagation of pre-launch keps and other element updates.
* Observer (QTH) data (latitude, longitude) may be imported from a simple
text database (up to 1000 locations). Entry by grid-square is

possible.
* Printing of tables of tracking and scheduling data in several formats.
Table generation doesn't interfere with tracking.
* On-line help, including direct access to text information about Amateur
satellites from the tracking windows.
* Standard Windows interface for all functions - no commands to memorize.

This program is available via internet, by anonymous ftp from:
ftp.amsat.org in /amsat/software/windows/tracking/winorb24.zip
oak.oakland.edu /pub3/hamradio/pc/satellite/winorb24.zip
(as of 4/21/95 only the oak server has been updated)

Future enhancements might include (depending upon interest):
Bug fixes (when reported by users)
Corrected/augmented satellite information supplied by users.
Enhanced satellite database maintenance features
Additional table formats (as requested by users)
Fancier map formats
Sun/Moon tracking for EME/antenna calibration
Speedups
Rotor and rig control interface

[info via Carl Gregory]

* THANKS! *
==========
Thanks to all those who sent messages of appreciation to SpaceNews,
especially:

ON1EN K2JWD KB2SFD IK5WQO N8HUL

* FEEDBACK/INPUT WELCOMED *
==========================
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any
of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948

Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

936. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-02 00:00:00 UTC
From: R lindberg + E Winnie <rlindber@kendaco.telebyte.com>
Message-ID: <Pine.LNX.3.91.950502075241.32690A-100000@kendaco.telebyte.com>
Source record: 25136
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

On Mon, 1 May 1995, Dave Moorman wrote:

> In article <rwa.799088205@atha>, rwa@cs.athabascau.ca (Ross Alexander) wrote:
>
>
> > I also support .qrp rather than .low-profile. For a start, it's shorter :).
>
> How about .qrp/low profile so everyone would know what the newsgroup

Sorry Dave, but low_profile still makes me think of small, short radios.
Not low impact operating. There is also the '/', I'm not certain it's
allowed in group names, at least I couldn't find any current use of it.
I still think that qrp or qrp_something_else would work better. Let's see

rec.radio.amateur.qrp I think this has been voted down
before, but I don't understand why
.low_profile I don't think it tells the 'story'
.qrp_low_profile As above
.qrp_hidden Just thought of this one
don't know how good it would
really be, but it could cover
qrp, fox-hunts and 'low_profile'

73's Ralph
(trying hard to find a way I could vote for this idea)

Ralph Lindberg N7BSN Ellen Winnie N7PYK
e-mail => dragonsl@scn.org (best address, read daily, forwards to find us)
rlindberg@kpt.nuwc.navy.mil (last resort only)

937. SatTrack 3.1 on DEC/OSF1 ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-02 00:00:00 UTC
From: li95001@sable.ox.ac.uk
Message-ID: <1995May2.174040.150@inca.comlab.ox.ac.uk>
Source record: 25137

Hi,
I've been trying without success to compile Manfred Bester's
SatTrack program, Version 3.1 on our University DEC Alpha AXP2100 system,
but having problems with the checkKeyboard() function, which contains
several ioctl statements, #ifdef's for different machines, none of which
will build successfully on the Alpha system here. OK, I deleted them to
get it to compile, but obviously that results in a certain loss of
functionality... :-)
If anyone has got this software to build successfully on any
DEC alpha system, under OSF1, I'd be really glad if they'd Email me.

Thanks, 73 de Paul, g7ndc

--
___ You wanna go further, | Paul Hirst Lincoln College, Oxford. OX1 3DR
----V---- faster every day, but | Paul.Hirst@Lincoln.ox.ac.uk, g7ndc@amsat.org
in the morning you'll be gone... | li95001@sable.ox.ac.uk ^best (alledgedly)
URLs: http://sable.ox.ac.uk/~li95001/ and http://sable.ox.ac.uk/~gliding/

938. STS QSL Card.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-02 00:00:00 UTC
From: brad@PROBLEM_WITH_INEWS_DOMAIN_FILE
Message-ID: <3o66r5$1i7@masala.cc.uh.edu>
Source record: 25138

I talked to the Shuttle (on packet) back in June of 1994.
I sent an SASE with plenty of postage.... when are the QSL
cards going to be returned?

Anyone know?

-- ,--------------------------------------.
Brad A. Killebrew N5LJV | Student of Computer Engr Technology |
E-Mail : n5ljv@uh.edu | University of Houston, Texas |
E-Mail : n5ljv@amsat.org | http://tech.uh.edu/ |--.
E-Mail : n5ljv@phoenix.net `--------------------------------------' |
AMPRnet: n5ljv@wb5fnd.ampr.org | Without C, we would only have |
Packet : n5ljv@f6cnb.#setx.tx.usa.na | BASI, OBOL, and PASAL. |
WebNet : http://wb5fnd.tech.uh.edu/~brad `------------------------------'

939. Re: 2 m radio for balloon project

Newsgroup: rec.radio.amateur.space
Date: 1995-05-03 00:00:00 UTC
From: Dennis Erwin Thurlow <geosynq@indy.net>
Message-ID: <3o6mn7$bq0@indy-backup.indy.net>
Source record: 25139

lver@ksu.ksu.edu (Lloyd Paul Verhage) writes:
>I was thinking the software just puts headers on the data before sending
>it out the com port.
It does quite a bit more, and the STAMP just doesn't have enough
code space. Have the STAMP send the string to a PacComm PicoPacket,
and the output from that to your Baycom. Any other TNC will do, but
the PacComm is _tiny_, cheap, and full functioned.

940. Re: 2 m radio for balloon project

Newsgroup: rec.radio.amateur.space
Date: 1995-05-03 00:00:00 UTC
From: ken.thompson@WichitaKS.HMPD.COM
Message-ID: <ken.thompson.588.000858F6@WichitaKS.HMPD.COM>
Source record: 25140

In article <3o6mn7$bq0@indy-backup.indy.net> Dennis Erwin Thurlow <geosynq@indy.net>
writes:
>From: Dennis Erwin Thurlow <geosynq@indy.net>
>Subject: Re: 2 m radio for balloon project
>Date: 3 May 1995 01:36:39 GMT

>lver@ksu.ksu.edu (Lloyd Paul Verhage) writes:
>>I was thinking the software just puts headers on the data before sending
>>it out the com port.
>It does quite a bit more, and the STAMP just doesn't have enough
>code space. Have the STAMP send the string to a PacComm PicoPacket,
>and the output from that to your Baycom. Any other TNC will do, but
>the PacComm is _tiny_, cheap, and full functioned.

How much code space is there? I put together a 68HC811 with the '3105 modem
chip and the code to collect the GPS data, plus voltage, temp. and
pressure, and to format it and send it out is under 1K.

941. Re: PacComm GPS/TNC

Newsgroup: rec.radio.amateur.space
Date: 1995-05-03 00:00:00 UTC
From: Ken Quinn <kquinn@shadow.net>
Message-ID: <3o94h4$fm2@anshar.shadow.net>
Source record: 25141

Dennis Erwin Thurlow <geosynq@indy.net> wrote:
>Has anyone used one of these yet?
>Does the TNC automatically packetize ASCII strings from the GPS?
>
There is a parameter in the TNC called "LOCATION" which allows the info
from the GPS to be beaconed as UI frames. The TNC must state GPS
support during the power-up "welcome message", otherwise the EPROM must
be upgraded. I observed it's operation during Dayton and it seemed like
alot of fun

73's de N4SMY, Ken in Homestead, FL
AO-16, LO-19, UO-22, KO-23 & KO-25

942. Satellite Mac Software

Newsgroup: rec.radio.amateur.space
Date: 1995-05-03 00:00:00 UTC
From: Harrington.Ed@mail.ndhm.gtegsc.com
Message-ID: <Harrington.Ed-0305950950190001@157.176.66.44>
Source record: 25142

Does anybody know of any Mac software equivalent to the PC-based WISP or
Kansas City Tracker??

943. Re: STS QSL Card.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-03 00:00:00 UTC
From: mbordel@phoenix.net
Message-ID: <mbordel-0305952317440001@dial42.phoenix.net>
Source record: 25143

(Brad Killebrew) wrote:

> I talked to the Shuttle (on packet) back in June of 1994.
> I sent an SASE with plenty of postage.... when are the QSL
> cards going to be returned?
>
> Anyone know?
>

Yes. Briefly, here is the process. After a flight, the many roles of film are processed and cataloged. Crew schedules are quite busy after the flight. Then each picture must be reviewed and "captioned." at some point, the crew picks pictures and text for their QSL card. This is sent to the ARRL for printing. After the ARRL prints the cards, they are sent a club in charge of QSL cards for that particular flight. During this time, the packet worked and heard lists are sent to the clubs, as well as, a transcription of the voice tapes. There are usually four or five hours of voice tapes to be transcribed.

Then, the club fills out all the QSL cards and sends them out.

STS-64 and STS-65 are just now getting sent out. I apologize for the delay, but be patient (I haven't gotten mine either).

--
Matt Bordelon KC5BTL
SAREX Principal Investigator

-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: 2.6.2

mQCPAy86OVEAAAEEALhqyXqqkrVcTH2/DSEj0OfxsMTzYeVwWlv2fJJRBXhUWo7c
2fenbLpKn7UToL5HpD+KVxDg5PVmH0/BrD6PvNifnwgrfXIhtFTR+v+bR9PEj6lb
ByC9dyr5ktiVCDTk1t3C5mN15vD89U+6sUvNKapSASCNYJ7rUOPCe/MuQrNtABEB
AAG0KU1hdHRoZXcgRy4gQm9yZGVsb24gPG1ib3JkZWxAcGhvZW5peC5uZXQ+
=11am
-----END PGP PUBLIC KEY BLOCK-----

944. STS-65 QSLs

Newsgroup: rec.radio.amateur.space
Date: 1995-05-03 00:00:00 UTC
From: sufana@ceco.ceco.com
Message-ID: <D80J53.K05@ceco.ceco.com>
Source record: 25144

We are starting to release STS-65 QSLs today (5/3/95). Your patience is appreciated for all SAREX missions as it make take up to a year to get a SAREX QSL. The shuttle crew usually helps design the card after the mission is completed using pictures from the mission. To date, we have received over 650 cards. We hope to have all of the cards out by the end of May.

73s,
Charlie AJ9N
STS-65 QSL Manager
Lake County (Indiana) Amateur Radio Club.

945. New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-04 00:00:00 UTC
From: amsoft@epix.net
Message-ID: <NEWTNews.799626869.6779.amsoft@amsoft.epix.net>
Source record: 25145
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

The World of Ham Radio CD-ROM MAY 1995 issue is now available.
For more information contact amsoft@epix.net or the new AmSoft
WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/

Pete, KC3TL voice: 717-938-8249 fax: 717-938-6767

946. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-04 00:00:00 UTC
From: rwa@cs.athabascau.ca
Message-ID: <rwa.799598069@atha>
Source record: 25146
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

R lindberg + E Winnie <rlindber@kendaco.telebyte.com> writes:

>On Mon, 1 May 1995, Dave Moorman wrote:
>> In article <rwa.799088205@atha>, rwa@cs.athabascau.ca (Ross Alexander) wrote:
>> > I also support .qrp rather than .low-profile. For a start, it's shorter :).
>> How about .qrp/low profile so everyone would know what the newsgroup

> Sorry Dave, but low_profile still makes me think of small, short radios.
>Not low impact operating. There is also the '/', I'm not certain it's
>allowed in group names, at least I couldn't find any current use of it.

It (use of /) is specifically forbidden. The length must be less than 15
characters.

> I still think that qrp or qrp_something_else would work better. Let's see
> rec.radio.amateur.qrp I think this has been voted down
> before, but I don't understand why
> .low_profile I don't think it tells the 'story'
> .qrp_low_profile As above
> .qrp_hidden Just thought of this one
> don't know how good it would
> really be, but it could cover
> qrp, fox-hunts and 'low_profile'

The narrower and more restrictive the group topic is, the less support
it will have. QRP is well understood and has lots of interest. Heck,
even I'm interested in QRP, and I have 75 acres in the country. Let's
keep the name short, sweet and well understood.

> 73's Ralph
> (trying hard to find a way I could vote for this idea)

Me too. rec.radio.amateur.just_us_guys_in_condos isn't going to get
a yes vote from me :).

73,
Ross ve6pdq
--
Ross Alexander, ve6pdq -- (403) 675 6311 -- rwa@cs.athabascau.ca

947. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-04 00:00:00 UTC
From: pschleck@gonix.com
Message-ID: <pschleck.799605651@gonix>
Source record: 25147
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In <dmoorman-01059520022900001@nb-dyna82.interaccess.com> dmoorman@interaccess.com (Dave Moorman) writes:

>In article <rwa.799088205@atha>, rwa@cs.athabascau.ca (Ross Alexander) wrote:

>
>> I also support .qrp rather than .low-profile. For a start, it's shorter :).

>How about .qrp/low profile so everyone would know what the newsgroup
>is about?

>Dave, K9SW

Forward (and backward) slashes are "forbidden" characters in newsgroup names. The reason is that all news server software sooner or later has to access files and directories, and since the usual convention is to map the dot-delimited components of a newsgroup name into subdirectory names, the slashes could possibly be misinterpreted by the operating system as directory-name separators.

--
Paul W. Schleck, KD3FU
pschleck@gonix.com

948. Re: MIR FREQUENCY

Newsgroup: rec.radio.amateur.space
Date: 1995-05-04 00:00:00 UTC
From: bk097@freenet.buffalo.edu
Message-ID: <D81rB7.8Dx@freenet.buffalo.edu>
Source record: 25148

Hi, name is Larry. To answer ur question, the uplink and
down link for Mir is the same, 145.55. Good luck 73.
--

949. Re: STS QSL Card.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-04 00:00:00 UTC
From: melmark@ix.netcom.com
Message-ID: <3ob109$bdk@ixnews4.ix.netcom.com>
Source record: 25149

In <mbordel-0305952317440001@dial42.phoenix.net> mbordel@phoenix.net (Matt Bordelon) writes:

>
>(Brad Killebrew) wrote:
>
>> I talked to the Shuttle (on packet) back in June of 1994.
>> I sent an SASE with plenty of postage.... when are the QSL
>> cards going to be returned?
>>
>> Anyone know?
>>
>
>Yes. Briefly, here is the process. After a flight, the many roles of
>film are processed and cataloged. Crew schedules are quite busy after the
>flight. Then each picture must be reviewed and "captioned." at some
>point, the crew picks pictures and text for their QSL card. This is sent
>to the ARRL for printing. After the ARRL prints the cards, they are sent
>a club in charge of QSL cards for that particular flight. During this
>time, the packet worked and heard lists are sent to the clubs, as well as,
>a transcription of the voice tapes. There are usually four or five hours
>of voice tapes to be transcribed.
>
>Then, the club fills out all the QSL cards and sends them out.
>
>STS-64 and STS-65 are just now getting sent out. I apologize for the
>delay, but be patient (I haven't gotten mine either).
>
>--
>Matt Bordelon KC5BTL
>SAREX Principal Investigator

Since the postage went up after the cards with SASE were sent, should we send additional postage to assure receipt of the card?

Mel, K2JWD

950. SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-04 00:00:00 UTC
From: dsantoro@pipeline.com
Message-ID: <3obb5o$9ve@news.nyc.pipeline.com>
Source record: 25150

Hi Everyone

I am looking to home-brew an antenna for working Mir and SAREX. It needs to be CHEAP. I would also like to use it for local communications occaisionally as well.

Any suggestions?

Thanks a lot and 73,
Dave N2VYP

951. Re: STS QSL Card.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-05 00:00:00 UTC
From: brad@PROBLEM_WITH_INEWS_DOMAIN_FILE
Message-ID: <3obu99$4vh@masala.cc.uh.edu>
Source record: 25151

Matt Bordelon (mbordel@phoenix.net) wrote: : (Brad Killebrew) wrote:

: Yes. Briefly, here is the process. After a flight, the many roles of
: film are processed and cataloged. Crew schedules are quite busy after the
: flight. Then each picture must be reviewed and "captioned." at some
: point, the crew picks pictures and text for their QSL card. This is sent
: to the ARRL for printing. After the ARRL prints the cards, they are sent
: a club in charge of QSL cards for that particular flight. During this
: time, the packet worked and heard lists are sent to the clubs, as well as,
: a transcription of the voice tapes. There are usually four or five hours
: of voice tapes to be transcribed.
: Then, the club fills out all the QSL cards and sends them out.
: STS-64 and STS-65 are just now getting sent out. I apologize for the
: delay, but be patient (I haven't gotten mine either).

Thanks for the reply. Will I need to send additional postage
since the rates went up?

-Brad

952. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-05 00:00:00 UTC
From: amsoft@epix.net
Message-ID: <3odnf4$60b@grape.epix.net>
Source record: 25152
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

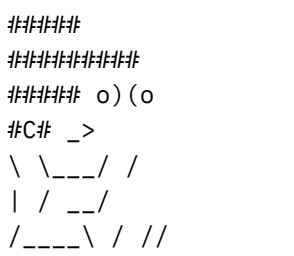
In article <NEWTNews.799626869.6779.amsoft@amsoft.epix.net>,
amsoft@epix.net says...

>WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/

Should read: http:/hamster.business.uwo.ca:80/~amsoft/

Sorry for the typo in the original message.

Pete, KC3TL
amsoft@epix.net



953. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-05 00:00:00 UTC
From: doublehop@aol.com
Message-ID: <3oes7o$909@newsbf02.news.aol.com>
Source record: 25153
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

Catch the interest, INDEED. I not (yet) a ham, but intend to get licensed within a year and am earnestly reading everything I can find on antennas. This group will likely maintain itself.

73
Jeff Malone

954. Two-Line Orbital Element Sets (TLE600)

Newsgroup: rec.radio.amateur.space
Date: 1995-05-05 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.799712351@dolphin>
Source record: 25154

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #600 -
Alouette 1
1 00424U 62049A 95123.58422828 .00000072 00000-0 74457-4 0 1037
2 00424 80.4626 328.8894 0023946 12.3706 347.8017 13.67840332626206
ATS 1
1 02608U 66110A 95115.41060979 -.00000066 00000-0 10000-3 0 9297
2 02608 14.6281 357.2161 0010282 58.5500 301.5045 1.00316618 20669
ATS 3
1 03029U 67111A 95124.37573060 -.00000114 00000-0 10000-3 0 3582
2 03029 14.8088 4.1306 0008724 275.9050 331.6408 1.00272735100652
Cosmos 398
1 04966U 71016A 95124.89815925 .00152787 82784-5 18358-3 0 8382
2 04966 51.4190 64.5985 0650440 301.6119 52.2904 14.78636421818757
Starlette
1 07646U 75010A 95123.66185046 -.00000134 00000-0 60456-5 0 8839
2 07646 49.8297 328.7114 0205721 314.6303 43.7960 13.82188651 22182
LAGEOS
1 08820U 76039A 95123.49146826 .00000007 00000-0 10000-3 0 1042
2 08820 109.8359 245.2942 0044292 216.4220 143.3276 6.38664407187603
ETS-2
1 09852U 77014A 95117.35213582 .00000080 00000-0 10000-3 0 246
2 09852 12.6684 37.7673 0002605 43.6570 316.2767 0.99997868 13476
GOES 2
1 10061U 77048A 95121.34276831 .00000061 00000-0 10000-3 0 5218
2 10061 11.7381 41.9216 0010785 122.4878 3.3030 1.00251787 10301
IUE
1 10637U 78012A 95120.12198095 -.00000243 00000-0 10000-3 0 1331
2 10637 35.1153 89.7655 1325119 45.1623 70.7599 1.00238237 15784
GPS BI-01
1 10684U 78020A 95122.31657209 -.00000054 00000-0 10000-3 0 3547
2 10684 64.8175 36.0509 0061094 163.2865 196.9318 1.98069819111254
```

```
GPS BI-02
1 10893U 78047A 95121.16614784 -.00000034 00000-0 10000-3 0 1604
2 10893 63.3531 274.2423 0222034 14.3271 346.2198 2.01627313124486
GOES 3
1 10953U 78062A 95120.49214550 .00000074 00000-0 10000-3 0 4831
2 10953 10.7066 44.7068 0003256 93.9017 83.7015 1.00297015 14907
SeaSat 1
1 10967U 78064A 95123.74393057 -.00000016 00000-0 39384-4 0 3955
2 10967 107.9997 45.5417 0001744 251.3981 108.6988 14.38030332882441
GPS BI-03
1 11054U 78093A 95102.46301566 .00000020 00000-0 10000-3 0 2760
2 11054 63.0618 272.9100 0044686 177.0368 182.9757 1.93505222120302
Nimbus 7
1 11080U 78098A 95123.63552498 -.00000045 00000-0 -25163-5 0 4981
2 11080 99.0102 359.5378 0009072 357.4032 2.7085 13.83711622834398
GPS BI-04
1 11141U 78112A 95119.07828434 -.00000077 00000-0 10000-3 0 9717
2 11141 64.8125 37.8989 0048534 26.4796 333.7680 1.92894863 9872
GPS BI-05
1 11690U 80011A 95124.01336186 -.00000046 00000-0 10000-3 0 9081
2 11690 65.1576 37.6392 0143127 194.9626 164.6207 2.00563387125978
GPS BI-06
1 11783U 80032A 95116.57494612 -.00000050 00000-0 10000-3 0 714
2 11783 62.4873 267.6986 0217739 29.4705 331.7148 2.03456627110332
GOES 5
1 12472U 81049A 95124.72389869 -.00000279 00000-0 10000-3 0 8566
2 12472 7.4484 54.5032 0006339 12.0025 347.9013 1.00291311 8996
Cosmos 1383
1 13301U 82066A 95123.88341399 .00000022 00000-0 82825-5 0 4028
2 13301 82.9286 74.6322 0026144 293.3674 66.4729 13.68065395641270
LandSat 4
1 13367U 82072A 95125.18493763 .00000050 00000-0 21147-4 0 6667
2 13367 98.1339 182.0795 0007072 341.6994 18.3949 14.57154778680950
DMSP B5D2-1
1 13736U 82118A 95124.52815256 .00000066 00000-0 46006-4 0 7557
2 13736 98.6298 314.4217 0008644 135.9399 224.2470 14.25730092642698
IRAS
1 13777U 83004A 95124.55701995 -.00000191 00000-0 -10152-3 0 9492
2 13777 98.9677 313.7664 0012158 145.7806 214.4139 13.99230556296083
Cosmos 1447
1 13916U 83021A 95123.53418063 .00000056 00000-0 42951-4 0 4995
2 13916 82.9425 134.7777 0036503 214.8353 145.0413 13.74325242607331
TDRS 1
1 13969U 83026B 95120.72228208 -.00000193 00000-0 10000-3 0 4134
2 13969 8.2982 47.7897 0005676 265.9526 249.0361 1.00263046 17230
GOES 6
1 14050U 83041A 95124.35828917 .00000015 00000-0 10000-3 0 3950
2 14050 6.2626 57.6864 0005612 350.0731 179.2460 1.00314333102081
OSCAR 10
1 14129U 83058B 95124.52959707 -.00000287 00000-0 10000-3 0 3497
```

```
2 14129 26.4994 269.9093 6006601 273.9350 23.6862 2.05882905 61439
LandSat 5
1 14780U 84021A 95124.67164680 .00000046 00000-0 20192-4 0 2344
2 14780 98.1181 182.2015 0004937 353.8342 6.2796 14.57160778594295
UoSat 2
1 14781U 84021B 95123.98964928 .00000112 00000-0 26792-4 0 7959
2 14781 97.7826 128.6036 0011057 328.0233 32.0307 14.69337546597412
GPS BI-09
1 15039U 84059A 95120.83951719 -.00000067 00000-0 10000-3 0 3323
2 15039 64.4903 32.2411 0081544 17.1100 343.1890 1.92302289 79483
Cosmos 1574
1 15055U 84062A 95123.64795536 .00000049 00000-0 35869-4 0 7009
2 15055 82.9582 188.7109 0029120 46.1787 314.1765 13.73620733544626
GPS BI-10
1 15271U 84097A 95124.19784889 -.00000010 00000-0 10000-3 0 9883
2 15271 62.1858 267.7423 0155078 353.6521 6.1393 2.00597017 77041
Cosmos 1602
1 15331U 84105A 95124.08313667 .00000220 00000-0 23111-4 0 3873
2 15331 82.5337 137.2135 0018616 220.0204 139.9636 14.84610279572123
NOAA 9
1 15427U 84123A 95124.78451330 .00000064 00000-0 57687-4 0 2393
2 15427 99.0017 183.2412 0015872 34.1749 326.0436 14.13702829535788
GPS BI-11
1 16129U 85093A 95124.50680511 -.00000050 00000-0 10000-3 0 6538
2 16129 65.1525 35.1959 0153884 87.0302 274.7551 1.89368097 14160
Mir
1 16609U 86017A 95125.20104188 .00004318 00000-0 61934-4 0 208
2 16609 51.6476 12.9166 0005147 87.3387 272.8194 15.58506653526269
SPOT 1
1 16613U 86019A 95125.20178898 .00000090 00000-0 62356-4 0 8091
2 16613 98.6492 197.4998 0002429 31.7083 328.4239 14.20056175162262
Cosmos 1766
1 16881U 86055A 95123.67379218 .00000159 00000-0 16319-4 0 3028
2 16881 82.5199 195.4539 0017437 250.9274 109.0046 14.83617278472973
EGP
1 16908U 86061A 95124.17203900 -.00000083 00000-0 10000-3 0 9961
2 16908 50.0088 177.5605 0010747 48.9980 311.1782 12.44412168 65350
NOAA 10
1 16969U 86073A 95124.76340929 .00000002 00000-0 19071-4 0 1486
2 16969 98.5093 128.9577 0014128 107.0037 253.2687 14.24932909448293
MOS-1
1 17527U 87018A 95121.52906662 -.00000199 00000-0 -11563-3 0 2038
2 17527 98.9918 187.8885 0001125 98.1631 261.9666 13.94921225417321
GOES 7
1 17561U 87022A 95123.86968979 .00000085 00000-0 10000-3 0 3699
2 17561 2.2399 72.8148 0004032 344.1450 341.3677 1.00284943 13182
Kvant-1
1 17845U 87030A 95124.81631110 -.00010202 00000-0 -12459-3 0 2427
2 17845 51.6474 14.8545 0005355 71.5782 288.5437 15.58491283526117
DMSP B5D2-3
```

```
1 18123U 87053A 95124.73010120 .00000013 00000-0 29248-4 0 9806
2 18123 98.7806 316.5673 0014450 347.6957 12.3861 14.15401734406574
RS-10/11
1 18129U 87054A 95123.86925806 .00000033 00000-0 19889-4 0 557
2 18129 82.9226 91.8253 0010397 208.5410 151.5182 13.72351695393897
Meteor 2-16
1 18312U 87068A 95123.92117087 .00000052 00000-0 33356-4 0 3949
2 18312 82.5513 317.4826 0011421 298.0731 61.9275 13.84055942389428
Meteor 2-17
1 18820U 88005A 95124.20501077 .00000069 00000-0 48262-4 0 6104
2 18820 82.5479 13.2423 0017212 3.5421 356.5857 13.84738135366781
DMSP B5D2-4
1 18822U 88006A 95124.51433061 .00000030 00000-0 31737-4 0 9669
2 18822 98.4064 330.6189 0006753 117.1086 243.0783 14.23151814376305
Glonass 34
1 19163U 88043A 95122.04699319 .00000024 00000-0 10000-3 0 9892
2 19163 65.1153 99.7183 0006826 159.4505 200.5528 2.13102577 53458
Glonass 36
1 19165U 88043C 95119.28769848 .00000019 00000-0 10000-3 0 3877
2 19165 65.0938 99.7818 0002481 304.8638 55.0875 2.13102121 54017
METEOSAT 3
1 19215U 88051A 95125.12745465 -.00000274 00000-0 10000-3 0 1222
2 19215 2.4179 70.1070 0002221 41.6313 88.0019 1.00268280 13145
AO-13
1 19216U 88051B 95124.15018318 -.00000345 00000-0 10000-4 0 358
2 19216 57.5522 189.4705 7286938 8.0437 359.3195 2.09725072 21244
OKEAN 1
1 19274U 88056A 95123.92785474 .00000165 00000-0 17579-4 0 26
2 19274 82.5125 295.5609 0021597 37.2886 322.9824 14.82329776368592
Meteor 3-2
1 19336U 88064A 95123.91648856 .00000051 00000-0 10000-3 0 3911
2 19336 82.5370 96.7418 0016399 176.1363 183.9866 13.16972521325478
Glonass 39
1 19503U 88085C 95117.90794348 -.00000042 00000-0 10000-3 0 2763
2 19503 65.7097 338.7410 0008741 162.3530 197.7167 2.13101874 51472
NOAA 11
1 19531U 88089A 95124.75708334 .00000011 00000-0 30916-4 0 503
2 19531 99.1927 126.9443 0011342 315.2855 44.7405 14.13048896340620
TDRS 2
1 19548U 88091B 95120.50640231 .00000088 00000-0 10000-3 0 1207
2 19548 1.6496 72.7506 0002933 351.8181 164.2178 1.00264346 11384
Glonass 40
1 19749U 89001A 95122.16978570 .00000025 00000-0 10000-3 0 4941
2 19749 65.0674 99.2862 0005394 317.1331 42.7315 2.13101220 49070
Glonass 41
1 19750U 89001B 95114.24801062 .00000066 00000-0 10000-3 0 4062
2 19750 65.0722 99.5995 0005705 238.3783 121.5636 2.13101840 48920
GPS BII-01
1 19802U 89013A 95123.81030431 .00000042 00000-0 10000-3 0 497
2 19802 55.1820 126.9816 0025850 187.3358 172.6358 2.00576485 45481
```

```
Akebono
1 19822U 89016A 95125.09270603 .00014087 00000-0 72487-3 0 4913
2 19822 75.0895 359.8294 3783059 52.9639 336.1012 7.85393755134430
Meteor 2-18
1 19851U 89018A 95123.83548056 .00000016 00000-0 82997-6 0 3924
2 19851 82.5157 248.2512 0016006 48.5563 311.6971 13.84387814312058
MOP-1
1 19876U 89020B 95116.86331711 -.00000084 00000-0 10000-3 0 1115
2 19876 1.1160 70.8619 0001242 4.3558 82.0228 1.00272310 2502
TDRS 3
1 19883U 89021B 95124.05497874 -.00000269 00000-0 10000-3 0 728
2 19883 0.0071 252.0815 0002082 113.8391 194.3012 1.00267376195007
GPS BII-02
1 20061U 89044A 95124.15424728 -.00000048 00000-0 10000-3 0 592
2 20061 54.4391 303.3146 0143718 211.8929 147.2578 2.00561828 43231
Nadezhda 1
1 20103U 89050A 95124.76888969 .00000010 00000-0 -64582-5 0 3817
2 20103 82.9602 50.6103 0038722 112.3953 248.1311 13.73852183292460
GPS BII-03
1 20185U 89064A 95123.99735354 .00000044 00000-0 10000-3 0 845
2 20185 55.0098 127.5503 0014471 289.7286 70.1040 2.00578065 41805
GMS 4
1 20217U 89070A 95120.52020115 -.00000291 00000-0 10000-3 0 1853
2 20217 0.9444 75.7954 0000714 77.8290 31.7487 1.00265569 21273
INTERCOSMOS 24
1 20261U 89080A 95123.62620737 .00000177 00000-0 54856-4 0 4070
2 20261 82.5959 172.9475 1240390 255.1635 90.9111 12.47244464254721
GPS BII-04
1 20302U 89085A 95120.53605114 -.00000039 00000-0 10000-3 0 605
2 20302 53.3859 243.4997 0010429 184.8131 175.1611 2.00554961 40538
Meteor 3-3
1 20305U 89086A 95124.23165516 .00000044 00000-0 10000-3 0 3054
2 20305 82.5505 48.0136 0004164 255.7202 104.3453 13.04408835264757
COBE
1 20322U 89089A 95123.02281730 .00000125 00000-0 10787-3 0 1172
2 20322 98.9644 139.7374 0009792 99.5432 260.6823 14.03453286279252
Kvant-2
1 20335U 89093A 95124.81631110 -.00010202 00000-0 -12459-3 0 2550
2 20335 51.6474 14.8545 0005355 71.5782 288.5437 15.58491283308438
GPS BII-05
1 20361U 89097A 95124.03969130 -.00000018 00000-0 10000-3 0 9205
2 20361 55.7355 69.5350 0080666 129.2785 231.4219 2.00561913 30082
SPOT 2
1 20436U 90005A 95125.18615677 -.00000044 00000-0 00000+0 0 9282
2 20436 98.7366 199.8150 0001621 56.3512 303.7819 14.20023202273796
UO-14
1 20437U 90005B 95123.71805122 .00000005 00000-0 18796-4 0 942
2 20437 98.5686 208.8022 0010986 333.9350 26.1276 14.29884345275390
UO-15
1 20438U 90005C 95123.73528273 .00000004 00000-0 18883-4 0 8915
```

```
2 20438 98.5646 207.3928 0010206 339.4335 20.6432 14.29204764275298
PACSAT
1 20439U 90005D 95123.76149781 -.00000001 00000-0 16744-4 0 8936
2 20439 98.5794 210.4540 0011419 334.8250 25.2373 14.29938356275410
DO-17
1 20440U 90005E 95123.75436867 -.00000007 00000-0 14017-4 0 8938
2 20440 98.5778 210.8870 0011378 333.7835 26.2765 14.30079372275439
WO-18
1 20441U 90005F 95123.73575246 -.00000009 00000-0 13282-4 0 8971
2 20441 98.5806 210.8486 0012059 334.2129 25.8447 14.30050787275435
LO-19
1 20442U 90005G 95123.27200572 .00000036 00000-0 30725-4 0 8934
2 20442 98.5816 210.7377 0012441 334.8558 25.2013 14.30152917275387
GPS BII-06
1 20452U 90008A 95124.43652951 .00000017 00000-0 10000-3 0 270
2 20452 54.0388 183.4486 0058640 87.2758 273.5388 2.00572116 38592
MOS-1B
1 20478U 90013A 95125.23322598 .00000091 00000-0 10000-3 0 7789
2 20478 98.9947 195.7758 0000722 103.8950 256.2283 13.94924881187540
DEBUT
1 20479U 90013B 95123.80936518 -.00000045 00000-0 -22847-4 0 8925
2 20479 99.0696 220.8050 0540622 333.3968 24.0294 12.83328042245267
FO-20
1 20480U 90013C 95123.81225079 -.00000084 00000-0 -10922-3 0 7899
2 20480 99.0698 220.6623 0540614 333.7683 23.6931 12.83228511245256
MOS-1B R/B
1 20491U 90013D 95122.41841046 .00000166 00000-0 37526-3 0 1290
2 20491 99.0351 272.5294 0470437 178.7678 181.4718 13.02982195248234
LACE
1 20496U 90015A 95121.44500979 .00000922 00000-0 35488-4 0 5331
2 20496 43.1063 37.3471 0011077 268.1222 91.8271 15.34441521290395
Nadezhda 2
1 20508U 90017A 95124.64876001 .00000036 00000-0 21302-4 0 3798
2 20508 82.9563 185.2810 0046203 66.1054 294.4933 13.73492822259676
OKEAN 2
1 20510U 90018A 95123.85994090 .00000216 00000-0 26466-4 0 4026
2 20510 82.5207 246.9967 0017545 216.7092 143.2918 14.78482861279045
GPS BII-07
1 20533U 90025A 95122.85223082 -.00000056 00000-0 10000-3 0 445
2 20533 54.8129 303.9322 0049255 79.5508 281.0043 2.00560173 37333
PegSat
1 20546U 90028A 95122.43325720 .00003460 00000-0 72417-4 0 7942
2 20546 94.1131 118.3615 0070148 151.0642 209.4487 15.42964715281427
HST
1 20580U 90037B 95124.04549299 .00000403 00000-0 24836-4 0 6617
2 20580 28.4708 334.5642 0005655 205.1972 154.8334 14.90865879 77313
MACSAT 2
1 20608U 90043B 95123.67037803 .00000176 00000-0 27248-4 0 932
2 20608 89.9317 176.8832 0108423 51.7004 309.3899 14.64827960266197
Glonass 44
```

```
1 20619U 90045A 95123.94633248 -.00000045 00000-0 10000-3 0 1867
2 20619 65.3011 337.9939 0022698 208.2852 151.5806 2.13102395 38567
Glonass 45
1 20620U 90045B 95117.49549141 -.00000043 00000-0 10000-3 0 1925
2 20620 65.2975 338.1974 0009826 47.1510 312.9864 2.13102643 38460
Glonass 46
1 20621U 90045C 95119.90802686 -.00000047 00000-0 10000-3 0 7931
2 20621 65.3183 338.1491 0013533 191.3495 168.6567 2.13101529 38515
Kristall
1 20635U 90048A 95124.81631110 -.00010202 00000-0 -12459-3 0 485
2 20635 51.6474 14.8545 0005355 71.5782 288.5437 15.58491283526062
ROSAT
1 20638U 90049A 95106.09298919 -.00000036 00000-0 16494-4 0 4071
2 20638 52.9904 66.5618 0010404 265.0672 94.9121 15.07146191267757
Meteor 2-19
1 20670U 90057A 95116.59076644 .00000014 00000-0 -90980-6 0 8895
2 20670 82.5469 319.5518 0016331 353.5680 6.5263 13.84163335243971
CRRES
1 20712U 90065A 95123.19116176 .00000097 00000-0 26768-3 0 881
2 20712 18.0205 57.1472 7180134 70.3139 349.7167 2.35398114 33428
GPS BII-08
1 20724U 90068A 95124.16903107 .00000044 00000-0 10000-3 0 9000
2 20724 54.8297 125.1342 0117042 172.8685 187.3137 2.00560312 33221
Feng Yun1-2
1 20788U 90081A 95125.19855387 -.00000027 00000-0 10000-4 0 3765
2 20788 98.8118 139.7010 0015096 186.8211 173.2751 14.01338292238812
Meteor 2-20
1 20826U 90086A 95123.81478311 .00000026 00000-0 98568-5 0 9038
2 20826 82.5227 250.8526 0011956 227.6899 132.3248 13.83605715232097
GPS BII-09
1 20830U 90088A 95121.22489050 -.00000044 00000-0 10000-3 0 9089
2 20830 55.6614 67.6339 0064615 100.6465 260.0508 2.00570259 33805
GPS BIIA-10
1 20959U 90103A 95124.12408940 .00000045 00000-0 10000-3 0 8595
2 20959 55.0703 127.1129 0097315 230.0215 129.1480 2.00554862 32459
DMSP B5D2-5
1 20978U 90105A 95124.53857935 .00000131 00000-0 62802-4 0 1839
2 20978 98.6430 192.9148 0078466 299.0681 60.2679 14.32540368231066
Glonass 47
1 21006U 90110A 95122.28056889 .00000025 00000-0 10000-3 0 7589
2 21006 65.0382 98.6160 0059350 188.5498 171.3470 2.13102856 34233
Glonass 48
1 21007U 90110B 95119.18394507 .00000018 00000-0 10000-3 0 8917
2 21007 65.0634 98.7754 0033974 177.3094 182.6843 2.13101083 34157
Glonass 49
1 21008U 90110C 95121.88969715 .00000022 00000-0 00000+0 0 650
2 21008 65.0426 98.6483 0011516 279.2970 80.5586 2.13099101 34201
AO-21
1 21087U 91006A 95122.44571130 .00000093 00000-0 82657-4 0 5910
2 21087 82.9335 266.4153 0033249 274.7745 84.9614 13.74553839213448
```

```
RS-12/13
1 21089U 91007A 95124.07617092 .00000019 00000-0 40694-5 0 7963
2 21089 82.9206 133.4945 0027920 297.8048 62.0285 13.74056702212717
MOP-2
1 21140U 91015B 95125.02537346 -.00000001 00000-0 00000+0 0 9975
2 21140 0.2177 92.2516 0002302 347.9093 152.1875 1.00281874 17507
Nadezhda 3
1 21152U 91019A 95124.76539426 .00000039 00000-0 24850-4 0 697
2 21152 82.9195 89.0400 0043396 42.9141 317.5390 13.73518219207540
Glonass 50
1 21216U 91025A 95121.82982011 -.00000050 00000-0 10000-3 0 4050
2 21216 65.0505 337.7291 0007650 211.1292 148.8993 2.13102808 31734
Glonass 51
1 21217U 91025B 95121.89828552 -.00000050 00000-0 10000-3 0 8130
2 21217 65.0526 337.7100 0011506 247.0523 112.8721 2.13101947 31729
Glonass 52
1 21218U 91025C 95124.82626798 -.00000041 00000-0 10000-3 0 2892
2 21218 65.0076 337.6201 0005753 304.8101 55.1836 2.13102564 31791
GRO
1 21225U 91027B 95111.47337898 .00002562 00000-0 51478-4 0 2264
2 21225 28.4753 249.7038 0003316 98.3415 261.7480 15.42479626104569
Meteor 3-4
1 21232U 91030A 95123.89458577 .00000051 00000-0 10000-3 0 8018
2 21232 82.5381 302.8589 0014338 102.5375 257.7347 13.16467768193553
NOAA 12
1 21263U 91032A 95124.71907533 .00000127 00000-0 76100-4 0 4729
2 21263 98.5879 149.8954 0013884 27.5708 332.6206 14.22513809206246
OKEAN 3
1 21397U 91039A 95124.08826488 .00000175 00000-0 21918-4 0 1023
2 21397 82.5272 159.7461 0020987 296.1970 63.7073 14.76364917210853
GPS BIIA-11
1 21552U 91047A 95122.39830073 -.00000037 00000-0 10000-6 0 8490
2 21552 55.9659 65.2807 0063890 242.8584 116.4589 2.00568922 28012
ERS-1
1 21574U 91050A 95124.80746396 .00000034 00000-0 28830-4 0 1385
2 21574 98.5527 199.7345 0001510 55.4712 304.6611 14.32249059198846
UO-22
1 21575U 91050B 95123.72291596 .00000035 00000-0 26083-4 0 5993
2 21575 98.3991 196.1346 0008654 54.3711 305.8278 14.36972899199117
ORBCOMM-X
1 21576U 91050C 95123.72262803 .00000020 00000-0 21282-4 0 6949
2 21576 98.3973 194.6085 0004893 58.8574 301.3091 14.36378624199028
TUBSAT-A
1 21577U 91050D 95123.16460698 .00000000 00000-0 14643-4 0 5939
2 21577 98.3974 194.5812 0007476 58.1266 302.0645 14.36481085198970
SARA
1 21578U 91050E 95123.74618594 .00000217 00000-0 84238-4 0 7933
2 21578 98.4157 200.2792 0005990 58.8913 301.2858 14.38993111199307
TDRS 4
1 21639U 91054B 95121.00000000 .00000076 00000-0 10000-3 0 8871
```

```
2 21639 0.0708 71.3710 0002903 331.9450 0.7739 1.00271936107751
Meteor 3-5
1 21655U 91056A 95123.84353668 .00000051 00000-0 10000-3 0 7991
2 21655 82.5488 250.2568 0014626 113.3929 246.8735 13.16838777178665
UARS
1 21701U 91063B 95123.91251518 -.00000004 00000-0 20781-4 0 6705
2 21701 56.9853 314.0103 0005389 106.3754 253.7860 14.96379426198945
DMSP B5D2-6
1 21798U 91082A 95124.73269953 .00000066 00000-0 58563-4 0 8264
2 21798 98.9615 136.3833 0012462 313.0204 46.9924 14.13882084177066
Glonass 53
1 21853U 92005A 95124.09947381 .00000042 00000-0 10000-3 0 9997
2 21853 64.9835 98.2432 0008326 211.8101 148.1507 2.13102187 25386
Glonass 54
1 21854U 92005B 95122.98189813 .00000031 00000-0 00000+0 0 1290
2 21854 64.9919 98.2745 0016486 9.5126 350.4981 2.13103781 25343
Glonass 55
1 21855U 92005C 95122.57616948 .00000027 00000-0 00000+0 0 1161
2 21855 64.9881 98.2934 0007334 218.8907 141.0309 2.13102254 25326
JERS-1
1 21867U 92007A 95124.71058255 .00000922 00000-0 81678-4 0 5775
2 21867 97.7204 201.9687 0001999 95.8520 264.2889 14.98641034176536
GPS BIIA-12
1 21890U 92009A 95124.86003376 -.00000021 00000-0 10000-3 0 6540
2 21890 53.9499 243.5248 0057622 178.5922 181.4317 2.00545471 23430
GPS BIIA-13
1 21930U 92019A 95122.07036795 -.00000083 00000-0 10000-3 0 6265
2 21930 55.7067 5.0857 0039848 170.2494 189.8620 2.00566098 22308
EUVE
1 21987U 92031A 95104.35250777 .00001084 00000-0 40671-4 0 3996
2 21987 28.4345 191.7779 0009745 32.0292 328.0880 15.19210399158237
SAMPEX
1 22012U 92038A 95122.22285456 .00000140 00000-0 96736-5 0 6271
2 22012 81.6714 194.2079 0120408 77.9813 283.4849 14.91403673153823
GPS BIIA-14
1 22014U 92039A 95124.10958507 .00000018 00000-0 10000-3 0 5469
2 22014 54.8576 184.9455 0084634 312.2078 47.1680 2.00575732 14181
Glonass 56
1 22056U 92047A 95124.35310966 -.00000044 00000-0 00000+0 0 338
2 22056 64.8842 337.7683 0003845 298.5871 61.4074 2.13103162 21459
Glonass 57
1 22057U 92047B 95122.77114266 -.00000049 00000-0 00000+0 0 322
2 22057 64.9005 337.8554 0007665 333.0079 26.9973 2.13103037 21397
Glonass 58
1 22058U 92047C 95119.89584820 -.00000048 00000-0 10000-3 0 165
2 22058 64.8934 337.9501 0009145 274.0805 85.8643 2.13102937 21382
TOPEX
1 22076U 92052A 95121.74535085 -.00000061 00000-0 00000+0 0 8749
2 22076 66.0421 349.3369 0007642 269.5703 90.4433 12.80930975127294
KO-23
```

```
1 22077U 92052B 95124.03980984 -.00000037 00000-0 10000-3 0 4909
2 22077 66.0868 328.2071 0008919 211.1260 148.9234 12.86290658128051
S80/T
1 22078U 92052C 95116.67028245 -.00000037 00000-0 10000-3 0 4858
2 22078 66.0900 342.5888 0009721 205.0925 154.9630 12.86574602127180
GPS BIIA-15
1 22108U 92058A 95120.07897333 -.00000043 00000-0 10000-3 0 5611
2 22108 54.1856 244.4795 0119289 148.9638 211.7247 2.00565681 19285
FREJA
1 22161U 92064A 95123.61372949 -.00000149 00000-0 -15773-4 0 5094
2 22161 62.9944 201.6329 0805173 342.9801 14.5572 13.21830732124159
LAGEOS II
1 22195U 92070B 95123.17676191 -.00000009 00000-0 10000-3 0 3993
2 22195 52.6537 251.4396 0138533 256.9529 101.5511 6.47293945 59669
GPS BIIA-16
1 22231U 92079A 95124.24955613 .00000016 00000-0 10000-3 0 5338
2 22231 54.6570 186.0919 0027910 287.8404 71.9394 2.00567969 17943
GPS BIIA-17
1 22275U 92089A 95123.90134616 .00000019 00000-0 10000-3 0 5514
2 22275 54.6310 183.6624 0052803 254.2874 105.2183 2.00557576 17341
TDRS 5
1 22314U 93003B 95122.14944444 -.00000284 00000-0 10000-3 0 5041
2 22314 1.7825 72.1395 0001837 324.9825 190.1006 1.00280603 8450
GPS BIIA-18
1 22446U 93007A 95124.47247333 -.00000046 00000-0 10000-3 0 5374
2 22446 54.4460 304.0964 0078390 4.2985 355.7528 2.00546942 16345
Glonass 59
1 22512U 93010A 95121.28527285 .00000017 00000-0 10000-3 0 7004
2 22512 65.0013 98.1911 0009222 194.1133 165.8348 2.13101998 16898
Glonass 60
1 22513U 93010B 95121.22468767 .00000017 00000-0 00000+0 0 7485
2 22513 64.9998 98.2062 0006865 212.5162 147.4152 2.13102773 17087
Glonass 61
1 22514U 93010C 95124.33380267 .00000045 00000-0 00000+0 0 7491
2 22514 65.0213 98.0928 0010206 200.8460 159.0939 2.13103174 17150
ASTRO-D
1 22521U 93011A 95122.27597416 .00000738 00000-0 46475-4 0 4045
2 22521 31.1122 170.1004 0056052 43.7431 316.7630 15.02206210120465
UFO F1
1 22563U 93015A 95124.52024455 -.00000236 00000-0 10000-3 0 4119
2 22563 26.0767 294.9897 0002368 333.4439 304.2557 0.99254384 12029
GPS BIIA-19
1 22581U 93017A 95119.62908407 -.00000088 00000-0 10000-3 0 4265
2 22581 55.2134 4.7567 0071462 39.6012 320.9536 2.00542288 15308
ARSENE
1 22654U 93031B 95116.38491222 -.00000118 00000-0 10000-3 0 3111
2 22654 2.4802 86.0751 2900787 209.2691 130.9572 1.42202808 5656
GPS BIIA-20
1 22657U 93032A 95120.25793341 -.00000087 00000-0 10000-3 0 4647
2 22657 55.2441 4.6083 0066724 213.3967 146.2393 2.00568134 10640
```

```
RADCAL
1 22698U 93041A 95123.87552854 .00000048 00000-0 15548-4 0 3979
2 22698 89.5393 292.8203 0089339 223.6252 135.7869 14.21343671 96147
GPS BIIA-21
1 22700U 93042A 95124.21366325 -.00000021 00000-0 10000-3 0 4104
2 22700 54.3530 245.0838 0036359 342.4849 17.4013 2.00562613 13525
NOAA-13
1 22739U 93050A 95123.89569591 .00000056 00000-0 56471-4 0 7932
2 22739 98.9916 72.6968 0009344 305.0150 55.0145 14.10932035 89194
GPS BIIA-22
1 22779U 93054A 95123.80059615 -.00000051 00000-0 10000-3 0 4640
2 22779 54.6153 304.1367 0019103 244.9691 114.8357 2.00565902 12276
Meteor 2-21
1 22782U 93055A 95124.00621906 .00000041 00000-0 23778-4 0 3998
2 22782 82.5458 312.2050 0024080 47.8692 312.4508 13.83031638 84436
UFO F2
1 22787U 93056A 95124.30390731 -.00000068 00000-0 00000+0 0 4232
2 22787 4.5829 324.8944 0004027 43.1448 34.5356 1.00268515 4724
SPOT 3
1 22823U 93061A 95121.70381608 .00000002 00000-0 21378-4 0 4326
2 22823 98.7402 196.3999 0002546 96.2451 263.9014 14.20021265 82692
STELLA
1 22824U 93061B 95123.81283044 -.00000054 00000-0 -43507-5 0 3862
2 22824 98.6186 200.5494 0006683 4.5477 355.5746 14.27100644 83401
AO-27
1 22825U 93061C 95123.73671272 .00000001 00000-0 18254-4 0 3880
2 22825 98.6196 200.7688 0009133 357.7672 2.3465 14.27660283 83420
IO-26
1 22826U 93061D 95124.18453792 .00000007 00000-0 20658-4 0 3872
2 22826 98.6209 201.3003 0009855 356.3667 3.7446 14.27767597 83491
HEATHSAT
1 22827U 93061E 95123.71866045 .00000012 00000-0 22604-4 0 4487
2 22827 98.6180 200.7797 0009701 346.4895 13.6016 14.27889553 83430
ITAMSAT
1 22828U 93061F 95124.19119912 .00000013 00000-0 22742-4 0 3657
2 22828 98.6170 201.3414 0010787 341.9575 18.1225 14.28097103 51591
PO-28
1 22829U 93061G 95123.71173003 .00000045 00000-0 35896-4 0 3790
2 22829 98.6167 200.8968 0010617 344.4247 15.6581 14.28076061 83448
KO-25
1 22830U 93061H 95123.35220895 .00000089 00000-0 52929-4 0 3978
2 22830 98.5187 194.2527 0009981 319.2335 40.8098 14.28087692 83397
GPS BIIA-23
1 22877U 93068A 95120.86164432 -.00000050 00000-0 10000-3 0 2705
2 22877 55.4182 65.7097 0039787 298.3031 61.2809 2.00550309 11100
METEOSAT 6
1 22912U 93073B 95124.45804646 -.00000087 00000-0 00000+0 0 3029
2 22912 0.2004 269.0367 0001228 209.8904 257.8972 1.00272060 3755
HST Array
1 22920U 90037C 95123.66967368 .00004958 00000-0 36895-3 0 3179
```

```
2 22920 28.4778 302.1906 0003402 38.7790 321.2629 15.00751903 77614
Meteor 3-6
1 22969U 94003A 95123.67068521 .00000051 00000-0 10000-3 0 1654
2 22969 82.5601 190.1321 0015292 178.0130 182.1061 13.16728628 61020
TUBSAT-B
1 22970U 94003B 95123.25604800 .00000051 00000-0 10000-3 0 1566
2 22970 82.5595 190.3673 0014524 179.1992 180.9143 13.16824670 60975
GPS BIIA-24
1 23027U 94016A 95124.92689513 -.00000079 00000-0 10000-3 0 2026
2 23027 55.0581 6.4186 0062647 195.2831 164.6230 2.00553256 8490
Glonass 62
1 23043U 94021A 95124.41200674 -.00000044 00000-0 00000+0 0 1993
2 23043 64.7729 338.1901 0004817 176.3499 183.6959 2.13102882 8278
Glonass 63
1 23044U 94021B 95122.41768833 -.00000050 00000-0 00000+0 0 1759
2 23044 64.7649 338.2595 0027739 202.4522 157.4719 2.13103074 8239
Glonass 64
1 23045U 94021C 95124.00160277 -.00000046 00000-0 00000+0 0 1862
2 23045 64.7482 338.2204 0011463 35.7889 324.3306 2.13102745 8266
GOES 8
1 23051U 94022A 95124.19846690 -.00000258 00000-0 10000-3 0 3064
2 23051 0.0747 263.2064 0002401 204.8697 110.7027 1.00269406 11252
MSTI 2
1 23101U 94028A 95125.19625339 .00004648 00000-0 84124-4 0 1874
2 23101 97.0993 319.0447 0012741 48.2167 312.0240 15.50072431 55861
STRV-1A
1 23125U 94034B 95124.05070471 .00000914 00000-0 56820-3 0 1471
2 23125 7.4800 49.2247 7255774 84.0100 346.7809 2.29859294 6634
STRV-1B
1 23126U 94034C 95124.15898031 .00000257 00000-0 26012-3 0 1439
2 23126 7.4912 49.3282 7258703 83.8929 346.8309 2.29498201 6688
Nadezhda 4
1 23179U 94041A 95124.19220332 .00000059 00000-0 45348-4 0 985
2 23179 82.9485 180.4664 0035705 186.4560 173.6138 13.75666811 40422
Glonass 65
1 23203U 94050A 95123.20071163 .00000009 00000-0 00000+0 0 1381
2 23203 64.8085 217.9337 0007139 149.7609 210.3240 2.13102193 5640
Glonass 66
1 23204U 94050B 95123.43485374 .00000009 00000-0 00000+0 0 1481
2 23204 64.7868 217.9546 0014801 346.3877 13.6158 2.13102527 5640
Glonass 67
1 23205U 94050C 95122.37920838 .00000010 00000-0 00000+0 0 1340
2 23205 64.7915 217.9692 0002049 299.5763 60.4435 2.13102186 5627
DMSP B5D2-7
1 23233U 94057A 95124.69430975 .00000121 00000-0 89081-4 0 3260
2 23233 98.8819 183.1707 0011432 262.8576 97.1291 14.12601097 35011
OKEAN 1-7
1 23317U 94066A 95123.87250766 .00000223 00000-0 30498-4 0 628
2 23317 82.5425 76.4590 0025946 339.2480 20.7707 14.73925525 30098
ELEKTRO
```

```
1 23327U 94069A 95113.79055131 -.00000126 00000-0 10000-3 0 664
2 23327 0.8669 264.1242 0005813 160.8592 147.2652 1.00270504 1789
RESURS 1-3
1 23342U 94074A 95123.02457267 .00000094 00000-0 23794-4 0 1052
2 23342 98.0200 183.4825 0001175 85.1398 274.9942 14.69730208 26414
Glonass 68
1 23396U 94076A 95122.22253350 .00000023 00000-0 00000+0 0 928
2 23396 64.9334 98.2565 0029574 194.6164 165.2760 2.13102437 3460
Glonass 69
1 23397U 94076B 95122.39793923 .00000025 00000-0 00000+0 0 957
2 23397 64.9196 98.2643 0015004 318.6693 41.1927 2.13102425 3466
Glonass 70
1 23398U 94076C 95122.28132649 .00000024 00000-0 00000+0 0 1015
2 23398 64.9090 98.2514 0005358 294.1112 65.8080 2.13102439 3471
RS-15
1 23439U 94085A 95123.53443186 -.00000039 00000-0 10000-3 0 472
2 23439 64.8245 327.2096 0167672 270.1588 88.0123 11.27523866 14481
NOAA 14
1 23455U 94089A 95124.79066303 .00000088 00000-0 72740-4 0 1648
2 23455 98.8983 67.6545 0009402 324.6654 35.3882 14.11508428 17690
ODERACS II A
1 23471U 95004C 95124.86139677 .00024594 00000-0 12540-3 0 1062
2 23471 51.6474 0.7868 0011737 289.2374 70.7907 15.81159507 14310
ODERACS II B
1 23472U 95004D 95124.87273267 .00055913 00000-0 21665-3 0 1111
2 23472 51.6584 358.5462 0013990 292.5688 67.5975 15.86483303 14346
Glonass 71
1 23511U 95009A 95122.82844525 -.00000050 00000-0 00000+0 0 448
2 23511 64.7791 338.5158 0006389 334.2252 25.7885 2.13102686 1205
Glonass 72
1 23512U 95009B 95122.65269830 -.00000050 00000-0 00000+0 0 495
2 23512 64.7831 338.5335 0011434 197.3399 162.6672 2.13102947 1200
Glonass 73
1 23513U 95009C 95122.24185113 -.00000050 00000-0 00000+0 0 436
2 23513 64.7817 338.5251 0004442 210.6955 149.3257 2.13102584 1196
Soyuz TM-21
1 23519U 95010A 95124.81631110 -.00010202 00000-0 -12459-3 0 720
2 23519 51.6474 14.8545 0005355 71.5782 288.5437 15.58491283 8072
GMS 5
1 23522U 95011B 95124.61138017 -.00000120 00000-0 00000+0 0 262
2 23522 0.9982 293.0895 0000187 325.2213 343.5216 1.00271952 342
DMSP B5D2-8
1 23533U 95015A 95124.49954283 .00000020 00000-0 34355-4 0 572
2 23533 98.8319 127.4906 0007602 129.2445 230.9401 14.12681719 5786
OFEQ 3
1 23549U 95018A 95125.15171298 .00009880 00000-0 26745-3 0 287
2 23549 143.3736 272.3847 0259944 318.5072 39.6625 15.06985181 4474
1995018B
1 23550U 95018B 95125.24105645 .00212778 -57465-5 90848-3 0 417
2 23550 143.3706 280.2700 0309768 327.5384 30.6682 15.37674522 4567
```

```
AMSC-1
1 23553U 95019A 95115.35887272 -.00000138 00000-0 00000+0 0 202
2 23553 0.0843 36.4999 0004435 207.2591 356.5506 1.00303998 190
1995019B
1 23554U 95019 95122.50314682 .00020092 00000-0 65941-2 0 127
2 23554 26.5002 8.8268 7491558 189.4319 136.4792 2.02234116 498
Progress M-27
1 23555U 95020A 95124.81631110 -.00010202 00000-0 -12459-3 0 349
2 23555 51.6474 14.8545 0005355 71.5782 288.5437 15.58491283 4001
GFZ-1
1 23558U 86017JE 95122.43463272 .00002160 00000-0 32966-4 0 210
2 23558 51.6529 26.6908 0007410 111.6557 248.5222 15.59612923525697
1986017JF
1 23559U 86017JF 95124.29099184 .00016938 00000-0 21071-3 0 182
2 23559 51.6502 17.3472 0006779 130.5848 229.6038 15.60058271525981
ERS-2
1 23560U 95021A 95124.41030131 .00000818 00000-0 31933-3 0 302
2 23560 98.5518 199.3538 0001386 67.8116 292.3213 14.32253819 1910
1995021B
1 23561U 95021B 95123.29465078 .00000026 00000-0 25004-4 0 180
2 23561 98.4775 198.2905 0006224 215.5162 144.5608 14.33194434 1756
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

955. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-05 00:00:00 UTC
From: jeffrey@math.hawaii.edu
Message-ID: <D83B43.Mt5@news.hawaii.edu>
Source record: 25155
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

Please stop suggesting rec.radio.amateur.qrp - there's already a very
fine qrp email list with a high S/N ratio. Last count there were
400 subscribers. Now that doesn't sound like enough to warrant
a newsgroup, does it? In the past 3 years every time a suggestion
was made to shift from an email list to a newsgroup the suggestion
was always vehemently voted down.

If the low-profilers want a group, then why not start an email list?
Such lists are very very successful, for they target a select-interest
group and as a result the noise level is quite low (no flame wars).

With well over 7000 newsgroups some sites may have reached the saturation
point and choose not to subscribe to the new rec.radio.amateur.low-profile.

73 from Hawaii,
Jeff NH6IL

956. NEW HAM RADIO WWW PAGE!

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: wb6siv@aol.com
Message-ID: <3ogq69$kbv@newsbf02.news.aol.com>
Source record: 25062

Check out my new ham www page. It has just come on line and will cover much more ham info. in the near future.

957. Re: some sat freq please

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: eareckso@netcom.com
Message-ID: <eareckso D84tw8.19s@netcom.com>
Source record: 25063

c002@Lehigh.EDU wrote:
: well, this is the best i can find, but
: whtat are the freq of Meteosat3 ? is it 137.xx or 1691?

: thanks

1691mhz.

958. Returned mail

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: MAILER-DAEMON@satlink.NET
Message-ID: <FX0s7qf61@satlink.net>
Source record: 25064

```
----- Transcript of session follows -----
The host talkdata.satlink.net is unknown. Please contact info@satlink.net

----- Unsent message follows -----
From UCSD.EDU!owner-ham-space Sat May 6 11:30:24 1995
Received: from mail.ucsd.edu (ucsd.edu) by hustle.rahul.net with SMTP id AA19297
(5.67b8/IDA-1.5 for <hsd@talkdata.satlink.net>); Sat, 6 May 1995 06:47:54 -0700
Received: by mail.ucsd.edu; id EAA17576
sendmail 8.6.12/UCSD-2.2-sun
Sat, 6 May 1995 04:30:27 -0700 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA17566
sendmail 8.6.12/UCSD-2.2-sun
Sat, 6 May 1995 04:30:25 -0700 for ham-space-ddist
Message-Id: <199505061130.EAA17566@mail.ucsd.edu>
Date: Sat, 6 May 95 04:30:24 PDT
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #123
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 6 May 95 Volume 95 : Issue 123

Today's Topics:
PacComm GPS/TNC
SatTrack 3.1 on DEC/OSF1 ??
STS-65 QSLs

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 3 May 1995 23:44:36 GMT
From: Ken Quinn <kquinn@shadow.net>
```

Subject: PacComm GPS/TNC

Dennis Erwin Thurlow <geosynq@indy.net> wrote:
>Has anyone used one of these yet?
>Does the TNC automatically packetize ASCII strings from the GPS?
>
There is a parameter in the TNC called "LOCATION" which allows the info
from the GPS to be beaconed as UI frames. The TNC must state GPS
support during the power-up "welcome message", otherwise the EPROM must
be upgraded. I observed it's operation during Dayton and it seemed like
alot of fun

73's de N4SMY, Ken in Homestead, FL
AO-16, LO-19, UO-22, KO-23 & KO-25

Date: Tue, 2 May 95 17:40:40 BST
From: li95001@sable.ox.ac.uk (Paul Hirst)
Subject: SatTrack 3.1 on DEC/OSF1 ??

Hi,
I've been trying without success to compile Manfred Bester's
SatTrack program, Version 3.1 on our University DEC Alpha AXP2100 system,
but having problems with the checkKeyboard() function, which contains
several ioctl statements, #ifdef's for different machines, none of which
will build successfully on the Alpha system here. OK, I deleted them to
get it to compile, but obviously that results in a certain loss of
functionality... :-)
If anyone has got this software to build successfully on any
DEC alpha system, under OSF1, I'd be really glad if they'd Email me.

Thanks, 73 de Paul, g7ndc

--
___ You wanna go further, | Paul Hirst Lincoln College, Oxford. OX1 3DR
----V---- faster every day, but | Paul.Hirst@Lincoln.ox.ac.uk, g7ndc@amsat.org
in the morning you'll be gone... | li95001@sable.ox.ac.uk ^best (alledgedly)
URLs: http://sable.ox.ac.uk/~li95001/ and http://sable.ox.ac.uk/~gliding/

Date: Wed, 3 May 1995 17:27:03 GMT
From: sufana@ceco.ceco.com (Charles R. Sufana)
Subject: STS-65 QSLs

We are starting to release STS-65 QSLs today (5/3/95). Your patience is appreciated for all
SAREX missions as it make take up to a year to get a SAREX QSL. The shuttle crew usually
helps design the card after the mission is completed using pictures from
the mission. To date, we have received over 650 cards. We hope to have all of the
cards out by the end of May.

73s,
Charlie AJ9N

STS-65 QSL Manager
Lake County (Indiana) Amateur Radio Club.

End of Ham-Space Digest V95 #123
****

959. ARLK018 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk018.1995@ampr.org>
Source record: 25065
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK018
ARLK018 Keplerian data

ZCZC SK43
QST de W1AW
Keplerian Bulletin 18 ARLK018
From ARRL Headquarters
Newington, CT May 6, 1995
To all radio amateurs

SB KEP ARL ARLK018
ARLK018 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95113.84541411 -.00000257 00000-0 10000-3 0 3474
2 14129 26.4940 271.6858 6010172 270.9642 24.9868 2.05878548 61212
RS-10/11
1 18129U 87054A 95123.86925806 .00000033 00000-0 19889-4 0 557
2 18129 82.9226 91.8253 0010397 208.5410 151.5182 13.72351695393897
UO-11
1 14781U 84021B 95123.98964928 .00000112 00000-0 26792-4 0 7959
2 14781 97.7826 128.6036 0011057 328.0233 32.0307 14.69337546597412
RS-12/13
1 21089U 91007A 95116.13900511 .00000019 00000-0 45267-5 0 7930
2 21089 82.9205 139.3804 0028357 320.7012 39.2077 13.74056544211625
AO-13
1 19216U 88051B 95122.24295625 -.00000499 00000-0 10000-4 0 343
2 19216 57.5595 189.8235 7286722 7.9057 359.3399 2.09727167 21202
UO-14
1 20437U 90005B 95123.71805122 .00000005 00000-0 18796-4 0 942
2 20437 98.5686 208.8022 0010986 333.9350 26.1276 14.29884345275390
RS-15
1 23439U 94085A 95123.53443186 -.00000039 00000-0 10000-3 0 472
2 23439 64.8245 327.2096 0167672 270.1588 88.0123 11.27523866 14481
AO-16
1 20439U 90005D 95123.76149781 -.00000001 00000-0 16744-4 0 8936
2 20439 98.5794 210.4540 0011419 334.8250 25.2373 14.29938356275410
```

```
DO-17
1 20440U 90005E 95123.75436867 -.00000007 00000-0 14017-4 0 8938
2 20440 98.5778 210.8870 0011378 333.7835 26.2765 14.30079372275439
WO-18
1 20441U 90005F 95123.73575246 -.00000009 00000-0 13282-4 0 8971
2 20441 98.5806 210.8486 0012059 334.2129 25.8447 14.30050787275435
LO-19
1 20442U 90005G 95123.27200572 .00000036 00000-0 30725-4 0 8934
2 20442 98.5816 210.7377 0012441 334.8558 25.2013 14.30152917275387
FO-20
1 20480U 90013C 95123.81225079 -.00000084 00000-0 -10922-3 0 7899
2 20480 99.0698 220.6623 0540614 333.7683 23.6931 12.83228511245256
AO-21
1 21087U 91006A 95122.44571130 .00000093 00000-0 82657-4 0 5910
2 21087 82.9335 266.4153 0033249 274.7745 84.9614 13.74553839213448
UO-22
1 21575U 91050B 95123.72291596 .00000035 00000-0 26083-4 0 5993
2 21575 98.3991 196.1346 0008654 54.3711 305.8278 14.36972899199117
KO-23
1 22077U 92052B 95116.65348803 -.00000037 00000-0 10000-3 0 4872
2 22077 66.0897 343.6729 0009129 213.6914 146.3529 12.86290475127102
KO-25
1 22828U 93061F 95117.18489287 .00000004 00000-0 19361-4 0 3634
2 22828 98.6177 194.4310 0011112 359.8589 0.2611 14.28096001 50597
IO-26
1 22826U 93061D 95116.75613973 .00000021 00000-0 26125-4 0 3854
2 22826 98.6215 193.9738 0010198 16.0997 344.0507 14.27766889 82432
AO-27
1 22825U 93061C 95123.73671272 .00000001 00000-0 18254-4 0 3880
2 22825 98.6196 200.7688 0009133 357.7672 2.3465 14.27660283 83420
PO-28
1 22829U 93061G 95123.71173003 .00000045 00000-0 35896-4 0 3790
2 22829 98.6167 200.8968 0010617 344.4247 15.6581 14.28076061 83448
Mir
1 16609U 86017A 95124.23922633 .00002314 00000-0 36264-4 0 182
2 16609 51.6477 17.7431 0005075 80.8139 279.3428 15.58486596526110

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
May 9, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

960. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: n0dh@comtch.iea.com
Message-ID: <3ofsbt$fem@krel.iea.com>
Source record: 25156
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

amsoft@epix.net wrote:

: The World of Ham Radio CD-ROM MAY 1995 issue is now available.
: For more information contact amsoft@epix.net or the new AmSoft
: WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/

: Pete, KC3TL voice: 717-938-8249 fax: 717-938-6767

Pete

you guys just don't get it do you......you didn't get enough flames the
last time you used the rec.radio.****** bandwidth for commercial ads?

:-(
N0DH

961. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: ssampson@icon.net
Message-ID: <ssampson.18.0016192F@icon.net>
Source record: 25157
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <3ofsbt$fem@krel.iea.com> n0dh@comtch.iea.com (D.C. Henderson) writes:
>you guys just don't get it do you......you didn't get enough flames the
>last time you used the rec.radio.****** bandwidth for commercial ads?
> N0DH

You're whining.

962. Packet Radio and the Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: sclausen@sclausen.seanet.com
Message-ID: <sclausen-0605951100150001@sclausen.seanet.com>
Source record: 25158

A friend is in to packet radio. He is a teacher who wants to use it with
his Macs in the school to show students part of the radio world.
Can anyone point me to any information on connecting Macs to packet radio.
He doesn't want to, but if forced, he will consider other platforms.
I'm not acquainted with this area, I'm just posting for my friend.
Thanks for your time.

Scott

963. Re: some sat freq please

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3ogk5q$qpk@ns4-1.CC.Lehigh.EDU>
Source record: 25159

In article <earecksoD84tw8.19s@netcom.com>, eareckso@netcom.com (William A. Eare
ckson) writes:
>c002@Lehigh.EDU wrote:
>: well, this is the best i can find, but
>: whtat are the freq of Meteosat3 ? is it 137.xx or 1691?
>
>: thanks
>
>
>1691mhz.

ah well..thanks

|---|
David Roseman	c002@lehigh.edu
SysOp of NODE 3 BBS	The Flying HAm - BBS
Running OBV/2 Software	TechnoMage - BBS
	N3SQE/SVARC - Ham
HAmmy in IRC	N3SQE@N3IQD.FN20GO.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

964. Re: Packet Radio and the Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-05-06 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0605951515370001@maria-5j.ip.realtime.net>
Source record: 25160

In article <sclausen-0605951100150001@sclausen.seanet.com>,
sclausen@sclausen.seanet.com (Scott Clausen) wrote:

> A friend is in to packet radio. He is a teacher who wants to use it with
> his Macs in the school to show students part of the radio world.
> Can anyone point me to any information on connecting Macs to packet radio.
> He doesn't want to, but if forced, he will consider other platforms.
> I'm not acquainted with this area, I'm just posting for my friend.
> Thanks for your time.
>
> Scott

If you are talking about terrestrial AX.25 packet, all you need is a
terminal emulator such as the shareware ZTerm.

For TCP/IP there is NetMac.

All you need is a TNC connected to one of the serial ports.

Ron W5RKN

965. LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: G8SMQ@cromer.demon.co.uk
Message-ID: <19950507.013233.77@cromer.demon.co.uk>
Source record: 25066
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

Hi All,
Many thanks for reading this plea.

Can anyone advise me the makes and model numbers of DX4 or
Pentium computers that give the least (or zero, hi!) interference
on 2 metres.

(I normally use 2 cascaded GaAs FETs on front end)

73

de Norman, G8SMQ
--

966. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: wrt@eskimo.com
Message-ID: <D870oo.19p@eskimo.com>
Source record: 25067
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

In article <19950507.013233.77@cromer.demon.co.uk>, G8SMQ@cromer.demon.co.uk says...
>
>
>Hi All,
> Many thanks for reading this plea.
>
> Can anyone advise me the makes and model numbers of DX4 or
>Pentium computers that give the least (or zero, hi!) interference
>on 2 metres.
>
> (I normally use 2 cascaded GaAs FETs on front end)
>
>73
>
>de Norman, G8SMQ
>--
>>
Unfortunately, manufacturers change designs at the drop of a hat, so trying to go by a model number is not likely to be a sure thing. From my experience, the most likely source of interference is not the computer itself, but rather the monitor. Two suggestions:

1. Take a two meter HT with you when looking at different models.

2. If the computer is made in the US, look for a label stating compliance to class B EMI standards. You'd think class A would be the best, but not so. A is for industrial or commercial areas where more interference can be tolerated and B is for home use where interference to TVs, radios, etc is likely to be greater, so B is actually more strict.

I have a class B computer here and have no problem at all on two meters. There are some weak harmonics at several places in the HF bands, but nothing I can't live with. As I mentioned, nearly all of them are from the monitor.

Good luck.

73, Bill W7LZP

967. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: ericksco@mhd.moorhead.msus.edu
Message-ID: <3oh98m$h07@urvile.MSUS.EDU>
Source record: 25068

All you need is a mobile antenna.... Or you can make k J pole.

article <3obb5o$9ve@news.nyc.pipeline.com>, dsantoro@pipeline.com (Dave Santoro) writes:
>Hi Everyone
>
>I am looking to home-brew an antenna for working Mir and SAREX. It
>needs to be CHEAP. I would also like to use it for local
>communications occaisionally as well.
>
>Any suggestions?
>
>Thanks a lot and 73,
>Dave N2VYP
>
>

968. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: rwilkins@ccnet.com
Message-ID: <3ojvhc$605@ccnet3.ccnet.com>
Source record: 25069
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

KC3TL (amsoft@epix.net) recently wrote in <3odnf4$60b@grape.epix.net>:
:
: #####
: ##########
: ##### o)(o
: #C# _>
: \ ___/ /
: | / __/
: /____\ / //

Hi pete

I could not find a search feature on your web page. There was a long unformated list or index. The folks at QRZ cd-rom have a callsign look up search and they have lots of amateur radio files and programs to down load.

Please provide a service to this amateur community. QRZ does not advertize here....every one links to them on the web! There is room to compete with out filling every radio news group with pointers to your off shore order form. Is it a secure server for credit card info?

--
Bob Wilkins work bwilkins@cave.org
Berkeley, California home rwilkins@ccnet.com
94701-0710 play n6fri@n6eeg.#nocal.ca.usa.noam

969. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: Mike Gathergood <Mike@g4kfk.demon.co.uk>
Message-ID: <799879565snz@g4kfk.demon.co.uk>
Source record: 25070
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

In article <19950507.013233.77@cromer.demon.co.uk>
G8SMQ@cromer.demon.co.uk "Norman Guilford" writes:

> Can anyone advise me the makes and model numbers of DX4 or
> Pentium computers that give the least (or zero, hi!) interference
> on 2 metres.

According to Martin Lynch's (Ealing, West London) latest propaganda (see ads in various magazines), his range of 'radio ready' PCs (made by Peacock) were specifically selected for their low RFI.

However, since Martin was also the guy who assured me that the Yaesu FT-5200 was a high-quality rig with a super front end and nice tx audio, I would test one very thoroughly before buying if I were you. Maybe a posting in uk.radio.amateur would help you find a Peacock PC owner.

73
Mike
G4KFK

970. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: mkeitz@bev.net
Message-ID: <3ojkhh$a05@solaris.cc.vt.edu>
Source record: 25071
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In article <3oes7o$909@newsbf02.news.aol.com>,
doublehop@aol.com (Doublehop) wrote:
>Catch the interest, INDEED. I not (yet) a ham, but intend to get
>licensed within a year and am earnestly reading everything I can find on
>antennas. This group will likely maintain itself.
>
>73
>Jeff Malone
You're getting closer. The key to 'low-profile' operation is antennas.
Everything else is easily hidden. But the antenna has to be
electromagentically exposed to the whole world, but visibly hidden from your
neighbors. Quite a dicotomy. I think the terms 'secret', 'covert' or perhaps
'hidden' best describe this type of operation rather than 'low-profile.'
Definitely not 'QRP', as this is already well-developed as its own specialty,
and covert stations may be medium or high power if desired. The best antennas
for QRP use are very high-profile, so there would be an immediate conflict in
trying to include this topic in with the QRPers.
-Mike KD4QDM

971. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: ahusik@pluto.njcc.com
Message-ID: <3ojkl5$3n6@earth.njcc.com>
Source record: 25072
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

: itself, but rather the monitor. Two suggestions:
: I can't live with. As I mentioned, nearly all of them are from the monitor.

I definately agree. My new kenwood TH-79 goes crazy in front of my 17"
Mag Innovision monitor. It just goes nuts, that's the best way to
describe it. I doubt there is any solution to this problem, except to use
an external antenna far away from the monitor. Does anyone else have a
solution to this annoying problem?

972. Field Day 95

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: drayegon@america.com
Message-ID: <NEWTNews.21111.799822542.drayegon@drayegon.america.com>
Source record: 25073

I thought about leaving this page blank. I haven't seen one article anywhere on the in's and out's of using the Sat's on Field day 95. I did see the article about how many points you could get if you made a contact but thatwas it. QST may 95 I believe.
So who is dropping the ball. William / Phil / John /Mike I know you all read this group why no articles or a short paragraph or two right here.

73 dray AD4RR

973. Re: Packet Radio and the Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: paulot@cais.com
Message-ID: <paulot-0705951000110001@paulot.cais.com>
Source record: 25074

In article <sclausen-0605951100150001@sclausen.seanet.com>,
sclausen@sclausen.seanet.com (Scott Clausen) wrote:

> A friend is in to packet radio. He is a teacher who wants to use it with
> his Macs in the school to show students part of the radio world.
> Can anyone point me to any information on connecting Macs to packet radio.
> He doesn't want to, but if forced, he will consider other platforms.
> I'm not acquainted with this area, I'm just posting for my friend.
> Thanks for your time.
>
> Scott

Scott,about any TNC available out there will work on the Mac.If your
friend is looking for shareware,like another reply says,Z-term will do the
job.There's also another program called Savant that works on the
Mac,however the demo version is severely limited.Going towards comercial
packages,both Kantronics and AEA have Mac versions of their host
software.I prefer Kantronics Hostmaster,wich he should be able to buy for
about $50 directly from them.This software not only suports packet,but
also the other digital formats like RTTY,AMTOR,PACTOR and so on,when used
with the proper TNC (i.e. Kam +).
If you folks have FTP capabilities,give a try to oak.oakland.edu/ham/mac
server,where most recent Macintosh shareware is available.Also,I run a
small BBS here in Washington,DC that has a good collection of the said
shareware.It will just cost you whatever long distance charges to call
in,the acess is free.
Feel free to contact me via e-mail,Usenet or the BBS if your friend has
any questions.

73's de Paulo,N3MGA

--

Paulo A. Teixeira "Free speech is the right to shout
N3MGA@WA3TAI.NOAM.MD 'THEATER' in a crowded fire."
Sysop@ Gallery's BBS 202-333-0407 - A yippie proverb

974. Re: Packet Radio and the Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: paulot@cais.com
Message-ID: <paulot-0705951000480001@paulot.cais.com>
Source record: 25075

In article <sclausen-0605951100150001@sclausen.seanet.com>,
sclausen@sclausen.seanet.com (Scott Clausen) wrote:

> A friend is in to packet radio. He is a teacher who wants to use it with
> his Macs in the school to show students part of the radio world.
> Can anyone point me to any information on connecting Macs to packet radio.
> He doesn't want to, but if forced, he will consider other platforms.
> I'm not acquainted with this area, I'm just posting for my friend.
> Thanks for your time.
>
> Scott

Duh,forgot the BBS number.202-333-0407

--

Paulo A. Teixeira "Free speech is the right to shout
N3MGA@WA3TAI.NOAM.MD 'THEATER' in a crowded fire."
Sysop@ Gallery's BBS 202-333-0407 - A yippie proverb

975. Re: Packet Radio and the Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-05-07 00:00:00 UTC
From: wday@dfw.net
Message-ID: <wday-0705950946200001@fw21.dfw.net>
Source record: 25076

In article <sclausen-0605951100150001@sclausen.seanet.com>,
sclausen@sclausen.seanet.com (Scott Clausen) wrote:

> A friend is in to packet radio. He is a teacher who wants to use it with
> his Macs in the school to show students part of the radio world.
> Can anyone point me to any information on connecting Macs to packet radio.
> He doesn't want to, but if forced, he will consider other platforms.
> I'm not acquainted with this area, I'm just posting for my friend.
> Thanks for your time.
>
> Scott

Macs are no more difficult to connect to a TNC than PC's. He'll need to
have a terminal program running up on the Mac (Z-Term, TermPlus, FreeTerm,
etc.) to allow the computer to talk to the TNC, and an appropriate
connecting cable that goes from the Mac's 8-pin serial port to the TNC.
Set the TNC and the terminal program to talk at the same baud rate, and
plug 'em in. That should be about all there is to it. Both of my Macs
(an older SE and a Performa 475) work quite well as packet talkers, and
there are specialized programs available should your friend want something
besides what his terminal program provides.

Feel free to email me directly if he needs help.

BTW - rec.radio.amateur.digital.misc is probably a better newsgroup for
discussions like this.

73 Wayne KF5ZC

Wayne Day KF5ZC Fort Worth,Texas,USA |
CompuServe: 76703,376 Internet: 76703.376@CompuServe.Com | ,__o
or Internet: wday@dfw.net |--_<,
Member: Bicycle Mobile Hams of America (*)/'(*)
For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net
---

976. 10M sat uplink freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: umtrinh4@cc.umanitoba.ca
Message-ID: <3okmt1$51j@canopus.cc.umanitoba.ca>
Source record: 25077

Hi there...

Could someone please tell me if there are any satellites with 10M uplink frequencys? If so, could you please mail them to me.

Thanks...

email: umtrinh4@ccu.umanitoba.ca

977. Re: NEW HAM RADIO WWW PAGE!

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: Robert D Houghton <rhought@cello.gina.calstate.edu>
Message-ID: <3ojovl$jmg@cello.gina.calstate.edu>
Source record: 25078

Umm..yeah...

I'd love to check out your new ham radio www page but you left out the
address!

++++++++++++++++++++++++++++++	++
	AMSAT member #26148
Robert D. Houghton	digital satellites: KC6LVG@PACSAT
Science Department Chairman	Packet radio: kc6lvg@k6unq.#cas.na
John A. Rowland High School	Other internet:
Rowland Heights, CA 91748	kc6lvg@amsat.org
	rdhoughton@vms4.sci.csupomona.edu
++++++++++++++++++++++++++++++	++

978. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: jmfriedt@ens-lyon.fr
Message-ID: <3okscj$bkt@cri.ens-lyon.fr>
Source record: 25079
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

> I definately agree. My new kenwood TH-79 goes crazy in front of my 17"
> Mag Innovision monitor. It just goes nuts, that's the best way to
> describe it. I doubt there is any solution to this problem, except to use
> an external antenna far away from the monitor. Does anyone else have a
> solution to this annoying problem?
>

Wouldn't a plasma monitor (the kind used on laptops) help ?

979. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: pdecker@lds.loral.com
Message-ID: <1995May8.223620.18987@lds.loral.com>
Source record: 25080
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

In article 3n6@earth.njcc.com, ahusik@pluto.njcc.com (Adam Husik) writes:
>: itself, but rather the monitor. Two suggestions:
>: I can't live with. As I mentioned, nearly all of them are from the monitor.
>
>I definately agree. My new kenwood TH-79 goes crazy in front of my 17"
>Mag Innovision monitor. It just goes nuts, that's the best way to
>describe it. I doubt there is any solution to this problem, except to use
>an external antenna far away from the monitor. Does anyone else have a
>solution to this annoying problem?
>
Does an LCD display cause interference also? Less so, I'd imagine.
How about active versus passive matrix? Color versus monochrome?

PJD

980. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: rburgan@detroit.freenet.org
Message-ID: <3olgvj$d83@detroit.freenet.org>
Source record: 25081

Previous versions of the ARRL Handbook have given details on
making a cheap satellite antenna, called a TURNSTILE ANTENNA.
It is constructed with two dipoles crossed at right angles with
a simple matching system, and a chicken wire relector. This
type of antenna provides maximum pattern in the vertical mode,
as against a standard whip, which has zero functions at the
absolute vertical mode, which is exactly what you do NOT want
for satellites. (The standard whip works great on the horizon,
which also happens to be the longest distance to the satellite.)
Roland, KB8XI
--

981. RE: Ham related web sites

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: Jim.Hansen@stpete.honeywell.COM
Message-ID: <2FAE6F57@vax-flcgr.stpete.honeywell.com>
Source record: 25082

>Date: 7 May 1995 13:21:42 GMT
>From: JOHN C STELLA <76615.2745@CompuServe.COM>
>Subject: WWW LISTS
>
>Does anyone have a list of Ham related web sites. Does anybody know
> any good ones?
>
>------------------------------
here are a few, but you need to decide for your self if they're good:

http://www.webcom.com/~arfunk/amrad.html
http://w6yx.stanford.edu/w6yx.html
http://www.amsat.org/amsat/AmsatHome.html
http://www.acs.ncsu.edu:80/HamRadio/
http://www.tapr.org/tapr/index.html
http://www.acs.oakland.edu/barc.html

Jim Hansen
WDODIA
jim.hansen@honeywell.com

982. Mode A receiving antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: Wayne_Estes@csg.mot.com
Message-ID: <9505081311.ZM4560@SALCIUS2>
Source record: 25083

I discovered this weekend that my new HF vertical doesn't receive Mode A very well. I would like to construct two effective mode A receive antennas:
1. For Field Day.
2. For home use.

For Field Day I plan to use a rotatable dipole about 12 feet off the ground, 3 feet above the crossboom of VHF/UHF yagis. The dipole would track the azimuth of the yagis, and the dipole would be pretty close to the "ideal" 3/8 wavelength off the ground. Is this practical, or would 2m transmit energy desense the 10m receiver? (If so, would an HF lowpass filter help very much?)

At home, the same setup on my roof would be almost 1 wavelength off the ground, resulting (I think) in a lot of nulls. So instead I would like to try a 10m antenna in the attic of my 1-story house. I just put up a 10m dipole in the attic, but I was wondering if something else might be better.

Would a 10m turnstile antenna be effective without a ground plane underneath? Any other suggestions for a non-rotatable attic antenna for Mode A reception? (10m verticals and eggbeaters wouldn't fit in my attic)

73,
Wayne Estes WD5FFH wayne@csg.mot.com

983. 9600 packet question

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: wci@crl.com
Message-ID: <3om0sd$pga@crl4.crl.com>
Source record: 25084

I have a question about what equipment is necessary to access the
9600 bps capable satellites, i.e. KO-23, KO-25, et at. I gather that
you can use FM radios, properly connected for 9600 bps operation. My
question is what do you do about Doppler shift? Is it necessary to
correct for that? All the info about the satellites lists certain
frequencies. Should this be plus or minus Doppler?

Now, if you have to correct for Doppler, can you do it on standard FM-only
rigs that tune in 5 KHz steps? And, has anyone ever successfully used
a dual-band mobile rig to operate the Pacsats with only one radio?

Thanks very much for the help. I'm trying to figure out how to build
a small, portable Pacsat station.

73 de Jeff N9HZQ

Williams Consulting, Inc.
wci@crl.com (404) 623-4280 fax: (404) 623-4301
Custom computer hardware and software design
--
Williams Consulting, Inc.
wci@crl.com (404) 623-4280 fax: (404) 623-4301
Custom computer hardware and software design

984. Re: Mode A receiving antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: ajm@teleoscom.com
Message-ID: <9505082033.AA07324@teleoscom.com>
Source record: 25085

Wayne,
If you are not using a pre-amp, you might try that first. I use a GAP Titan vertical which is 25' tall mounted about 15' above ground. Without the pre-amp, signals were fairly hard to copy (very weak). Using an ARR 10m receive-only preamp (about $29 if think), signals are strong and easy to copy with the same antenna. Rig is a Kenwood TS450 which is pretty sensitive by itself, but not quite enough.
73,
Tony

985. * SpaceNews 08-May-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3olfh3$jf0@pilot.njin.net>
Source record: 25086
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0508
* SpaceNews 08-May-95 *

BID: $SPC0508

=========
SpaceNews
=========

MONDAY MAY 8, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* SAREX INFORMATION *
====================
NASA has announced that the launch of STS-71, which was to perform the docking with the MIR space station has been delayed. The new launch date has now be set for 19-JUN-95. This delay was caused by additional work need to move some solar panels on MIR and it appears that the work will not be completed in time for STS-71. Therefore, STS-70 will fly first and its launch date has now been set for 08-JUN-95. Both of these STS missions will be carrying the Shuttle Amateur Radio Experiment (SAREX). STS-70 with Discovery will carry the SAREX payload, courtesy Mission Specialist Don Thomas (KC5FVF) into a 28.5 degree orbit and the SAREX payload will operate with both FM voice and packet for six days. In order that there will be confusion about the downlink frequencies, those wishing to make a contact with STS-70 should note that the usual downlink frequency of 145.550 MHz will be utilized. STS-71, on the other hand, is slated to use a downlink of 145.840 MHz. The STS-71 Atlantis docking mission will use the MIR communication equipment to simulate SAREX as well. On that mission it will be FM voice only! STS-71 will be a 9 day mission. It will carry Pilot Charlie Precourt (KB5YSQ) and Mission Specialist Ellen Baker (KB5SIX) in a 51.6 deg orbit.

[Info via ANS]

* MIR NEWS *
============
The crew on the Mir space station is very busy. They are trying to rebuild the station in time to dock with STS-71, scheduled for launch on 19-Jun-95. The work is quite extensive and will require at least two space walks by the Russians (not Norman). Two solar panels need to be moved to make clearance for the shuttle. In addition, a power module will dock in May. A few weeks ago, the crew dismantled the shower and replaced

it with a Gyro. For the next few months, the shower will be replaced by wet towels.

Amateur Radio activities have taken a low priority. The crew is working very long days and they do not go to bed until around midnight (Moscow time, 5:00 PM EST). The crew is not in the habit of using any set radio schedule. Best times for contacts are just before bed time, from 3:00 - 5:00 PM EST. Contacts are usually 3-8 minutes long. They like to rag chew and expect everyone to wait until they call CQ before going on to the next caller.

The Packet Radio System is still not reliable, and the crew likes to conserve power by shutting it down at night. Work is still underway to adjust the TNC parameters to improve the packet radio performance.

[Info via WF1F]

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

986. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-08 00:00:00 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <D88LF7.5B1@news.hawaii.edu>
Source record: 25087
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

mkeitz@bev.net (Mike Keitz) writes:

>doublehop@aol.com (Doublehop) wrote:

>>.....antennas.

>...antennas.
>...antenna...
> ...antennas...

"To subscribe to a newsgroup on UNIX use `g' followed by the group's name.
For example: g rec.radio.amateur.antenna"

Jeff NH6IL

987. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-09 00:00:00 UTC
From: wwg@coutts.COUTTS.ON.CA
Message-ID: <D8BC13.1tu@wizbang.COUTTS.ON.CA>
Source record: 25088
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

Philip Decker (pdecker@lds.loral.com) wrote:
: In article 3n6@earth.njcc.com, ahusik@pluto.njcc.com (Adam Husik) writes:
: >: itself, but rather the monitor. Two suggestions:
: >: I can't live with. As I mentioned, nearly all of them are from the monitor.
: >
: >I definately agree. My new kenwood TH-79 goes crazy in front of my 17"
: >Mag Innovision monitor. It just goes nuts, that's the best way to
: >describe it. I doubt there is any solution to this problem, except to use
: >an external antenna far away from the monitor. Does anyone else have a
: >solution to this annoying problem?
: >
: Does an LCD display cause interference also? Less so, I'd imagine.
: How about active versus passive matrix? Color versus monochrome?

I was wondering how much of a problem would remain, if one were to build
a metal enclosure, and include the LCD portable inside, open at the
front of course! Certainly LCD based equipment would be easier to do
this for than normal full sized monitors.

But even for a full sized monitor, how would a metal enclosure with
aluminum screen on front be? The screen mesh would be a pain to view
through, but it really depends on how important, how long and how much
reading is actually done from the tube while operating.

The biggest source of noise in my experience has been on the power
lines! With the equipment now all using switching power supplies, the
cheaper the equipment, the worse the noise, it seems. I had a night and
day difference swapping out the power supply in my PC, when the original
had failed. Presumably, you've already taken steps on the power line?

Warren W. Gay VE3WWG John Coutts Library Services Limited
wwg@wizbang.COUTTS.ON.CA Niagara Falls, Ontario, Canada

988. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-09 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995May9.144520.8909@ke4zv.atl.ga.us>
Source record: 25089
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

In article <D8BC13.1tu@wizbang.COUTTS.ON.CA> wwg@coutts.COUTTS.ON.CA (Warren Gay VE3WWG) writes:
>
>But even for a full sized monitor, how would a metal enclosure with
>aluminum screen on front be? The screen mesh would be a pain to view
>through, but it really depends on how important, how long and how much
>reading is actually done from the tube while operating.

If the tube is color, and uses a shadow mask, IE isn't a Sony Trinitron, then its face is already effectively shielded. If the tube is monochrome, or a Trinitron, then fine wire mesh, painted flat black and and installed against the tube, will form an effective face shield, and serve as a glare filter in the bargain.

Where you have to concentrate your shielding is around the plastic case. You can either use metal, or a conductive spray. GC markets a spray that is effective.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

989. Re: 9600 packet question

Newsgroup: rec.radio.amateur.space
Date: 1995-05-09 00:00:00 UTC
From: "Jeffrey L. Davis" <jdavis@one.net>
Message-ID: <3onjb5$okh@mail.one.net>
Source record: 25090

wci@crl.com (Chip Williams) wrote:
>
> I have a question about what equipment is necessary to access the
> 9600 bps capable satellites, i.e. KO-23, KO-25, et at. I gather that
> you can use FM radios, properly connected for 9600 bps operation. My
> question is what do you do about Doppler shift? Is it necessary to
> correct for that? All the info about the satellites lists certain
> frequencies. Should this be plus or minus Doppler?
>
> Now, if you have to correct for Doppler, can you do it on standard FM-only
> rigs that tune in 5 KHz steps? And, has anyone ever successfully used
> a dual-band mobile rig to operate the Pacsats with only one radio?
>

Jeff,

Having just got everything going on the 9600 bd PacSats recently I thought I
jumpi-in;

Doppler - On the uplink, the PacSats seem to be able to compensate
quite well for the Doppler. I set the uplink freq as published.
On the downlink, I let my tracking program tune my receiver.
The problem I have with this is my received efficiency is not
nearly as high as when I am in the shack and 'hand-tuning' the
radio. I set the meter to the discriminator mode and keep the needle
adjusted to center. When I do this my download efficiency jumps
into the high 90% range.

The FM birds (KO-23, KO-25, UO-22) are very forgiving on the
Doppler issue. I generally begin to listen 6-8 khz higher than
the downlonk frequency listed and tune down as the bird moves
overhead.

As to your other questions, I am using a Yaesu FT-736R and I
made the modifications for 9600 bd. Not sure about using a dual
band mobile radio, I have never seen one that could tune the
downlink frequencies (but I am sure they exist, I have an older
dual-band mobile that won't go down to 435 mhz).

Good luck, it has been a challenge getting things going, but it has
been a lot of fun.

73, N9AVG

990. RE: Ham-Space Digest V95 #126

Newsgroup: rec.radio.amateur.space
Date: 1995-05-09 00:00:00 UTC
From: Jim.Hansen@stpete.honeywell.COM
Message-ID: <2FAFD1D3@vax-flcgr.stpete.honeywell.com>
Source record: 25091

>Date: 8 May 1995 09:05:37 GMT
>From: umtrinh4@cc.umanitoba.ca (Nghi Hung Trinh)
>Subject: 10M sat uplink freqs?
>
> Hi there...
>
>Could someone please tell me if there are any satellites with 10M uplink
>frequencys? If so, could you please mail them to me.
>
>Thanks...
>
>email: umtrinh4@ccu.umanitoba.ca
>
There are none that I know of. However, there are two with 10M downlinks.
Here is some text I copied from a FAQ on the intrnet:

RS-10/11 (Radio Sputnik) is for CW and SSB signals, so an all mode 2 meter
rig is ideal for transmitting to this bird. The input bandpass is from
145.860 - 145.900 and the output freqs are from 29.360 - 29.400 MHz. There
is also a morse beacon at 29.357 MHz.

RS-12/13, A cousin to RS-10/11, RS-12/13 is also a 40 KHz wide linear
transponder.
However, this bird is unique because its input frequencies are in the
fifteen
meter band! This is also the only ham sat in the sky that requires more
than
a code free technician license to work it, because its input band is from
21.210 - 21.250 MHz. This straddles the Advanced and Extra portions of the
15 meter band. Its output freqs are from 29.410 - 29.450 MHz. Because of
skip, this satellite can often be heard and worked when it's below the
horizon! At least one person has earned DXCC on this satellite! RS-12/13
is
bolted to yet another Russian satellite and its NORAD ID is 21089. RS-12/13
also has a ROBOT mode like its brother RS-10/11.

991. Mir EVA radio frequencies, experience?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-09 00:00:00 UTC
From: billbldc@aol.com
Message-ID: <3oos1l$8t8@newsbf02.news.aol.com>
Source record: 25092

Several notices have appeared recently indicating that the Mir space station cosmonauts will do several EVAs this month, beginning this Friday, May 12, in preparation for the upcoming docking with the U.S. space shuttle. If possible, I'd like to hear some of the radio transmissions from the cosmonauts' space walks. Two questions:
--any suggestions on which frequencies to check, e.g., the same ones as used for other FM voice comms from the Mir and Soyuz, 143.625 and 121.75?....and/or other frequencies? (The May/June issue of "Satellite Times" has an article on Mir and the Shuttle, but doesn't refer directly to Mir EVAs).
--has anyone heard any Mir EVA transmissions in the last several years?
Thanks in advance, Bill Black, Washington, D.C., email BILLBLDC@AOL.COM

992. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-09 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995May9.003115.5477@ke4zv.atl.ga.us>
Source record: 25093

In article <3olgvj$d83@detroit.freenet.org> rburgan@detroit.freenet.org (Roland B. Burgan) writes:
>
>Previous versions of the ARRL Handbook have given details on
>making a cheap satellite antenna, called a TURNSTILE ANTENNA.
>It is constructed with two dipoles crossed at right angles with
>a simple matching system, and a chicken wire relector. This
>type of antenna provides maximum pattern in the vertical mode,
>as against a standard whip, which has zero functions at the
>absolute vertical mode, which is exactly what you do NOT want
>for satellites. (The standard whip works great on the horizon,
>which also happens to be the longest distance to the satellite.)
> Roland, KB8XI
>--

A LEO will spend 67% of its time above your horizon at an elevation of 30 degrees or less. So to maximize your communications time, you need an antenna that puts most of its power in a lobe at 30 degrees and below. That's a good description of a 1/4-wave vertical. The turnstyle puts a null at the horizon (where you in fact need the most gain due to the greater path loss). It is only useful during nearly directly overhead passes, and only during the overhead portion of the pass. This is only a very brief window.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

993. IT ST-1 error message?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-09 00:00:00 UTC
From: ve7avw@ftcnet.com
Message-ID: <3omidr$lqs@beta.ftcnet.com>
Source record: 25094

Does any one using IT with AEA ST-1 know what the error message

OrbitDRV: Error 10810

is trying to tell me? Do I need a program update?

Any suggestions would be appreciated.

Arnie
VE7AVW

994. DSP93

Newsgroup: rec.radio.amateur.space
Date: 1995-05-09 00:00:00 UTC
From: "Lawrence F. Johnston" <ljohnsto@carbon.cudenver.edu>
Message-ID: <Pine.OSF.3.91.950509153845.1379B-100000@carbon.cudenver.edu>
Source record: 25095

Anyone have any experience with or thoughts about the DSP93?

I have a Yaesu FT736 and would like to get on KO23 and KO25 and
have the flexibility for P3D.

I'd appreciate any helpful suggestions.

Larry, W0EIE

995. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-10 00:00:00 UTC
From: mark@ve6mgs.ampr.ab.ca
Message-ID: <D8Co17.39H@bohica.net>
Source record: 25096
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

jeffrey@math.hawaii.edu writes:

>Please stop suggesting rec.radio.amateur.qrp - there's already a very
>fine qrp email list with a high S/N ratio. Last count there were
>400 subscribers. Now that doesn't sound like enough to warrant
>a newsgroup, does it?

All that is needed for a group to form is 100 more yes votes than no votes.

>In the past 3 years every time a suggestion was made to shift from an email
>list to a newsgroup the suggestion was always vehemently voted down.

And why I am not a member of the mail list ... (There is a hint in there).

>If the low-profilers want a group, then why not start an email list?

Because, the defined message of the low-profilers requires some active
information retrieval, something a mail list can not provide because of
it's more obscure nature. I do not support the low-profilers group because
it heavily overlaps the r.r.a.antenna group, though ...

>Such lists are very very successful, for they target a select-interest
>group and as a result the noise level is quite low (no flame wars).

You mother wears army boots, and dresses you funny.

>With well over 7000 newsgroups some sites may have reached the saturation
>point and choose not to subscribe to the new rec.radio.amateur.low-profile.

Even though I do not support the group, I would be pleased to distribute it
despite the 7000 newsgroup saturating my disk transfer statistics ...

Ciao -- Mark

996. FS 1.2 Ghz for FT-736

Newsgroup: rec.radio.amateur.space
Date: 1995-05-10 00:00:00 UTC
From: duffield@indirect.com
Message-ID: <duffield.5.001F8FC4@indirect.com>
Source record: 25097

I have a 1.2 Ghz module for the Yaesu FT-736. Like new condition.
Asking $400.00

Gary N7NQM
(602) 843-7724

997. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-10 00:00:00 UTC
From: hanko@wv.mentorg.com
Message-ID: <3oqtvq$hm1@hpbab.wv>
Source record: 25098
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <3ofsbt$fem@krel.iea.com>, n0dh@comtch.iea.com (D.C. Henderson) writes:
|> amsoft@epix.net wrote:
|>
|> : The World of Ham Radio CD-ROM MAY 1995 issue is now available.
|> : For more information contact amsoft@epix.net or the new AmSoft
|> : WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/
|>
|> : Pete, KC3TL voice: 717-938-8249 fax: 717-938-6767
|>
|> Pete
|>
|> you guys just don't get it do you......you didn't get enough flames the
|> last time you used the rec.radio.****** bandwidth for commercial ads?
|>
|> :-(
|> N0DH

Or perhaps "YOU guys" (the self-annointed net cops) don't get it.

There are many of us out here who welcome access to ANY and ALL
information relating to our hobby.

"If you don't like it, don't read it."

... Hank

--

Hank Oredson @ Mentor Graphics Library Operations
Internet : hank_oredson@mentorg.com "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

998. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-10 00:00:00 UTC
From: mc@shore.net
Message-ID: <3oqab2$mi5@shore.shore.net>
Source record: 25099
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In article <D83B43.Mt5@news.hawaii.edu>, <jeffrey@math.hawaii.edu> wrote:
>Please stop suggesting rec.radio.amateur.qrp - there's already a very
>fine qrp email list with a high S/N ratio. Last count there were
>400 subscribers. Now that doesn't sound like enough to warrant
>a newsgroup, does it? In the past 3 years every time a suggestion
>was made to shift from an email list to a newsgroup the suggestion
>was always vehemently voted down.
>
>If the low-profilers want a group, then why not start an email list?
>Such lists are very very successful, for they target a select-interest
>group and as a result the noise level is quite low (no flame wars).

This seems to be the best suggestion. I would definitely be interested
in subscribing. Such a mailing list should have some provision for a
daily digest as well, since some of us simply cannot receive many
messages daily without attracting adverse attention. (How about another
list called Internet.e-mail.low-profile ....!

>With well over 7000 newsgroups some sites may have reached the saturation
>point and choose not to subscribe to the new rec.radio.amateur.low-profile.

This is also a valid point. I'm pretty sure that I would not have access
to such a specialized newsgroup through my present means of access.

73 From Sunny Massachusetts (enjoy it while u can!)

Michael Crestohl KH6KD/W1
mc@shore.net

999. Re: WWW LISTS

Newsgroup: rec.radio.amateur.space
Date: 1995-05-10 00:00:00 UTC
From: sdunham@ibm.net
Message-ID: <3oqp67$2cqj@news-s01.ny.us.ibm.net>
Source record: 25100
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.scanner,alt.radio.pirate,alt.radio.scanner

In <3oihh6$606$1@mhafc.production.compuserve.com>, JOHN C STELLA
<76615.2745@CompuServe.COM> writes:
>Does anyone have a list of Ham related web sites. Does anybody know
> any good ones?

Don't have a list, but here's one:

HTTP://www.best.com/~sdunham/homepage.html

1000. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-10 00:00:00 UTC
From: rburgan@detroit.freenet.org
Message-ID: <3oqkga$cta@detroit.freenet.org>
Source record: 25101

True, but much higer powers are need at 30 degrees or less, because of distance. And, you are attempting to compete with those hams for whom the satelitte is at a higher angle. At what point is it considered to be using excessive power? A pointable beam system should then be considered if working the sats at all over-horizon conditions is necessary. My reply was aimed at those just getting into the mode.
--

1001. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-10 00:00:00 UTC
From: dsantoro@pipeline.com
Message-ID: <3orjqa$bgc@news.nyc.pipeline.com>
Source record: 25102

So am I right in deducing from this conversation that ther is no ONE
antenna that will provide reasonble performance over the entire pass?

I am now using a homemade J-Pole up on the roof, ant the signal
practically disappears when the bird goes above 33 degrees.

What about using both with a coax switch?

Thanks for all you opinions!

gary@ke4zv.atl.ga.us (Gary Coffman) wrote:

>In article <3olgvj$d83@detroit.freenet.org> rburgan@detroit.freenet.org (Roland B.
Burgan) writes:
>>
>>Previous versions of the ARRL Handbook have given details on
>>making a cheap satellite antenna, called a TURNSTILE ANTENNA.
>>It is constructed with two dipoles crossed at right angles with
>>a simple matching system, and a chicken wire relector. This
>>type of antenna provides maximum pattern in the vertical mode,
>>as against a standard whip, which has zero functions at the
>>absolute vertical mode, which is exactly what you do NOT want
>>for satellites. (The standard whip works great on the horizon,
>>which also happens to be the longest distance to the satellite.)
>> Roland, KB8XI
>>--

>A LEO will spend 67% of its time above your horizon at an elevation
>of 30 degrees or less. So to maximize your communications time,
>you need an antenna that puts most of its power in a lobe at 30
>degrees and below. That's a good description of a 1/4-wave vertical.
>The turnstyle puts a null at the horizon (where you in fact need
>the most gain due to the greater path loss). It is only useful
>during nearly directly overhead passes, and only during the overhead
>portion of the pass. This is only a very brief window.

1002. Icom IC-W21A Mod

Newsgroup: rec.radio.amateur.space
Date: 1995-05-10 00:00:00 UTC
From: ajnaylor@peg.apc.org
Message-ID: <570400001@peg>
Source record: 25103

I need to find a description of a modification that will allow an ICOM IC
W21A handheld set to general coverage transmit and cross band repeat.
Can anyone help me out?
Andrew Naylor for VK7KIH (Ian Hart)
IN A ajnaylor@acslink.net.au

1003. Mailing list for keps???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3ouj15$atb@acmex.gatech.edu>
Source record: 25012

Hello!!!

Where have all the keps gone??? Isn't there a mailing list for the latest
2-line sets??

Thanks for any info, please respond to mwhaley@iu.net. :-)

73 de KD4UGI

```
*******************************************************************************
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
*******************************************************************************
```

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1004. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995May11.164407.18501@ke4zv.atl.ga.us>
Source record: 25013

In article <3oqkga$cta@detroit.freenet.org> rburgan@detroit.freenet.org (Roland B. Burgan) writes:
>
>True, but much higer powers are need at 30 degrees or less,
>because of distance. And, you are attempting to compete with
>those hams for whom the satelitte is at a higher angle. At what
>point is it considered to be using excessive power? A pointable
>beam system should then be considered if working the sats at all
>over-horizon conditions is necessary. My reply was aimed at those
>just getting into the mode.

You need from 6 to 10 dB more power when the satellites are near the horizon as opposed to when they are overhead. Unsurprisingly, that's about the gain difference for a 1/4-wave vertical in the horizontal and near vertical directions.

You're considered using excessive power when the signal you deliver to the satellite is substantially stronger than that of other users. What ERP you have to run to deliver that signal level to the satellite is a function of your path loss of the moment. Using a low gain antenna and a big amplifier, or a high gain antenna and a little amplifier make no difference to the signal level you put at the satellite. ERP is ERP however you develop it.

I advocate the vertical if you aren't going to use steerable beams because its pattern most closely matches the changes in ERP requirement for the LEO satellites from near horizon to overhead of the various *simple* antennas. The turnstyle has the opposite pattern characteristic to what is desired. While it will allow slightly less power be used to generate the required ERP for the short overhead segment, it requires so much more power for the bulk of the pass that it's not a good choice. If a more complex antenna is acceptable, a Lindenblad or eggbeater may be a better choice. Both produce patterns that resemble a flattened hemisphere, and don't have the null directly overhead that the simple vertical has. (That null is very small in solid angle, however.)

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

1005. Re: Mode A receiving antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3os91v$51t@news4.primenet.com>
Source record: 25014

In <9505081311.ZM4560@SALCIUS2>, Wayne_Estes@csg.mot.com (Wayne_Estes) writes:
>I discovered this weekend that my new HF vertical doesn't receive Mode A very
>well. I would like to construct two effective mode A receive antennas:
> 1. For Field Day.
> 2. For home use.
>
>For Field Day I plan to use a rotatable dipole about 12 feet off the ground,
>3 feet above the crossboom of VHF/UHF yagis. The dipole would track the
>azimuth of the yagis, and the dipole would be pretty close to the "ideal" 3/8
>wavelength off the ground. Is this practical, or would 2m transmit energy
>desense the 10m receiver? (If so, would an HF lowpass filter help very
>much?)
>
>At home, the same setup on my roof would be almost 1 wavelength off the
>ground, resulting (I think) in a lot of nulls. So instead I would like to
>try a 10m antenna in the attic of my 1-story house. I just put up a 10m
>dipole in the attic, but I was wondering if something else might be better.
>
>Would a 10m turnstile antenna be effective without a ground plane underneath?
>Any other suggestions for a non-rotatable attic antenna for Mode A reception?
>(10m verticals and eggbeaters wouldn't fit in my attic)
>
>73,
>Wayne Estes WD5FFH wayne@csg.mot.com

My first year on RS 10 was with 5/8 wave verticals on both links. Passes below
20 degrees were difficult, but usable depending on noise and traffic. Adding a
10m preamp improved somewhat. The 5/8 wave null on overhead passes did not
pose any problem. I suppose the closer range helped, and of course the null may
not be very deep. My uplink power was 25 watts through 60 feet of RG-8.
Field Day on the Russian birds gets quite messy. I haven't worked RS-15, but
since it has a higher orbit, better antennas are called for.

73 Jim N7TCF

1006. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3otdq2$bre@news.internetmci.com>
Source record: 25104
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

I agree, NET COPS find something to do, like maybe try sex - you may find that to be more fulfilling than criusing the highway handing out citations.

1007. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: rwilkins@ccnet.com
Message-ID: <3oulj4$fo1@ccnet3.ccnet.com>
Source record: 25105
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Bob Smith (rsmith@internetmci.com) recently wrote
in <3otdq2$bre@news.internetmci.com>:

: I agree, NET COPS find something to do, like maybe try sex - you
: may find that to be more fulfilling than criusing the highway
: handing out citations.

Lets look at this a little differently. This is not a NET COPS issue.

What you are seeing is the local citizens here in these groups trying to clean up the graffitti and posters on all the telephone poles in our neighborhood. The NET COPS can't touch all that graffitti, they are too busy being NET COPS.

I don't think any of us mind a commercial poster with some new information or a new product to sell. You can't ignore it!

Just what does a new cd-rom of amateur programs found here on the internet, have to do with Amateur Space, Policy, Digital, Antennas?

This graffitti should be seen in rec.radio.swap where there is no confusion about the commercial nature of the offer.

Would you like this graffitti problem in your neighborhood? The inner cities look like Hell, because no one cares. These commercial cd-rom folks will stop advertizing in our Amateur Radio Magazines and post here for Free. Do you want all the nuts and bolts magazine ads in our news groups? Hunderds of those little ads every week over and over. Then no more ham magazines...

Almost as bad as the SALE@ALLUS on amateur packet. Does anyone really read all that junk? Oh Sure! go eat a cookie.

Bob ;-)

--
Bob Wilkins work bwilkins@cave.org
Berkeley, California home rwilkins@ccnet.com
94701-0710 play n6fri@n6eeg.#nocal.ca.usa.noam

1008. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3os8af$51t@news4.primenet.com>
Source record: 25106
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

In <19950507.013233.77@cromer.demon.co.uk>, G8SMQ@cromer.demon.co.uk (Norman Guilford) writes:
>
>Hi All,
> Many thanks for reading this plea.
>
> Can anyone advise me the makes and model numbers of DX4 or
>Pentium computers that give the least (or zero, hi!) interference
>on 2 metres.
>
> (I normally use 2 cascaded GaAs FETs on front end)
>
>73
>
>de Norman, G8SMQ
>--

While unable to directly answer your question, I can offer my tips about pc-rfi. I wrapped several ferrite split-cores on every wire and cable inside my machine. This reduced the noise quite a bit. Also getting a good bond between the case, power supply and motherboard. Now only some highly active graphics cause interference. My line-voltage cables also have ferrite cores and are shielded. My GASFET is mast-mounted however. Best of luck.

Jim N7TCF

1009. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: amigo@seanet.com
Message-ID: <3otl8a$3i1@kisa.seanet.com>
Source record: 25107
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

n7tcf@primenet.com writes:

>In <19950507.013233.77@cromer.demon.co.uk>, G8SMQ@cromer.demon.co.uk (Norman Guilford)
writes:
>>
>>Hi All,
>> Many thanks for reading this plea.
>>
>> Can anyone advise me the makes and model numbers of DX4 or
>>Pentium computers that give the least (or zero, hi!) interference
>>on 2 metres.
>>
>> (I normally use 2 cascaded GaAs FETs on front end)
>>
>>73
>>
>>de Norman, G8SMQ
>>--

>While unable to directly answer your question, I can offer my tips about pc-rfi.
>I wrapped several ferrite split-cores on every wire and cable inside my machine.
>This reduced the noise quite a bit. Also getting a good bond between the case,
>power supply and motherboard. Now only some highly active graphics cause
>interference. My line-voltage cables also have ferrite cores and are shielded.
> My GASFET is mast-mounted however. Best of luck.

> Jim N7TCF

I'd have to say the worse offender in this area is the monitor..
even a new model MPR-II rated, energy star, etc. monitor still has a
considerable RF problem. My monitor is >6 ft from the RIG, I still get
considerable noise in the 40M band from it. It would great if I could
leave it off, but what about packet? I've gone through some basics
to help the problem, including routing power cables away from the monitor,
sourcing power from another circuit, making sure everything is grounded to the same point,
etc. Granted, the ground in my place is not top-notch -- I have
a non-ground outlet house, and run considerable line to the nearest copper
pipe.
Dunno, seems like there could be a bit less radiation from that
monitor -- 6ft meets FCC class B standard anyhow.

--> Scott

1010. Re: DSP93

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-1105950822440001@ivy-b7.ip.realtime.net>
Source record: 25108

In article <Pine.OSF.3.91.950509153845.1379B-100000@carbon.cudenver.edu>,
"Lawrence F. Johnston" <ljohnsto@carbon.cudenver.edu> wrote:

> Anyone have any experience with or thoughts about the DSP93?
>
> I have a Yaesu FT736 and would like to get on KO23 and KO25 and
> have the flexibility for P3D.
>
> I'd appreciate any helpful suggestions.
>
> Larry, W0EIE

I didn't reply immediately as I was a DSP-93 beta tester so may not be totally unbiased. But didn't want to let you go without a reply.

The main reason I got involved with the DSP-93 (I was using an AEA DSP-2232) was the ability to program the DSP-93. All software and hardware interfaces are documented as opposed to the other black boxes. The performance is as good or better than the DSP-2232. I use it regularly on KO23 and KO25. If you have mnore specific questions, feel free to e-mail me.

Ron W5RKN

1011. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: kc0rl@rainbow.rmii.COM
Message-ID: <Pine.3.87.9505111427.A5215-0100000@rainbow.rmii.com>
Source record: 25109

SUBSCRIBE

QUIT

Eugene L. Olson Amateur Radio Call: KC0RL
2223 Saranac Drive PACKET Mail: KC0RL@W0LKD.#SECO.CO.USA.NA
Colorado Springs, CO 80910 Internet Address: kc0rl@rmii.com
Phone: (719) 634-2424

1012. GOES-E and GOES-W WEFAX broadcast schedule?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-11 00:00:00 UTC
From: wblair@rmii.com
Message-ID: <3ou8a5$q8i@natasha.rmii.com>
Source record: 25110

Does anyone have the schedule for WEFAX transmissions from the GOES-E
and GEOS-W satellites? I know I saw a schedule in QST, '73 or Pop. Comm.,
but I can't find the issue.

Thanks,
Bill B.

1013. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: wscad22@taipeh.hl.siemens.de
Message-ID: <3ovg7r$jtt@taipeh.hl.siemens.de>
Source record: 25015
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

Almost all the computer make interference.
Here are some tips that can help to reduce the interference of a computer

1. The computer should be in a total clossed metal case
most of the computer have a plastic front or case. trough this plastic the
interference leaks out.
2. The metal case of the computer must have a good ground connection
if no ground connection is available try a radiator or make your own ground
connection
3. All grounds should be connected at ONE point (make no ground-loops)
4. Place a netfilter beteen the powernet and the power-supply-unit
most computer power supplies bring a lot of interference on the power net of
your building/group.
5. Every connection out of your computer carries interfernece out of your computer
if you have a modem it will increase the interference ot of the computer.
All devices (if possible) should be places in the computer.
Every line out of the computer works like a atenna.
6. Don't place the computer to near to your receiver/transmitter.
7. if you have different AC-groups in hour building place the computer on a other
AC-group.
8. if you have the money by a Class A product (most of the clones are Class C)
class A devices are the best.

Hopes this helps you in making a good choice for a computer.

Marco M.C.M. van heijnsbergen.

1014. HELP:Yaesu 726R Info. Needed

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: "Walt (N3JPR)" <lrpst5@pitt.edu>
Message-ID: <3ou8qo$7vf@usenet.srv.cis.pitt.edu>
Source record: 25016

I have been offered a Yaesu 726R at a very good price but I don't know
anything about this rig.I would like the following info. if possible.
1.What is the power out on 2 and 440.
2.Does it have a computer interface.
3.Does it have a packet jack.
4.Can the 2 and 440 be displayed at the same time.
5.How does it stack up against the 736R preformance wise.
Thanks for any help I really want to get started in
Oscar sats. and hope this rig will do.

Walt N3JPR
lrpst5@pitt.edu

1015. Re: DSP93

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: gjones@tcet.unt.edu
Message-ID: <3ouj0p$39f@hermes.unt.edu>
Source record: 25017

And we still have 40 units in the next batch available!

Cheers - Greg, WD5IVD

Lawrence F. Johnston (ljohnsto@carbon.cudenver.edu) wrote:
: Anyone have any experience with or thoughts about the DSP93?

: I have a Yaesu FT736 and would like to get on KO23 and KO25 and
: have the flexibility for P3D.

: I'd appreciate any helpful suggestions.

: Larry, W0EIE

1016. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995May12.013154.20000@ke4zv.atl.ga.us>
Source record: 25018

In article <3orjqa$bgc@news.nyc.pipeline.com> dsantoro@pipeline.com (Dave Santoro) writes:
>So am I right in deducing from this conversation that ther is no ONE
>antenna that will provide reasonble performance over the entire pass?

No. The Lindenblad has a good horizon to horizon pattern. It's a bit
tricky to construct properly. I had the phasing backwards on my first
attempt. The eggbeater styles are also reputed to work well from horizon
to horizon, but I have no direct experience with them.

>I am now using a homemade J-Pole up on the roof, ant the signal
>practically disappears when the bird goes above 33 degrees.

The J-pole is, of course, a 1/2-wave vertical fed with a stub
match (the J). It has a much more pronounced overhead null than
a 1/4-wave vertical. That's how it gets its gain over a 1/4-wave,
by squishing the pattern down toward the horizon. So it's not too
surprsing that you have difficulty with the direct overhead portion
of the pass.

>What about using both with a coax switch?

That's another option. You can use a gain vertical for the portions
of the pass near the horizon, and a turnstyle for the overhead
portion. But remember you want a mast mounted preamp, so you need
remote switching. When you have to resort to that sort of manual
intervention, however, you're getting close to the complexity of
using a tracking antenna and might as well consider steerable beams.
Even modest beams, 3 to 5 elements, will offer considerable improvement
over any omni-directional antenna, and pointing accuracy constraints
are loose. The 3 dB beamwidth is on the order of 30 degrees for a
short beam, so you can move it in rather coarse steps.

I've used a simple 4 element beam, elevated with a rope. I fixed
the azimuth before the pass by rotating the mast by hand, and just
pulled the beam through the arc with the rope during the pass. It's
simple and cheap, if a bit Rube Goldberg. But even the most modest
TV rotator can handle such a beam if you prefer a less manual method
of rotation.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

1017. Re: NEW HAM RADIO WWW PAGE!

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: john_fay@lightside.com
Message-ID: <john_fay-1205950003060001@user52.lightside.com>
Source record: 25019

In article <3ogq69$kbv@newsbf02.news.aol.com>, wb6siv@aol.com (WB6SIV) wrote:

> Check out my new ham www page. It has just come on line and will cover
> much more ham info. in the near future.

Well I feel pretty dumb leaving off the URL. To set the record stright the
Web site is http://www.csz.com/sarrio.html (enjoy) 73's Ray

1018. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3p021f$kig@news.internetmci.com>
Source record: 25020
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

You make good points Bob. I was pretty much responding to the net cops elitiste (SP) and pompous attitude.

1019. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: jlowman@netcom.com
Message-ID: <jlowmanD8H5pq.2rz@netcom.com>
Source record: 25021
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

amsoft@epix.net wrote:

: The World of Ham Radio CD-ROM MAY 1995 issue is now available.
: For more information contact amsoft@epix.net or the new AmSoft
: WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/

: Pete, KC3TL voice: 717-938-8249 fax: 717-938-6767

Since we're getting off on a tangent here, let's step back and take a look. Even though netiquette frowns on advertising, I enjoy hearing of new products that are closely related to amateur radio. Let's face it...for those of us with 'Net access, we're going to hear about it here well before it hits CQ, QST or the other mags.

Here's something that works for the Linux enthuiasts: a moderated group for announcements, which permits new product announcements, as well as other announcements of general interest to that group. The subject lines for advertising-related announcements begin with "COMMERCIAL:" While I ordinarily dissaprove of moderated groups on censorship grounds, this works quite well. Linux enthusiasts can browse this newsgroup, skipping all posts that are clearly marked as commercials if they wish. The function of the moderator is to keep posts not related to Linux off the newsgroup.

So...I'll pose the question...are we ready to propose adding rec.radio.amateur.announce to the hierarchy?

Jim

--
jlowman@netcom.com | Jim Lowman * KF6CR* San Bernardino, CA
Systems Analyst | San Bernardino City Unified School District
(909) 881-8146 (O) | Unix: "It isn't supposed to be easy...If it
(909) 862-0662 (FAX)| was, everyone would be doing it." -Unknown-

1020. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: hayward@cs.uchicago.edu
Message-ID: <D8H7sD.76D@midway.uchicago.edu>
Source record: 25022
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <3oqtvq$hm1@hpbab.wv> Hank_Oredson@mentorg.com writes:
:In article <3ofsbt$fem@krel.iea.com>, n0dh@comtch.iea.com (D.C. Henderson) writes:
:|> amsoft@epix.net wrote:
:|>
:|> : The World of Ham Radio CD-ROM MAY 1995 issue is now available.
:|> : For more information contact amsoft@epix.net or the new AmSoft
:|> : WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/
:|>
:|>
:|> you guys just don't get it do you......you didn't get enough flames the
:|> last time you used the rec.radio.****** bandwidth for commercial ads?
:|>
:|> :-(
:|> N0DH
:
:
:Or perhaps "YOU guys" (the self-annointed net cops) don't get it.
:
:There are many of us out here who welcome access to ANY and ALL
:information relating to our hobby.
:

Ah, sigh. The Net Cops are just like the OFs on HF; whether it
be ham radio or the net, there will be the OFs sitting in their
shack complaining about something

Kristin (WX9T)
--
Dr. Kristin Rachael Hayward
Director of Administrative Information Systems/Director of Business Services
University of Maine ftp 130.111.120.54 login:anonymous
home page: http://www.umeais.maine.edu/~hayward

1021. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: drted@ix.netcom.com
Message-ID: <3p09ms$sup@ixnews3.ix.netcom.com>
Source record: 25023
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In <3p021f$kig@news.internetmci.com> rsmith@internetmci.com (Bob Smith) writes:

>
>You make good points Bob. I was pretty much responding to the
>net cops elitiste (SP) and pompous attitude.
>
Thanks guys...

This NET-COP phenomena is the damnedest counter-productive thing I have ever seen. If I was truly spamming the groups with some trash, I would love every netcop that jumped on my posting. Hey, in advertising, any press is good press. Let's say I only intended to post just once but I made a mistake and it took a couple of postings to correct that. I would have only created three postings about as long as this one is. If that was all, I would be worried about getting enough exposure. BUT NOOO... I can count on at least a half dozen jerks with their heads up their butts jumping on my case and keeping my ad running for at least a couple of weeks. It doesn't even matter whether or not my "ad" is relevant to the newsgroups I post it in. I certainly welcome the quarterly, less than 1k, posting about the Ham CD's. Even if I hated them, would I want to have the newsgroup cluttered with 100k of netcop ranting? A good cop understands some human nature and knows when to let things slide or when to just let go...

--
Bye... Ted..
Deep in the Heart of the Armpits of Houston, Texas...

1022. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: rwilkins@ccnet.com
Message-ID: <3p0ohf$df7@ccnet3.ccnet.com>
Source record: 25024
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Jim Lowman (jlowman@netcom.com) recently wrote
in <jlowmanD8H5pq.2rz@netcom.com>:

: amsoft@epix.net wrote:
: : WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/

: So...I'll pose the question...are we ready to propose adding
: rec.radio.amateur.announce to the hierarchy?

We have a similar group now. rec.radio.amateur.info

How about rec.radio.marketplace for new product announcements

Many of the other large collections of newsgroups have established the
marketplace group for similar posts. It has been proved quite popular
with readers, as well as the marketers. One stop shopping.

Bob

--
Bob Wilkins work bwilkins@cave.org
Berkeley, California home rwilkins@ccnet.com
94701-0710 play n6fri@n6eeg.#nocal.ca.usa.noam

1023. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: "F. Kevin Feeney" <fkf1@cornell.edu>
Message-ID: <3p00s8$isf@newsstand.cit.cornell.edu>
Source record: 25025

In article <1995May11.164407.18501@ke4zv.atl.ga.us> Gary Coffman,
gary@ke4zv.atl.ga.us writes:
>be a better choice. Both produce patterns that resemble a
>flattened hemisphere, and don't have the null directly overhead
>that the simple vertical has. (That null is very small in solid
>angle, however.)
>
>Gary
>--
>Gary Coffman KE4ZV | You make it, |
gatech!wa4mei!ke4zv!gary

Gary, is it possible to fill in that null a bit by putting a bend in the
antenna? Seems to me I've seen a number of aircraft antenna that are
essentially a 1/4 wave whips, with a 45 degree kink in them. I've been
told that's to keep that null from occurring so an aircraft doesn't miss
an important call or can't be heard momentarily.

☐ I'm interested in this both from the standpoint of the satellite
antenna, and also for a transmitting antenna on an ATV equipped R/C craft
- I've used a dipole in the past but when the craft turns, I get deep
nulls off the ends and lose the picture. I was thinking of putting bends
in the dipole elements, similar to what you see for some of those sine
wave curved simple FM antennas in the RS catalog.

Do you have any experience or ideas about this? I've used beams for RS10
and others in the past, but at the new QTH have been thinking of a simple
antenna as a backup.

Kevin

1024. Re: Mailing list for keps???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: jimkd0av@aol.com
Message-ID: <3ovreq$mp@newsbf02.news.aol.com>
Source record: 25026

suggest that u ftp

archive.afit.af.mil/pub/space

look for XX.tle you will find amateur.tle, weather.tle, mir.tle, etc.

Good source and updated regularly.

73,
Jim KD0AV

1025. Re: HELP:Yaesu 726R Info. Needed

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3p0ih9$pau@newshost.lanl.gov>
Source record: 25027

Answers in order:
1. 10 watts
2. No
3. No
4. No
5. I sold my 726 and bought a 736 but the new owner is very happy with it.

1026. RS-12

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: Steve Murdock <murdock@graceland.edu>
Message-ID: <3p0a0u$jg4@insosf1.infonet.net>
Source record: 25028

I made my first contacts the other morning on RS-12(mode k) and was thrilled to death, but I have a couple of questions about procedures.
(1) does one put any special info on a satalite QSL card?
(2) does one tune the trx or rcv or both to compensate for doppler shift when calling CQ? or does doppler affect both trx and recieve frequencies the same so that no compensation is called for?
(3) If I hear a CQ on say 29.430 and I think doppler should be abt +2.5 kHz, do I add 2.5 to my trx frequency in hopes that I will be heard?

Any suggestions will be welcome, E-Mail or posts if its of general interest.

Tnx

Steve Murdock, N0ZYE || Like the Zen Monk said to the hot dog vendor:
murdock@graceland.edu || make me One with everything

1027. RE: Ham-Space Digest V95 #129

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: Jim.Hansen@stpete.honeywell.COM
Message-ID: <2FB3F097@vax-flcgr.stpete.honeywell.com>
Source record: 25029

>I would like to find out from which ftp sites I can obtain
>two-line-elements or AMSAT format Keplerian elements compatible with
>QuikTrak (QT40). I understand that those TLE from NASA and AFIT ftp
>sites are compatible with SGP4 (Simplified General Perturbation version
>4) propagation model.
>
>What propagation model does QuikTrak use? Is it compatible with
>NASA/NORAD/SGP4?

You can get the two line elements from the following FTP site:

ARCHIVE.AFIT.AF.MIL

Look in /pub/space directory for the file tle.new, which has all the
satellites listed by name in order by NORAD# (or whatever the acronym is for
that government organization).

Decode 2-line elsets with the following key:

1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ

KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

I'm not sure about QuikTrak, but every other tracking program I've tries is
capable of using these two-line elements.

Jim
WDODIA

1028. Re: RS-12

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: Bill@halcyon.com
Message-ID: <NEWTNews.800327064.4714.bill@halcyon.com>
Source record: 25030

In article <3p0a0u$jg4@insosf1.infonet.net>, <murdock@graceland.edu> writes:
> Path: news.halcyon.com!nwfocus1.wa.com!news.sprintlink.net!howland.reston.ans.net!gatech
!news-feed-1.peachnet.edu!news.netins.net!murdock.graceland.edu!murdock
> From: Steve Murdock <murdock@graceland.edu>
> Newsgroups: rec.radio.amateur.space
> Subject: RS-12
> Date: 12 May 1995 18:39:26 GMT
> Organization: Graceland College
> Lines: 17
> Distribution: world
> Message-ID: <3p0a0u$jg4@insosf1.infonet.net>
> NNTP-Posting-Host: murdock.graceland.edu
> Mime-Version: 1.0
> Content-Type: text/plain; charset=ISO-8859-1
> Content-Transfer-Encoding: 8bit
> X-Newsreader: Nuntius 2.0.1_68K
> X-XXMessage-ID: <ABD915FAA7032092@murdock.graceland.edu>
> X-XXDate: Fri, 12 May 1995 19:41:14 GMT
>
> I made my first contacts the other morning on RS-12(mode k) and was
> thrilled to death, but I have a couple of questions about procedures.
> (1) does one put any special info on a satalite QSL card?

Make sure you note it is a satellite contact, the number of the satellite
(RS-12), and the mode.

> (2) does one tune the trx or rcv or both to compensate for doppler shift
> when calling CQ? or does doppler affect both trx and recieve frequencies
> the same so that no compensation is called for?

On RS-12 you tune whatever is necessary to get a contact going. Frequencies
are low enough that doppler is not a big problem. Most people are not full
duplex anyway.

> (3) If I hear a CQ on say 29.430 and I think doppler should be abt +2.5
> kHz, do I add 2.5 to my trx frequency in hopes that I will be heard?

Doesn't make any difference since most users are not full duplex. I normally
don't worry about doppler.

73,

Bill

1029. Re: Mailing list for keps???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-12 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3p0ui0$86u@acmex.gatech.edu>
Source record: 25031

jimkd0av@aol.com (JimKD0AV) writes:

>suggest that u ftp
>archive.afit.af.mil/pub/space
>look for XX.tle you will find amateur.tle, weather.tle, mir.tle, etc.
>Good source and updated regularly.
>73,
>Jim KD0AV

Thanks, I got a bunch of stuff and heard Mir 3 times today cos of it!! I'll work 'em as soon as they start talking!

BTW, just a random note for newbies out there... when I downloaded the elements, I tried to look at them on my PC and they were not at all lined up with the edges of the screen. I was worried, but QuikTrak sorted it out just fine. Just wanted to pass that along and keep someone else from worrying like I did!

73 de KD4UGI

****
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
****

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1030. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: rtm@newton.apple.com
Message-ID: <rtm-1305951548020001@17.201.244.88>
Source record: 25032
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

In article <3otl8a$3i1@kisa.seanet.com>, amigo@seanet.com (Scott Rowin) wrote:

> n7tcf@primenet.com writes:
>
> >In <19950507.013233.77@cromer.demon.co.uk>, G8SMQ@cromer.demon.co.uk
(Norman Guilford) writes:
> >>
> >>Hi All,
> >> Many thanks for reading this plea.
> >>
> >> Can anyone advise me the makes and model numbers of DX4 or
> >>Pentium computers that give the least (or zero, hi!) interference
> >>on 2 metres.
> >>
> >> (I normally use 2 cascaded GaAs FETs on front end)
> >>
> >>73
> >>
> >>de Norman, G8SMQ
> >>--

If you're getting RFI from your monitor, check the background pattern you're
using on the screen- the worst case rfi generating pattern is a grey background
made up from alternating black and white dots- all guns on and all guns
off, switching everything as fast as you possibly can. This is one of the
patterns
we use for rfi testing. Go for a solid color to minimise emissions from the
video portions of the display. The horizontal width link can also be a strong
magnetic radiator if it's unshielded- high currents are present.

73-

--

Bob Martin N6MZV * rtm@newton.apple.com
Apple Computer, Inc * #include <disclaimer.h>
--

1031. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995May13.071857.25773@ke4zv.atl.ga.us>
Source record: 25033
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space

In article <3ovg7r$jtt@taipeh.hl.siemens.de> wscad22@taipeh.hl.siemens.de writes:
>Almost all the computer make interference.
>Here are some tips that can help to reduce the interference of a computer
>
>1. The computer should be in a total clossed metal case
>most of the computer have a plastic front or case. trough this plastic the
>interference leaks out.

This is a good tip. All openings in the case need to be shielded. There
have to be openings for ventilation, but these should be covered with
metal mesh, similiar to the way any other RF equipment is handled. The
case seams need to be joined according to good RF practice. For VHF
suppression, that requires that the joining surfaces be paint free and
a screw should be used every 5 cm along the seam. Alternately, finger
stock can be used at seams. Removable media disk drive openings can
be a problem. Usually, the best course here is to install shielding
behind the drive bay and just suffer the interference when a floppy
is being written or read.

>2. The metal case of the computer must have a good ground connection
>if no ground connection is available try a radiator or make your own ground
>connection

This is not necesarily a good idea. Connection to Earth may or may not
improve interference suppression depending on the topology of the station
and computer installation. Frequently, connection to Earth will *worsen*
interference. You'll need to experiment with your particular layout to
see if this helps or not.

>3. All grounds should be connected at ONE point (make no ground-loops)

This is a good tip. Ground loops will insure mutual coupling of interference.

>4. Place a netfilter beteen the powernet and the power-supply-unit
>most computer power supplies bring a lot of interference on the power net of
>your building/group.

This is also a good tip. However, the filter needs to be bonded directly
to the computer chassis. Filters built into extension cords may or may not
help, and can sometimes make interference worse.

>5. Every connection out of your computer carries interfernece out of your
>computer
>if you have a modem it will increase the interference ot of the computer.
>All devices (if possible) should be places in the computer.
>Every line out of the computer works like a atenna.

This is generally true. However, use of internal modems and such can make your computer more vulnerable to lightning damage. Properly installed and connected, external modems can have as low an interference level, and offer some lightning protection by keeping the telephone line surge suppressor's return path off the computer chassis. Careful thought to Earth connections, if any, can help here. Earthing the modem rather than the computer can serve to keep surge return currents away from the more valuable computer.

>6. Don't place the computer to near to your receiver/transmitter.

Generally good advice. This will reduce cabinet to cabinet induced radiation. However, proper shielding of *both* radio and computer will allow them to be placed adjacent to each other without undue interference.

>7. if you have different AC-groups in hour building place the computer on a other
>AC-group.

This may, or may not, help. Again it is a function of total station topology. If you have any interconnections between station equipment and the computer, such as a packet modem or the like, then you want the systems on common power. Getting on another leg of the power distribution will insure ground loops in this case.

>8. if you have the money by a Class A product (most of the clones are Class C)
>class A devices are the best.

This is wrong (for the USA at least). Class A products are permitted for industrial/commercial zoning and have a higher permitted radiation limit than Class B devices which are permitted for residential zoning. I'm not aware of a Class C rating for computers in the USA (European standards may be different). There is a third rating beyond Class B, however, and that is Tempest. This is primarily for certain secure computer systems, and is *very* well RF shielded.

An additional item, and the most important in most cases, needs to be addressed. That's *monitor* radiation. For HF, and often for VHF, interference, the monitor is the primary culprit. Most of today's computer monitors have plastic cases and no, or inadequate, internal shielding. Use of metal, metal mesh, or foils to shield the cabinets will yield large interference reductions. Alternately, use of special EMI conductive sprays on the plastic cabinets will often work. For shadow masked color tubes, no additional shielding will generally be required for the monitor face. But for monochrome tubes, or Trinitron type color tubes, some sort of tube face shielding will be required. Fine wire mesh, painted flat black, can be installed over the tube face if required. This will do dual duty as an RF shield and a glare shield.

Special attention needs to be taken with the monitor cabling. The video cable will have signal components from the lowest LF to the VHF spectrum, and the power cable will normally have surge currents corresponding to the horizontal sweep rate and its harmonics. These cables need to be well shielded and properly installed to prevent

leakage. Use of ferrites on cable shields will suppress common mode radiation leakage.

The final problem is the keyboard. Most keyboards are totally unshielded, and the key scan matrix can generate considerable interference. Ordinary shielding techniques will make the keyboard unusable, so different methods have to be used. Waveshaping of the scan matrix signals, and adequate decoupling capacitor use will go far to reduce keyboard EMI. Often, however, it's simply better to try several different keyboards and pick the one with the least noise generation. I've found the Focus 2001 brand to be particularly quiet, and to have good key feel and layout, so I've standardized on that one for all my PCs. Other keyboards may meet your needs better. Mice, too, can be interference generators. Again, trying several and picking the least obnoxious is usually the best course.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

1032. Egg beater antennas useful for terres and sats???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3p2oe0$c@news.internetmci.com>
Source record: 25034

Saw some lit on eggbeater antennas - could they be used for pacsat work - I have a problem - want to work the pacsats but I have antenna restrictions - could get those pups in my attic though.

Any help would be appreciated.
73.
-=-
Bob Smith N3FTU
rsmith@internetMCI.COM Atlanta, GA

1033. Eggbeater the answer for attic sat use??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3p2pqd$9b@news.internetmci.com>
Source record: 25035

Eggbeater the answer for attic sat use??
Here's the story:

want to work PACSATS. DESPARATELY!

Live in a neighborhood with restrictions
Have lots of room in the attic (12' pitch!)
Not enough room for beams and rotors though.

Read a short spec in a catalogue on the eggbeater antenna -
Supposedly the thing for terres/space work.

Am I on the right track.
What else do you think I would need if they work.

My shack is in the basement of my house - about a 50' run.

any help would be appreciated.

thanks and 73, de Bob.
-=-
Bob Smith N3FTU
rsmith@internetMCI.COM Atlanta, GA

1034. Re: LOWEST RFI FROM WHAT COMPUTERS ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: wiselace@cix.compulink.co.uk
Message-ID: <D8J1Lp.Dw2@cix.compulink.co.uk>
Source record: 25036

If you can get a dag spray paint that helps.
The modern all plastic monitor enclosures are completely transparent to
RF.
A dissipative coating on the inside of the monitor case can reduce the
RFI by many dB.
But it is a real problem that has not received sufficient attention.
You could always get an LCD display.

Gary Peach G7SLL RSGB ARRL RAFARS
Wisdom to Perceive Choices
Grace to Acknowledge Innocuous or Flameproof

1035. Re: Eggbeater the answer for attic sat use??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: jimeagle@earth.execpc.com
Message-ID: <3p2sqc$2f@homer.alpha.net>
Source record: 25037

Bob Smith (rsmith@internetmci.com) wrote:
: Eggbeater the answer for attic sat use??
: Here's the story:

: want to work PACSATS. DESPARATELY!

: Live in a neighborhood with restrictions
: Have lots of room in the attic (12' pitch!)
: Not enough room for beams and rotors though.

: Read a short spec in a catalogue on the eggbeater antenna -
: Supposedly the thing for terres/space work.

: Am I on the right track.
: What else do you think I would need if they work.

: My shack is in the basement of my house - about a 50' run.

: any help would be appreciated.

: thanks and 73, de Bob.
: -=-
: Bob Smith N3FTU
: rsmith@internetMCI.COM Atlanta, GA

Worked 2M SSB mobile with an eggbeater 10-15 years ago along with Mike and Mel formerly of KLM. It is omni directional, horizontally polarized towards the horizon with circular polarization directly overhead. Some have placed a reflector below the loops to enhance LEO satellite operations. Essentially two "quad" loops, the antenna is very broadband so that attic mounting should not cause proximity detuning problems.
-=-=-=-= Jim Eagleson, WB6JNN/9 Milwaukee, WI
Jimeagle@execpc.com =-=-=-=-=-=-=-=-=-=-=-=-=

1036. Houston Balloon Launch

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3p33kd$343@news.onramp.net>
Source record: 25038

Does anyone have an update.
Bob Dallas

1037. Icom IC-W21A Mod

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: ajnaylor@peg.apc.org
Message-ID: <APC&7'0'21ff9d01'afb@peg.pegasus.oz.au>
Source record: 25039

I need to find a description of a modification that will allow an ICOM IC
W21A handheld set to general coverage transmit and cross band repeat.
Can anyone help me out?
Andrew Naylor for VK7KIH (Ian Hart)
IN A ajnaylor@acslink.net.au

1038. WISP + PK232 Problem

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: billh@gn2.getnet.com
Message-ID: <3p38dn$fle@infoman.net99.net>
Source record: 25040

I am running a PK232 and WISP on 1200B satellite. Works great as long as I go in with comm program 1st & set 232 to KISS mode. Prob then is that the MSPE module ALWAYS kicks the 232 out of KISS when it closes. I haven't figured a way to correct this and it raises hell during close together passes. Any ideas out there????

Bill Hosking, W7JSW
Scottsdale, Arizona

1039. Re: 10M sat uplink freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3p17vp$121@maureen.teleport.com>
Source record: 25041

In article <3okmt1$51j@canopus.cc.umanitoba.ca>, umtrinh4@cc.umanitoba.ca said...
>
> Hi there...
>
>Could someone please tell me if there are any satellites with 10M uplink
>frequencys? If so, could you please mail them to me.

There are none.

I respond via posts in the group so that the information can be shared with others
that have the same inquiry. That's why the group is here!

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1040. satTrak IV files available on www

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3p186f$121@maureen.teleport.com>
Source record: 25042

I have now included SatTrak IV files on my www page. This should make it a lot easier to get the updates.

I also have Wisp, KctDrv amd some telemetry files available. The url is:

http://www.teleport.com/~n7ryw/asatpage.html

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1041. ARLK019 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-05-13 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk019.1995@ampr.org>
Source record: 25043
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK019
ARLK019 Keplerian data

ZCZC SK44
QST de W1AW
Keplerian Bulletin 19 ARLK019
From ARRL Headquarters
Newington, CT May 13, 1995
To all radio amateurs

SB KEP ARL ARLK019
ARLK019 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95130.35718978 -.00000442 00000-0 10000-3 0 3514
2 14129 26.4892 268.9371 6005645 275.5410 22.9393 2.05881648 61553
RS-10/11
1 18129U 87054A 95132.03502850 .00000035 00000-0 21497-4 0 624
2 18129 82.9231 85.7886 0010913 184.4828 175.6231 13.72351824395018
UO-11
1 14781U 84021B 95132.02532571 .00000161 00000-0 35155-4 0 7978
2 14781 97.7825 136.2609 0010749 301.2919 58.7229 14.69340452598591
RS-12/13
1 21089U 91007A 95128.08116539 .00000028 00000-0 13629-4 0 7976
2 21089 82.9204 130.5235 0027657 286.2917 73.5203 13.74056878213261
AO-13
1 19216U 88051B 95129.39519897 .00000167 00000-0 10000-4 0 369
2 19216 57.5455 188.5066 7288432 8.4361 359.2572 2.09720829 21355
UO-14
1 20437U 90005B 95127.77663664 .00000075 00000-0 46164-4 0 953
2 20437 98.5682 212.7959 0010159 321.6320 38.4138 14.29884954275975
RS-15
1 23439U 94085A 95123.53443186 -.00000039 00000-0 10000-3 0 472
2 23439 64.8245 327.2096 0167672 270.1588 88.0123 11.27523866 14481
AO-16
1 20439U 90005D 95123.76149781 -.00000001 00000-0 16744-4 0 8936
2 20439 98.5794 210.4540 0011419 334.8250 25.2373 14.29938356275410
```

```
DO-17
1 20440U 90005E 95123.75436867 -.00000007 00000-0 14017-4 0 8938
2 20440 98.5778 210.8870 0011378 333.7835 26.2765 14.30079372275439
WO-18
1 20441U 90005F 95128.21366789 .00000022 00000-0 25317-4 0 8986
2 20441 98.5805 215.2623 0011973 321.2244 38.8078 14.30051520276075
LO-19
1 20442U 90005G 95127.74960326 .00000014 00000-0 22233-4 0 8942
2 20442 98.5813 215.1517 0012119 321.5384 38.4935 14.30153193276029
FO-20
1 20480U 90013C 95128.25614915 -.00000035 00000-0 16724-5 0 7908
2 20480 99.0703 224.2804 0540483 323.7171 32.8380 12.83229012245829
AO-21
1 21087U 91006A 95129.28815233 .00000093 00000-0 82657-4 0 5936
2 21087 82.9348 261.3520 0034361 256.0291 103.6959 13.74554438214380
UO-22
1 21575U 91050B 95132.21788233 .00000041 00000-0 28355-4 0 6011
2 21575 98.3986 204.4241 0008568 31.3365 328.8322 14.36974256200333
KO-23
1 22077U 92052B 95128.93810544 -.00000037 00000-0 10000-3 0 4917
2 22077 66.0860 317.9516 0008750 209.6241 150.4279 12.86290915128688
KO-25
1 22828U 93061F 95129.16567501 .00000026 00000-0 28076-4 0 3661
2 22828 98.6163 206.2470 0010491 327.8613 32.1934 14.28097849 52307
IO-26
1 22826U 93061D 95128.24913092 .00000026 00000-0 28352-4 0 3888
2 22826 98.6205 205.3087 0009752 345.5323 14.5574 14.27768276 84070
AO-27
1 22825U 93061C 95128.22211857 .00000010 00000-0 21938-4 0 3892
2 22825 98.6193 205.1917 0009030 345.4144 14.6769 14.27660840 84068
PO-28
1 22829U 93061G 95128.19583267 .00000016 00000-0 24159-4 0 3804
2 22829 98.6164 205.3198 0010198 331.8121 28.2515 14.28076353 84087
Mir
1 16609U 86017A 95132.51636574 .00004403 00000-0 62838-4 0 242
2 16609 51.6478 336.2148 0004976 107.0239 285.0698 15.58584976527392

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
May 16, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1042. Re: WWW LISTS

Newsgroup: rec.radio.amateur.space
Date: 1995-05-14 00:00:00 UTC
From: victor@ibpm.serpukhov.su
Message-ID: <victor.63.0@ibpm.serpukhov.su>
Source record: 25044
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.scanner,alt.radio.pirate,alt.radio.scanner

In article <3oihh6$606$1@mhafc.production.compuserve.com> JOHN C STELLA
<76615.2745@CompuServe.COM> writes:
>Path: push.stack.serpukhov.su!KremlSun!news.spb.su!news.eunet.fi!news.funet.fi!news.kolum
bus.fi!news.sprintlink.net!pipex!uunet!in1.uu.net!news.inhouse.compuserve.com!news.product
ion.compuserve.com!news
>From: JOHN C STELLA <76615.2745@CompuServe.COM>
>Subject: WWW LISTS

>Does anyone have a list of Ham related web sites. Does anybody know
> any good ones?

Packet Raido and TAPR is on the World-Wide-Web!

http://bb.iu.net/infomotion/taprhome.html
http://bb.iu.net/infomotion/pkthome.html

A new mini-handbook is now available with chapters on:
How amateur SSTV began in 1958.
Some typical images.
Descriptions of commercial products.
Homebrew projects.
Where to find free software.
Questions and Answers.
Bibliography, Glossary, and much more ...
http://www.ultranet.com/~sstv

UK callbook:
http://www.acs.ncsu.edu/HamRadio

The US callbook is at least telnettable via:
telnet callsign.cs.buffalo.edu 2000

Callsign Server
http://www.mit.edu:8001/callsign

Callbooks including QRZ, US, UK servers:
http://www.cc.columbia.edu/~fuat/cuarc/callsign-servers.html

The ARRL (BARC) has placed FCC Part 97.
http://www.acs.oakland.edu/barc/arrl/part97.html

The Online Repeater Database.

http://www.acs.ncsu.edu/HamRadio

Radio Devices: some product pictures, price list, order form
in the works too.
http://www.raddev.com/biz/raddev/

QRZ Ftp server and QRZ HTTP server.
http://www.qrz.com

The American Digital Radio Society (ADRS), publisher of the Digital
Journal.
http://www.iea.com/~adrs

OH2BUA WWW Page
http://www.clinet.fi/~jukka/
It has dx clusters listings and solar activity announcements. It's
mostly DC band DX but I have also seen 50, 144 and 432
announcements. TNX to W3IWU for this lead.

Boston ARC Web page:
http://www.acs.oakland.edu/barc.html
latest ARRL bulletins & more.
---

the ARRL now has a web presence, thanks to Scott Erlich (WY1Z).
http://www.acs.oakland.edu/barc/arrl.html

NEWSLINE AMATEUR RADIO NEWS - a very good ham radio newsletter.
http://www.acs.ncsu.edu/HamRadio/News.html

W4ATC - N.C. State University Student Amateur Radio Society (StARS)
http://www2.ncsu.edu/eos/users/d/dbhopper/www/w4atc.html

Ham Radio & More Station
http://www.acs.oakland.edu/barc/ham-more/ham-more.html

Baycom:
http://www.baycom.de/

I not include a small pages (maybe they are good also) of some HAMs.
73! de RX3DIN Victor

1043. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-14 00:00:00 UTC
From: jlowman@netcom.com
Message-ID: <jlowmanD8KxwC.Fqs@netcom.com>
Source record: 25045
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Bob Wilkins n6fri (rwilkins@ccnet.com) wrote:

: We have a similar group now. rec.radio.amateur.info

Hmmm...must have missed that one; will subscribe to it and check it out.

: How about rec.radio.marketplace for new product announcements

: Many of the other large collections of newsgroups have established the
: marketplace group for similar posts. It has been proved quite popular
: with readers, as well as the marketers. One stop shopping.

Either approach would be fine with me. Since there is already a .info
newsgroup, wouldn't it make more sense to simply direct advertisers to the
appropriate newsgroup, instead of wasting the bandwidth (and everyone's
time, surely a more valuable commodity) flaming these vendors? Of course,
there's still the problem of spamming the entire rec.radio.amateur.*
hierarchy.

Jim
--
jlowman@netcom.com | Jim Lowman * KF6CR* San Bernardino, CA
Systems Analyst | San Bernardino City Unified School District
(909) 881-8146 (O) | Unix: "It isn't supposed to be easy...If it
(909) 862-0662 (FAX)| was, everyone would be doing it." -Unknown-

1044. Re: Houston Balloon Launch

Newsgroup: rec.radio.amateur.space
Date: 1995-05-14 00:00:00 UTC
From: miles@mail.utexas.edu
Message-ID: <miles-1405950816280001@128.83.128.56>
Source record: 25046

In article <3p33kd$343@news.onramp.net>, Bob Winingham <kc5ejk@onramp.net>
wrote:

> Does anyone have an update.
> Bob Dallas

Successful launch in high winds with GPS & x-band repeater at 3:30 PM,
following GPS problems, a big smoke mystery and a mandatory 2-hour delay
imposed by FAA.

I don't know if they recovered the payload.

I anticipate that Dan Feeback will post a full report.
--
Miles Abernathy, N5KOB, University of Texas
P. O. Box 7580, Austin, Texas 78713 USA

1045. REJECTED: Ham-Space Digest V95 #131

Newsgroup: rec.radio.amateur.space
Date: 1995-05-14 00:00:00 UTC
From: MAILER-DAEMON@RTP41.ceo.dg.COM
Message-ID: <9505141404.AF00034@rtp41.rtp.dg.com>
Source record: 25047

----- Mail rejected by CEO. -----
No Routing Link Available Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #131
X-Ceo_Options: Document

<Original text message attached as document>

CEO document contents:

Ham-Space Digest Sun, 14 May 95 Volume 95 : Issue 131

Today's Topics:
DSP93
Egg beater antennas useful for terres and sats???
Icom IC-W21A Mod
LOWEST RFI FROM WHAT COMPUTERS ?
Mailing list for keps???
RS-12
WWW LISTS

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Tue, 9 May 1995 15:40:54 -0600
From: "Lawrence F. Johnston" <ljohnsto@carbon.cudenver.edu>
Subject: DSP93

Anyone have any experience with or thoughts about the DSP93?

I have a Yaesu FT736 and would like to get on KO23 and KO25 and
have the flexibility for P3D.

I'd appreciate any helpful suggestions.

Larry, W0EIE

Date: 13 May 1995 16:57:36 GMT
From: rsmith@internetmci.com (Bob Smith)
Subject: Egg beater antennas useful for terres and sats???

Saw some lit on eggbeater antennas - could they be used for
pacsat work - I have a problem - want to work the pacsats but I
have antenna restrictions - could get those pups in my attic
though.

Any help would be appreciated.
73.
-=-
Bob Smith N3FTU
rsmith@internetMCI.COM Atlanta, GA

Date: 10 May 95 23:01 GMT+1000
From: ajnaylor@peg.apc.org
Subject: Icom IC-W21A Mod

I need to find a description of a modification that will allow an ICOM IC
W21A handheld set to general coverage transmit and cross band repeat.
Can anyone help me out?
Andrew Naylor for VK7KIH (Ian Hart)
IN A ajnaylor@acslink.net.au

Date: Sat, 13 May 1995 07:18:57 GMT
From: gary@ke4zv.atl.ga.us (Gary Coffman)
Subject: LOWEST RFI FROM WHAT COMPUTERS ?

In article <3ovg7r$jtt@taipeh.hl.siemens.de> wscad22@taipeh.hl.siemens.de writes:
>Almost all the computer make interference.
>Here are some tips that can help to reduce the interference of a computer
>
>1. The computer should be in a total clossed metal case
>most of the computer have a plastic front or case. trough this plastic the
>interference leaks out.

This is a good tip. All openings in the case need to be shielded. There
have to be openings for ventilation, but these should be covered with
metal mesh, similiar to the way any other RF equipment is handled. The
case seams need to be joined according to good RF practice. For VHF
suppression, that requires that the joining surfaces be paint free and
a screw should be used every 5 cm along the seam. Alternately, finger
stock can be used at seams. Removable media disk drive openings can
be a problem. Usually, the best course here is to install shielding
behind the drive bay and just suffer the interference when a floppy
is being written or read.

>2. The metal case of the computer must have a good ground connection
>if no ground connection is available try a radiator or make your own ground
>connection

This is not necesarily a good idea. Connection to Earth may or may not
improve interference suppression depending on the topology of the station
and computer installation. Frequently, connection to Earth will *worsen*
interference. You'll need to experiment with your particular layout to
see if this helps or not.

>3. All grounds should be connected at ONE point (make no ground-loops)

This is a good tip. Ground loops will insure mutual coupling of interference.

>4. Place a netfilter beteen the powernet and the power-supply-unit
>most computer power supplies bring a lot of interference on the power net of
>your building/group.

This is also a good tip. However, the filter needs to be bonded directly
to the computer chassis. Filters built into extension cords may or may not
help, and can sometimes make interference worse.

>5. Every connection out of your computer carries interfernece out of your
>computer
>if you have a modem it will increase the interference ot of the computer.
>All devices (if possible) should be places in the computer.
>Every line out of the computer works like a atenna.

This is generally true. However, use of internal modems and such can make
your computer more vulnerable to lightning damage. Properly installed and
connected, external modems can have as low an interference level, and offer
some lightning protection by keeping the telephone line surge suppressor's
return path off the computer chassis. Careful thought to Earth connections,
if any, can help here. Earthing the modem rather than the computer can
serve to keep surge return currents away from the more valuable computer.

>6. Don't place the computer to near to your receiver/transmitter.

Generally good advice. This will reduce cabinet to cabinet induced
radiation. However, proper shielding of *both* radio and computer
will allow them to be placed adjacent to each other without undue
interference.

>7. if you have different AC-groups in hour building place the computer on a
other
>AC-group.

This may, or may not, help. Again it is a function of total station
topology. If you have any interconnections between station equipment
and the computer, such as a packet modem or the like, then you want
the systems on common power. Getting on another leg of the power
distribution will insure ground loops in this case.

>8. if you have the money by a Class A product (most of the clones are Class C)
>class A devices are the best.

This is wrong (for the USA at least). Class A products are permitted for industrial/commercial zoning and have a higher permitted radiation limit than Class B devices which are permitted for residential zoning. I'm not aware of a Class C rating for computers in the USA (European standards may be different). There is a third rating beyond Class B, however, and that is Tempest. This is primarily for certain secure computer systems, and is *very* well RF shielded.

An additional item, and the most important in most cases, needs to be addressed. That's *monitor* radiation. For HF, and often for VHF, interference, the monitor is the primary culprit. Most of today's computer monitors have plastic cases and no, or inadequate, internal shielding. Use of metal, metal mesh, or foils to shield the cabinets will yield large interference reductions. Alternately, use of special EMI conductive sprays on the plastic cabinets will often work. For shadow masked color tubes, no additional shielding will generally be required for the monitor face. But for monochrome tubes, or Trinitron type color tubes, some sort of tube face shielding will be required. Fine wire mesh, painted flat black, can be installed over the tube face if required. This will do dual duty as an RF shield and a glare shield.

Special attention needs to be taken with the monitor cabling. The video cable will have signal components from the lowest LF to the VHF spectrum, and the power cable will normally have surge currents corresponding to the horizontal sweep rate and its harmonics. These cables need to be well shielded and properly installed to prevent leakage. Use of ferrites on cable shields will suppress common mode radiation leakage.

The final problem is the keyboard. Most keyboards are totally unshielded, and the key scan matrix can generate considerable interference. Ordinary shielding techniques will make the keyboard unusable, so different methods have to be used. Waveshaping of the scan matrix signals, and adequate decoupling capacitor use will go far to reduce keyboard EMI. Often, however, it's simply better to try several different keyboards and pick the one with the least noise generation. I've found the Focus 2001 brand to be particularly quiet, and to have good key feel and layout, so I've standardized on that one for all my PCs. Other keyboards may meet your needs better. Mice, too, can be interference generators. Again, trying several and picking the least obnoxious is usually the best course.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

Date: 12 May 1995 20:29:52 -0400
From: eew4aql@prism.gatech.edu (GT Amateur Radio Club)

Subject: Mailing list for keps???

jimkd0av@aol.com (JimKD0AV) writes:

>suggest that u ftp
>archive.afit.af.mil/pub/space
>look for XX.tle you will find amateur.tle, weather.tle, mir.tle, etc.
>Good source and updated regularly.
>73,
>Jim KD0AV

Thanks, I got a bunch of stuff and heard Mir 3 times today cos of it!! I'll work 'em as soon as they start talking!

BTW, just a random note for newbies out there... when I downloaded the elements, I tried to look at them on my PC and they were not at all lined up with the edges of the screen. I was worried, but QuikTrak sorted it out just fine. Just wanted to pass that along and keep someone else from worrying like I did!

73 de KD4UGI

****
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
****

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

Date: 12 May 1995 18:39:26 GMT
From: Steve Murdock <murdock@graceland.edu>
Subject: RS-12

I made my first contacts the other morning on RS-12(mode k) and was thrilled to death, but I have a couple of questions about procedures.
(1) does one put any special info on a satalite QSL card?
(2) does one tune the trx or rcv or both to compensate for doppler shift when calling CQ? or does doppler affect both trx and recieve frequencies the same so that no compensation is called for?
(3) If I hear a CQ on say 29.430 and I think doppler should be abt +2.5 kHz, do I add 2.5 to my trx frequency in hopes that I will be heard?

Any suggestions will be welcome, E-Mail or posts if its of general interest.

Tnx

Steve Murdock, N0ZYE || Like the Zen Monk said to the hot dog vendor:
murdock@graceland.edu || make me One with everything

Date: 10 May 1995 16:21:27 GMT
From: sdunham@ibm.net
Subject: WWW LISTS

In <3oihh6$606$1@mhafc.production.compuserve.com>, JOHN C STELLA
<76615.2745@CompuServe.COM> writes:
>Does anyone have a list of Ham related web sites. Does anybody know
> any good ones?

Don't have a list, but here's one:

HTTP://www.best.com/~sdunham/homepage.html

Date: Sat, 13 May 1995 23:48:02 GMT
From: rtm@newton.apple.com (Bob Martin N6MZV)

References<19950507.013233.77@cromer.demon.co.uk>
<3os8af$51t@news4.primenet.com>, <3otl8a$3i1@kisa.seanet.com>
Subject: Re: LOWEST RFI FROM WHAT COMPUTERS ?

In article <3otl8a$3i1@kisa.seanet.com>, amigo@seanet.com (Scott Rowin) wrote:

> n7tcf@primenet.com writes:
>
> >In <19950507.013233.77@cromer.demon.co.uk>, G8SMQ@cromer.demon.co.uk
(Norman Guilford) writes:
> >>
> >>Hi All,
> >> Many thanks for reading this plea.
> >>
> >> Can anyone advise me the makes and model numbers of DX4 or
> >>Pentium computers that give the least (or zero, hi!) interference
> >>on 2 metres.
> >>
> >> (I normally use 2 cascaded GaAs FETs on front end)
> >>
> >>73
> >>
> >>de Norman, G8SMQ
> >>--

If you're getting RFI from your monitor, check the background pattern you're
using on the screen- the worst case rfi generating pattern is a grey background
made up from alternating black and white dots- all guns on and all guns
off, switching everything as fast as you possibly can. This is one of the
patterns
we use for rfi testing. Go for a solid color to minimise emissions from the
video portions of the display. The horizontal width link can also be a strong

magnetic radiator if it's unshielded- high currents are present.

73-

--

Bob Martin N6MZV * rtm@newton.apple.com
Apple Computer, Inc * #include <disclaimer.h>
--

End of Ham-Space Digest V95 #131
****

1046. Re: Eggbeater the answer for attic sat use??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-14 00:00:00 UTC
From: "Jeffrey L. Davis" <jdavis@one.net>
Message-ID: <3p5394$iam@mail.one.net>
Source record: 25048

jimeagle@earth.execpc.com (Jim Eagleson) wrote:
>
> Bob Smith (rsmith@internetmci.com) wrote:
> : Eggbeater the answer for attic sat use??
> : Here's the story:
>
> : want to work PACSATS. DESPARATELY!
>
> : Live in a neighborhood with restrictions
> : Have lots of room in the attic (12' pitch!)
> : Not enough room for beams and rotors though.
>
> : Read a short spec in a catalogue on the eggbeater antenna -
> : Supposedly the thing for terres/space work.
>

Perhaps take a look at the antenna of VE1COR as detailed in his
June [1995] QST article, Exploring the 9600 Baud PacSats...

VE1COR uses a fixed elevation log periodic antenna. The antenna has
a relatively wide vertical beamwidth. I would'nt have believed
that was his antenna [until I saw the article] as he seems to be
in the broadcast queue consistently on KO-23! I just saw him on
the last pass. This might fit in your attic space.

Don't compromise on a good pre-amp mounted right at the antenna
in your attic.

One other possible option...Although I don't live in an antenna
restricted neighborhood, when I first set up my sat station a
few years ago, I built the antennas [14 elements on 145 mhz
18 elements on 435 mhz] circular polarized yagis, with az-el rotor,
and recive preamps on the mast and mounted everything on a tripod
in my garage. I wanted to make sure everything worked prior to
taking that HUGE configuration up on the roof.

After I got everything together and tested, I decided to give it a
whirl, from the ground. I carried the tripod with antennas out into
the driveway, pointed the thing north, then gave it a shot. It
worked great. In fact for the next several days I dragged the whole
array into and out of the garage as time allowed [I've got pictures
to prove it!].

As I mentioned my 'strange' operating arrangement on the air
you would'nt believe
how many hams I talked to who worked that way on a permanent basis!

While it wouldn't be easy, the moral of the story is, where there is a will...there is a way.

Good luck getting on the PacSats, it is great fun and I hope to hear from you soon on the birds!

73, N9AVG
KO-23, KO-25

1047. Re: Houston Balloon Launch

Newsgroup: rec.radio.amateur.space
Date: 1995-05-14 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3p5iep$jt0@news.onramp.net>
Source record: 25049

```
This is all I got from My APRS log.
-----------
W5SXD>KJ5MX-11*>STATUS:!204 14-12-27 21:58:47 balloon status de W5SXD
GPS: 3D6 sats HDOP 1.2
lat 29 27.98'N, lon 95 35.70'W, 60000.0 feet msl
movivg 20.0 mph at 295 true oFer ground, cli]bing at 0 fm

KJ5MX-11*>BEACON:NOSTS-2 Clear&Lake Amateur Radio Club Balloon

KJ5MX-11*>"EACON:NOSTS-2 Cjear Jak/Amateur Radio Club Aalloon
--------------------
I have a bad intermod or image problem at 145.788 from a local 2-m
repeater and the balloon seemed to be sending at 145.789

Bob Dallas EM12ot
```

1048. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-14 00:00:00 UTC
From: dmoorman@interaccess.com
Message-ID: <dmoorman-1405951300530001@nb-dyna87.interaccess.com>
Source record: 25050
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

In article <D83B43.Mt5@news.hawaii.edu>, jeffrey@math.hawaii.edu wrote:
> With well over 7000 newsgroups some sites may have reached the saturation
> point and choose not to subscribe to the new rec.radio.amateur.low-profile.
>
> 73 from Hawaii,
> Jeff NH6IL

Jeff -

Of those 7,000 newsgroups, how many are totally bogus and mostly or
totally unused, such as:

alt.brian.saunders.pot.kettle.black
the whole alt.bonehead heirarchy
alt.bubba-love.el-caminoville
alt.bruce.it.was.just.an.accident
alt.butt-keg.marmalade
alt.cancel.bots
alt.check.her.miss-jesus
alt.choad

etc., etc. This list could go on and on. I'm really curious as to how
these newsgroups got started. They certainly don't serve a purpose
because nobody ever uses most of them and their names are totally wierd.

Dave, K9SW
Downers Grove,
Illinois

1049. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-15 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3p7qho$dt@superb.csc.ti.com>
Source record: 25051
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

```
:
; whether it
>be ham radio or the net, there will be the OFs sitting in their
>shack complaining about something
>
>Kristin (WX9T)
>--
```

Then there are those of us who usually don't comment publicly about the ads on telephone posts and newsgroups, but make it a point to avoid the product or service.

Ken K5MBV durham@lobbyl.ti.com

1050. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.space
Date: 1995-05-15 00:00:00 UTC
From: jmaynard@admin5.hsc.uth.tmc.edu
Message-ID: <radio/personal-intro_800535438@rtfm.mit.edu>
Source record: 25052
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

Posted-By: auto-faq 3.1.1.2
Archive-name: radio/personal-intro
Revision: 2.1 1994/11/01 03:50:23
Posting-Frequency: posted on the 15th of each month

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info, and rec.radio.swap newsgroups, as well as their Internet mailing list counterparts and complements. It is intended to serve as a guide for the new reader on what to find where. Questions and comments may be directed to the author, Jay Maynard, K5ZC, by Internet electronic mail at jmaynard@admin5.hsc.uth.tmc.edu. This message was last changed on 31 October 1994 to add the discussion of non-Usenet mailing lists and streamline most of the history discussion, and to change the moderator information for rec.radio.info.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions were held on the mailing list, and sent to the mailboxes of those who had signed up for it. When the Usenet software was created, and net news as we now know it was developed, a newsgroup was created for hams: net.ham-radio. The mailing list and the newsgroup were gatewayed together, eventually.

Over the years, as the net grew, the volume of discussion became progressively higher. First one by one, and then as part of two reorganizations, what was once one group became many. In the process, developments elsewhere on the net were reflected in the groups as they were created, most notably the change to place all of the ham radio groups in one hierarchy.

The collection of newsgroups continues to grow as more people join the net, and as more topics of discussion gain volume, I expect to see more groups be created as well. This follows what is happening on the rest of the net.

Nearly all of the radio newsgroups have corresponding mailing lists, the notable exception being rec.radio.swap. There are also a few mailing lists that don't have newsgroups.

The Current Groups
==================

It's important to post messages to the group that's appropriate for them, and not to the groups that aren't. The whole idea of having different

newsgroups is so that folks who aren't interested in, say, homebrewing, don't have to wade through messages about homebrewing on the way to read about Field Day. Posting appropriately is just good etiquette.

The rec.radio.amateur.misc group is the catchall. It is what rec.ham-radio was renamed to during the first major reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, was removed on September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there. To answer a frequently asked question: No, there is no mailing list that goes along with this group. If you can't read Usenet news directly, you're out of luck.

The group rec.radio.amateur.policy was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate - it's now legal to order a pizza on the autopatch, if you're not in the pizza business - as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The group rec.radio.cb is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently David Dodell, WB7TPY. The email address for submissions to the group is rec-radio-info@stat.com. Inquires and other administrivia should be directed to rec-radio-info-request@stat.com. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

Mailing Lists

In addition to the mailing lists that mirror the Usenet newsgroups, there also are a few that stand alone. These cover specific areas of ham radio, and discussion is focused on just those areas.

The cq-contest mailing list is for discussions of contesting in ham radio. To join, send email with the word "subscribe" on a line by itself to cq-contest-request@tgv.com.

The DX mailing list covers the finer points of DXing. This one is also joined by mailing "subscribe" on a line by itself, this time to

dx-request@unbc.edu.

There's also a VHF mailing list, for VHF operators of the weak signal persuasion. You can join this one be sending "subscribe vhf" on a line by itself to vhf-request@w6yx.stanford.edu.

All of the following mailing lists are sponsored to the Boston Amateur Radio Club, as well as some others of local interest. Thanks to N1IST for the information.

qrp-l: This is the qrp mailing list, previously maintained by Bruce Walker at Think.com. It is for discussions about the design, construction, and use of qrp (low power) radios and related equipment.
arrl-ve-list: This is a one-way list, run by Bart Jahnke of the ARRL VEC, for announcements to VEs and VE teams.
w1aw-list: ARRL bulletins, news, and information
newsline-list: Redistribution of Amateur Radio Newsline
letter-list: Redistribution of the ARRL Letter
fox-list: Fox hunting and Radio Direction Finding
fieldorg-l: ARRL field organization discussions
ham-tech: Technical discussions and questions about Amateur Radio
arrl-exam-list: amateur radio license examinations scheduled in the US and in some foreign areas.

To sign up or inquire about these lists, send mail to listserv@netcom.com with the following in the body (subject is ignored) of the message.
<listname> is the name of the list to subscribe to.
To subscribe: subscribe <listname>
To unsubscribe: unsubscribe <listname>
For more information: help
To post (to the two-way lists), send your message to <listname>@netcom.com

Please do NOT send subscription requests to the mailing lists themselves; that doesn't work very often, and is very annoying to those on the list. Also, please keep your electronic mail address current with any mailing lists you subscribe to, as dealing with returned email is a nuisance for the person maintaining the mailing list.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while

still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
"All is strange and vague." "Are we dead?" "Or is this Ohio?"
-- Yakko and Dot Warner

1051. [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-15 00:00:00 UTC
From: lsn92@ecs.soton.ac.uk
Message-ID: <3p62qa$sdk@turner.ecs.soton.ac.uk>
Source record: 25053
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

I observed somewhat peculiar Doppler Shift of the carrier from KO-25, whose centre frequency I knew to be 435.600 MHz.

I used a YAESU FT-736R and a computer, both connected via serial port, as an Automaitc Carrier Frequency Measuring Tool. The FT-736R returns an FM Discriminator Meter value which is proportional to the Tuner Frequency and Incoming Carrier Frequency. The computer then correct the Tuner Frequency according to the FM Disc Meter value. The accuracy is about 300 Hz.

I used both Quick Track 4.0 and Manfred Bester's Sattrack 3.0 to predict the Doppler Shift of KO-25. They agreed well within 1 kHz.

I attach my one of my latest log file with this post below. To my amazement, the Measured Doppler Shift and the Predicted values deviated with a certain pattern. The deviation (Prediction-Measurement) increased steadily and peaked at 9 kHz !! Then it decreased steadily.

I have not much problem with KO-23 and UO-22, transmitting FM at 435.175 MHz and 435.120 MHz respectively. The prediction-measurement deviation is more or less constant below 1 kHz.

I have tried different TLE sets for prediction. They gave similar results.

What could be the reason? Are the carrier frequencies I quoted correct? Has anyone made a similar observation?

Please reply to my email account.

Thanks for your attention and advice.

Yours,
L S Ng

(To feed the log file to a spreadsheet program, remove the colon (:) in the time field.)

```
Time Measured Predicted FM DISC (centre=59)
| Squelch (0=off=no signal
| | -128=on=signal OK)
| | Doppler Shift
| | | Elevation
v v v v Azimuth
2 Sun May 14 22:00:37 1995 436509550 436509549 0 0 9549 181 358
3 Sun May 14 22:00:38 1995 436509550 436509549 60 0 9549 181 358
4 Sun May 14 22:00:39 1995 436509550 436509548 60 0 9548 181 358
```

```
5 Sun May 14 22:00:40 1995 436509550 436509547 60 0 9547 181 358
6 Sun May 14 22:00:41 1995 436509550 436509547 60 0 9547 181 358
7 Sun May 14 22:00:42 1995 436509547 436509546 59 0 9546 181 358
8 Sun May 14 22:00:43 1995 436509547 436509546 59 0 9546 181 358
9 Sun May 14 22:00:44 1995 436509547 436509545 59 0 9545 180 358
10 Sun May 14 22:00:45 1995 436509547 436509544 59 0 9544 180 358
11 Sun May 14 22:00:46 1995 436509545 436509544 60 0 9544 180 358
12 Sun May 14 22:00:47 1995 436509545 436509543 60 0 9543 180 358
13 Sun May 14 22:00:48 1995 436509545 436509543 60 0 9543 180 358
14 Sun May 14 22:00:49 1995 436509543 436509542 60 0 9542 180 358
15 Sun May 14 22:00:50 1995 436509543 436509541 60 0 9541 180 358
16 Sun May 14 22:00:51 1995 436509543 436509540 60 0 9540 180 358
17 Sun May 14 22:00:52 1995 436509543 436509540 60 0 9540 180 358
18 Sun May 14 22:00:53 1995 436509540 436509539 59 0 9539 180 358
19 Sun May 14 22:00:54 1995 436509540 436509538 59 0 9538 180 359
20 Sun May 14 22:00:55 1995 436509540 436509537 59 0 9537 180 359
21 Sun May 14 22:00:56 1995 436509540 436509537 59 0 9537 180 359
22 Sun May 14 22:00:57 1995 436509537 436509536 59 0 9536 179 359
23 Sun May 14 22:00:58 1995 436509537 436509535 59 0 9535 179 359
24 Sun May 14 22:00:59 1995 436509537 436509534 59 0 9534 179 359
25 Sun May 14 22:01:00 1995 436509537 436509533 59 0 9533 179 359
26 Sun May 14 22:01:01 1995 436509534 436509533 58 0 9533 179 359
27 Sun May 14 22:01:02 1995 436509534 436509532 58 0 9532 179 359
28 Sun May 14 22:01:03 1995 436509534 436509531 58 0 9531 179 359
29 Sun May 14 22:01:04 1995 436509534 436509530 58 0 9530 179 359
30 Sun May 14 22:01:05 1995 436509531 436509529 59 0 9529 179 359
31 Sun May 14 22:01:14 1995 436509531 436509520 59 0 9520 178 359
32 Sun May 14 22:01:29 1995 436509521 436509502 61 0 9502 178 0
33 Sun May 14 22:01:30 1995 436509710 436509501 59 0 9501 177 0
34 Sun May 14 22:01:46 1995 436509707 436509476 60 0 9476 176 0
35 Sun May 14 22:02:00 1995 436510307 436509451 58 -128 9451 176 1
36 Sun May 14 22:02:01 1995 436510107 436509449 59 -128 9449 175 1
37 Sun May 14 22:02:16 1995 436510107 436509416 59 -128 9416 174 1
38 Sun May 14 22:02:27 1995 436510107 436509388 60 -128 9388 174 2
39 Sun May 14 22:02:30 1995 436509907 436509379 59 -128 9379 173 2
40 Sun May 14 22:02:43 1995 436509707 436509341 60 -128 9341 172 2
41 Sun May 14 22:02:50 1995 436509486 436509317 59 0 9317 172 3
42 Sun May 14 22:02:56 1995 436509486 436509296 58 -128 9296 171 3
43 Sun May 14 22:03:09 1995 436509686 436509245 58 -128 9245 170 3
44 Sun May 14 22:03:12 1995 436509486 436509232 58 -128 9232 170 4
45 Sun May 14 22:03:21 1995 436509286 436509192 60 -128 9192 169 4
46 Sun May 14 22:03:31 1995 436509286 436509142 59 -128 9142 169 5
47 Sun May 14 22:03:32 1995 436508871 436509137 60 -128 9137 168 5
48 Sun May 14 22:03:43 1995 436508871 436509075 60 -128 9075 167 5
49 Sun May 14 22:03:48 1995 436508671 436509045 60 -128 9045 167 6
50 Sun May 14 22:03:54 1995 436508671 436509006 60 -128 9006 166 6
51 Sun May 14 22:04:03 1995 436508252 436508944 60 0 8944 166 7
52 Sun May 14 22:04:04 1995 436508211 436508937 60 0 8937 165 7
53 Sun May 14 22:04:14 1995 436508211 436508860 60 0 8860 164 7
54 Sun May 14 22:04:17 1995 436507780 436508836 60 -128 8836 164 8
```

55 Sun May 14 22:04:23 1995 436507780 436508784 59 -128 8784 163 8
56 Sun May 14 22:04:30 1995 436507780 436508720 59 -128 8720 163 9
57 Sun May 14 22:04:32 1995 436507380 436508701 59 -128 8701 162 9
58 Sun May 14 22:04:41 1995 436507380 436508609 59 -128 8609 161 9
59 Sun May 14 22:04:42 1995 436507149 436508599 60 0 8599 161 10
60 Sun May 14 22:04:49 1995 436506949 436508521 60 -128 8521 160 10
61 Sun May 14 22:04:53 1995 436506349 436508473 60 -128 8473 160 11
62 Sun May 14 22:04:58 1995 436506149 436508411 60 -128 8411 159 11
63 Sun May 14 22:05:03 1995 436505949 436508346 59 -128 8346 159 12
64 Sun May 14 22:05:05 1995 436505549 436508319 61 -128 8319 158 12
65 Sun May 14 22:05:12 1995 436505349 436508220 60 -128 8220 158 13
66 Sun May 14 22:05:13 1995 436504949 436508205 60 -128 8205 157 13
67 Sun May 14 22:05:20 1995 436504949 436508097 60 -128 8097 156 14
68 Sun May 14 22:05:27 1995 436504149 436507980 60 -128 7980 155 14
69 Sun May 14 22:05:28 1995 436503749 436507962 60 -128 7962 155 15
70 Sun May 14 22:05:34 1995 436503749 436507854 60 -128 7854 154 15
71 Sun May 14 22:05:36 1995 436503495 436507816 61 0 7816 154 16
72 Sun May 14 22:05:41 1995 436502895 436507718 62 -128 7718 153 16
73 Sun May 14 22:05:43 1995 436502817 436507678 61 0 7678 153 17
74 Sun May 14 22:05:47 1995 436502617 436507593 60 -128 7593 152 17
75 Sun May 14 22:05:49 1995 436502555 436507550 60 0 7550 152 18
76 Sun May 14 22:05:54 1995 436502492 436507437 61 0 7437 151 18
77 Sun May 14 22:05:55 1995 436502426 436507414 60 0 7414 151 19
78 Sun May 14 22:06:00 1995 436502336 436507293 59 0 7293 150 19
79 Sun May 14 22:06:01 1995 436502264 436507269 60 0 7269 150 20
80 Sun May 14 22:06:06 1995 436502192 436507140 61 0 7140 149 20
81 Sun May 14 22:06:07 1995 436502116 436507114 60 0 7114 149 21
82 Sun May 14 22:06:12 1995 436502039 436506976 61 0 6976 148 22
83 Sun May 14 22:06:17 1995 436501930 436506832 61 0 6832 147 23
84 Sun May 14 22:06:21 1995 436501759 436506710 64 0 6710 147 24
85 Sun May 14 22:06:23 1995 436501670 436506648 62 0 6648 146 24
86 Sun May 14 22:06:26 1995 436501578 436506551 61 0 6551 146 25
87 Sun May 14 22:06:28 1995 436500378 436506485 65 -128 6485 145 25
88 Sun May 14 22:06:30 1995 436500378 436506417 65 -128 6417 145 26
89 Sun May 14 22:06:34 1995 436499178 436506278 65 -128 6278 144 27
90 Sun May 14 22:06:38 1995 436498578 436506133 62 -128 6133 144 28
91 Sun May 14 22:06:39 1995 436497978 436506095 62 -128 6095 143 28
92 Sun May 14 22:06:41 1995 436497578 436506020 61 -128 6020 143 29
93 Sun May 14 22:06:44 1995 436497578 436505903 61 -128 5903 142 29
94 Sun May 14 22:06:45 1995 436497178 436505864 61 -128 5864 142 30
95 Sun May 14 22:06:48 1995 436497178 436505742 61 -128 5742 142 31
96 Sun May 14 22:06:49 1995 436497178 436505701 59 -128 5701 141 31
97 Sun May 14 22:06:52 1995 436496778 436505575 61 -128 5575 141 32
98 Sun May 14 22:06:55 1995 436496378 436505445 61 -128 5445 140 33
99 Sun May 14 22:06:58 1995 436496378 436505311 61 -128 5311 140 34
100 Sun May 14 22:07:00 1995 436496378 436505220 59 -128 5220 139 34
101 Sun May 14 22:07:01 1995 436496178 436505174 60 -128 5174 139 35
102 Sun May 14 22:07:04 1995 436496178 436505032 60 -128 5032 139 36
103 Sun May 14 22:07:05 1995 436495978 436504984 60 -128 4984 138 36
104 Sun May 14 22:07:06 1995 436495978 436504936 60 -128 4936 138 37

105 Sun May 14 22:07:09 1995 436495778 436504788 60 -128 4788 138 38
106 Sun May 14 22:07:10 1995 436495378 436504738 61 -128 4738 137 38
107 Sun May 14 22:07:11 1995 436495378 436504687 61 -128 4687 137 39
108 Sun May 14 22:07:14 1995 436495378 436504532 61 -128 4532 137 40
109 Sun May 14 22:07:15 1995 436495178 436504480 60 -128 4480 136 40
110 Sun May 14 22:07:16 1995 436495178 436504427 60 -128 4427 136 41
111 Sun May 14 22:07:19 1995 436494778 436504266 61 -128 4266 136 42
112 Sun May 14 22:07:21 1995 436494978 436504156 58 -128 4156 135 43
113 Sun May 14 22:07:23 1995 436494978 436504045 58 -128 4045 135 44
114 Sun May 14 22:07:25 1995 436494778 436503931 60 -128 3931 135 45
115 Sun May 14 22:07:26 1995 436494778 436503874 60 -128 3874 134 45
116 Sun May 14 22:07:28 1995 436494578 436503759 60 -128 3759 134 46
117 Sun May 14 22:07:30 1995 436494578 436503641 60 -128 3641 134 47
118 Sun May 14 22:07:32 1995 436494378 436503522 60 -128 3522 133 48
119 Sun May 14 22:07:34 1995 436494378 436503401 60 -128 3401 133 49
120 Sun May 14 22:07:36 1995 436493978 436503279 61 -128 3279 133 50
121 Sun May 14 22:07:38 1995 436493978 436503155 59 -128 3155 132 51
122 Sun May 14 22:07:39 1995 436493978 436503092 59 -128 3092 132 52
123 Sun May 14 22:07:41 1995 436493793 436502966 60 0 2966 132 53
124 Sun May 14 22:07:43 1995 436493793 436502838 60 0 2838 132 54
125 Sun May 14 22:07:45 1995 436493793 436502709 31 -128 2709 131 55
126 Sun May 14 22:07:47 1995 436493793 436502579 31 -128 2579 131 56
127 Sun May 14 22:07:48 1995 436493600 436502513 59 0 2513 131 57
128 Sun May 14 22:07:50 1995 436493600 436502380 59 0 2380 131 58
129 Sun May 14 22:07:52 1995 436493800 436502246 58 -128 2246 130 59
130 Sun May 14 22:07:53 1995 436493800 436502179 58 -128 2179 130 60
131 Sun May 14 22:07:55 1995 436493800 436502043 59 -128 2043 130 61
132 Sun May 14 22:07:57 1995 436493800 436501906 59 -128 1906 130 62
133 Sun May 14 22:07:58 1995 436493600 436501837 60 -128 1837 130 63
134 Sun May 14 22:08:00 1995 436493600 436501699 60 -128 1699 130 64
135 Sun May 14 22:08:01 1995 436493600 436501629 59 -128 1629 129 65
136 Sun May 14 22:08:03 1995 436493600 436501490 59 -128 1490 129 66
137 Sun May 14 22:08:04 1995 436493200 436501419 61 -128 1419 129 67
138 Sun May 14 22:08:06 1995 436493200 436501278 61 -128 1278 129 68
139 Sun May 14 22:08:07 1995 436493200 436501207 61 -128 1207 129 69
140 Sun May 14 22:08:09 1995 436493200 436501065 59 -128 1065 129 70
141 Sun May 14 22:08:10 1995 436493200 436500994 59 -128 994 129 71
142 Sun May 14 22:08:12 1995 436493200 436500851 59 -128 851 129 72
143 Sun May 14 22:08:13 1995 436493200 436500779 59 -128 779 129 73
144 Sun May 14 22:08:15 1995 436493200 436500635 59 -128 635 129 74
145 Sun May 14 22:08:16 1995 436493000 436500563 60 -128 563 129 75
146 Sun May 14 22:08:17 1995 436493000 436500491 60 -128 491 128 75
147 Sun May 14 22:08:18 1995 436492784 436500419 -81 0 419 128 76
148 Sun May 14 22:08:19 1995 436492784 436500347 -81 0 347 128 77
149 Sun May 14 22:08:21 1995 436492784 436500202 -81 0 202 128 78
150 Sun May 14 22:08:22 1995 436492584 436500130 60 -128 130 128 79
151 Sun May 14 22:08:23 1995 436492584 436500057 60 -128 57 128 80
152 Sun May 14 22:08:25 1995 436492584 436499914 60 -128 -86 128 81
153 Sun May 14 22:08:26 1995 436492784 436499841 58 -128 -159 128 82
154 Sun May 14 22:08:28 1995 436492784 436499697 58 -128 -303 128 83

155 Sun May 14 22:08:29 1995 436492584 436499624 60 -128 -376 128 84
156 Sun May 14 22:08:31 1995 436492584 436499480 60 -128 -520 129 85
157 Sun May 14 22:08:32 1995 436492584 436499408 59 -128 -592 129 86
158 Sun May 14 22:08:34 1995 436492584 436499264 59 -128 -736 129 87
159 Sun May 14 22:08:35 1995 436492584 436499192 59 -128 -808 129 88
160 Sun May 14 22:08:36 1995 436492296 436499121 59 0 -879 129 89
161 Sun May 14 22:08:38 1995 436492296 436498978 59 0 -1022 129 90
162 Sun May 14 22:08:39 1995 436492081 436498907 60 0 -1093 129 91
163 Sun May 14 22:08:41 1995 436492081 436498765 60 0 -1235 129 92
164 Sun May 14 22:08:42 1995 436492081 436498694 60 0 -1306 129 93
165 Sun May 14 22:08:44 1995 436492281 436498553 58 -128 -1447 129 94
166 Sun May 14 22:08:45 1995 436492281 436498483 58 -128 -1517 129 95
167 Sun May 14 22:08:47 1995 436492281 436498343 59 -128 -1657 130 96
168 Sun May 14 22:08:49 1995 436492281 436498205 59 -128 -1795 130 97
169 Sun May 14 22:08:50 1995 436492281 436498136 59 -128 -1864 130 98
170 Sun May 14 22:08:52 1995 436492281 436497999 59 -128 -2001 130 99
171 Sun May 14 22:08:53 1995 436492281 436497931 59 -128 -2069 130 100
172 Sun May 14 22:08:55 1995 436492281 436497795 59 -128 -2205 130 101
173 Sun May 14 22:08:56 1995 436492281 436497728 59 -128 -2272 131 101
174 Sun May 14 22:08:57 1995 436492281 436497661 59 -128 -2339 131 102
175 Sun May 14 22:08:58 1995 436492281 436497595 59 -128 -2405 131 103
176 Sun May 14 22:09:00 1995 436492281 436497463 59 -128 -2537 131 104
177 Sun May 14 22:09:02 1995 436492281 436497332 59 -128 -2668 131 105
178 Sun May 14 22:09:03 1995 436492281 436497267 59 -128 -2733 131 106
179 Sun May 14 22:09:04 1995 436492081 436497202 60 -128 -2798 132 106
180 Sun May 14 22:09:05 1995 436492081 436497138 60 -128 -2862 132 107
181 Sun May 14 22:09:07 1995 436492081 436497011 60 -128 -2989 132 108
182 Sun May 14 22:09:09 1995 436492081 436496885 59 -128 -3115 132 109
183 Sun May 14 22:09:10 1995 436492081 436496823 59 -128 -3177 133 109
184 Sun May 14 22:09:11 1995 436491881 436496761 60 -128 -3239 133 110
185 Sun May 14 22:09:13 1995 436491881 436496638 60 -128 -3362 133 111
186 Sun May 14 22:09:14 1995 436491881 436496577 59 -128 -3423 133 112
187 Sun May 14 22:09:16 1995 436491881 436496457 59 -128 -3543 133 113
188 Sun May 14 22:09:17 1995 436491881 436496398 59 -128 -3602 134 113
189 Sun May 14 22:09:19 1995 436492081 436496280 58 -128 -3720 134 114
190 Sun May 14 22:09:21 1995 436492081 436496164 58 -128 -3836 134 115
191 Sun May 14 22:09:22 1995 436492081 436496107 59 -128 -3893 135 115
192 Sun May 14 22:09:23 1995 436492081 436496050 59 -128 -3950 135 116
193 Sun May 14 22:09:25 1995 436492081 436495937 59 -128 -4063 135 117
194 Sun May 14 22:09:27 1995 436492081 436495826 59 -128 -4174 135 118
195 Sun May 14 22:09:28 1995 436492081 436495772 59 -128 -4228 136 118
196 Sun May 14 22:09:29 1995 436492081 436495717 59 -128 -4283 136 119
197 Sun May 14 22:09:32 1995 436492081 436495557 59 -128 -4443 136 120
198 Sun May 14 22:09:33 1995 436491881 436495504 60 -128 -4496 137 120
199 Sun May 14 22:09:34 1995 436491881 436495452 60 -128 -4548 137 121
200 Sun May 14 22:09:37 1995 436491681 436495299 60 -128 -4701 137 122
201 Sun May 14 22:09:38 1995 436491681 436495248 60 -128 -4752 138 122
202 Sun May 14 22:09:39 1995 436491681 436495198 59 -128 -4802 138 123
203 Sun May 14 22:09:42 1995 436491681 436495051 59 -128 -4949 138 124
204 Sun May 14 22:09:44 1995 436491881 436494955 58 -128 -5045 139 124

205 Sun May 14 22:09:45 1995 436491881 436494908 58 -128 -5092 139 125
206 Sun May 14 22:09:47 1995 436491687 436494815 60 0 -5185 139 126
207 Sun May 14 22:09:49 1995 436491687 436494723 60 0 -5277 140 126
208 Sun May 14 22:09:50 1995 436491547 436494678 59 0 -5322 140 127
209 Sun May 14 22:09:53 1995 436491547 436494545 59 0 -5455 140 128
210 Sun May 14 22:09:54 1995 436491410 436494502 60 0 -5498 141 128
211 Sun May 14 22:09:56 1995 436491410 436494416 60 0 -5584 141 129
212 Sun May 14 22:09:59 1995 436491234 436494291 59 0 -5709 142 129
213 Sun May 14 22:10:00 1995 436491434 436494250 58 -128 -5750 142 130
214 Sun May 14 22:10:03 1995 436491434 436494130 58 -128 -5870 142 131
215 Sun May 14 22:10:04 1995 436491434 436494091 59 -128 -5909 143 131
216 Sun May 14 22:10:06 1995 436491434 436494013 59 -128 -5987 143 132
217 Sun May 14 22:10:10 1995 436491634 436493863 58 -128 -6137 144 133
218 Sun May 14 22:10:14 1995 436491434 436493719 60 -128 -6281 144 134
219 Sun May 14 22:10:15 1995 436491434 436493684 59 -128 -6316 145 134
220 Sun May 14 22:10:18 1995 436491434 436493581 59 -128 -6419 145 135
221 Sun May 14 22:10:20 1995 436491434 436493514 59 -128 -6486 146 135
222 Sun May 14 22:10:22 1995 436491434 436493448 59 -128 -6552 146 136
223 Sun May 14 22:10:26 1995 436491434 436493321 59 -128 -6679 147 136
224 Sun May 14 22:10:27 1995 436491434 436493290 59 -128 -6710 147 137
225 Sun May 14 22:10:31 1995 436491434 436493170 59 -128 -6830 148 138
226 Sun May 14 22:10:36 1995 436491434 436493026 59 -128 -6974 148 139
227 Sun May 14 22:10:37 1995 436491634 436492999 58 -128 -7001 149 139
228 Sun May 14 22:10:41 1995 436491634 436492890 59 -128 -7110 149 140
229 Sun May 14 22:10:43 1995 436491434 436492838 60 -128 -7162 150 140
230 Sun May 14 22:10:46 1995 436491234 436492762 60 -128 -7238 150 141
231 Sun May 14 22:10:49 1995 436491234 436492688 60 -128 -7312 151 141
232 Sun May 14 22:10:52 1995 436491434 436492616 58 -128 -7384 151 142
233 Sun May 14 22:10:55 1995 436491634 436492547 58 -128 -7453 152 142
234 Sun May 14 22:10:58 1995 436491634 436492480 59 -128 -7520 152 143
235 Sun May 14 22:11:01 1995 436491634 436492415 59 -128 -7585 153 143
236 Sun May 14 22:11:05 1995 436491434 436492332 60 -128 -7668 153 144
237 Sun May 14 22:11:08 1995 436491634 436492272 58 -128 -7728 154 144
238 Sun May 14 22:11:11 1995 436491634 436492214 59 -128 -7786 154 145
239 Sun May 14 22:11:14 1995 436491434 436492158 60 -128 -7842 155 145
240 Sun May 14 22:11:19 1995 436491434 436492068 59 -128 -7932 155 146
241 Sun May 14 22:11:21 1995 436491434 436492033 58 -128 -7967 156 146
242 Sun May 14 22:11:26 1995 436491434 436491950 58 -128 -8050 156 147
243 Sun May 14 22:11:28 1995 436491434 436491918 59 -128 -8082 157 147
244 Sun May 14 22:11:35 1995 436491434 436491811 59 -128 -8189 157 148
245 Sun May 14 22:11:36 1995 436491434 436491797 59 -128 -8203 158 148
246 Sun May 14 22:11:43 1995 436491434 436491698 59 -128 -8302 159 148
247 Sun May 14 22:11:44 1995 436491434 436491685 59 -128 -8315 159 149
248 Sun May 14 22:11:51 1995 436491434 436491595 59 -128 -8405 160 149
249 Sun May 14 22:11:54 1995 436491434 436491558 59 -128 -8442 160 150
250 Sun May 14 22:11:59 1995 436491434 436491500 59 -128 -8500 161 150
251 Sun May 14 22:12:04 1995 436491434 436491444 59 -128 -8556 161 151
252 Sun May 14 22:12:08 1995 436491434 436491402 59 -128 -8598 162 151
253 Sun May 14 22:12:15 1995 436491234 436491332 60 -128 -8668 162 152
254 Sun May 14 22:12:16 1995 436491234 436491322 59 -128 -8678 163 152

255 Sun May 14 22:12:25 1995 436491234 436491241 59 -128 -8759 164 152
256 Sun May 14 22:12:28 1995 436491234 436491215 59 -128 -8785 164 153
257 Sun May 14 22:12:35 1995 436491234 436491158 59 -128 -8842 165 153
258 Sun May 14 22:12:41 1995 436491234 436491112 59 -128 -8888 165 154
259 Sun May 14 22:12:45 1995 436491234 436491084 59 -128 -8916 166 154
260 Sun May 14 22:12:55 1995 436491034 436491016 60 -128 -8984 167 154
261 Sun May 14 22:12:56 1995 436491234 436491010 60 -128 -8990 167 155
262 Sun May 14 22:13:06 1995 436491234 436490950 60 -128 -9050 168 155
263 Sun May 14 22:13:13 1995 436491434 436490911 58 -128 -9089 168 156
264 Sun May 14 22:13:17 1995 436491434 436490891 59 -128 -9109 169 156
265 Sun May 14 22:13:28 1995 436491218 436490838 60 -128 -9162 170 156
266 Sun May 14 22:13:31 1995 436491174 436490824 57 0 -9176 170 157
267 Sun May 14 22:13:40 1995 436491160 436490786 56 0 -9214 171 157
268 Sun May 14 22:13:51 1995 436491120 436490745 59 0 -9255 171 158
269 Sun May 14 22:13:53 1995 436491074 436490738 60 0 -9262 172 158
270 Sun May 14 22:14:06 1995 436491063 436490695 59 0 -9305 173 158
271 Sun May 14 22:14:13 1995 436491020 436490675 59 0 -9325 173 159
272 Sun May 14 22:14:19 1995 436491002 436490658 60 0 -9342 174 159
273 Sun May 14 22:14:33 1995 436490985 436490624 59 0 -9376 175 159
274 Sun May 14 22:14:38 1995 436490948 436490613 60 0 -9387 175 160
275 Sun May 14 22:14:48 1995 436490941 436490593 59 0 -9407 176 160
276 Sun May 14 22:15:03 1995 436490917 436490568 59 0 -9432 177 160
277 Sun May 14 22:15:05 1995 436490895 436490565 60 0 -9435 177 161
278 Sun May 14 22:15:19 1995 436490890 436490546 61 0 -9454 178 161
279 Sun May 14 22:15:36 1995 436490869 436490527 61 0 -9473 179 161
280 Sun May 14 22:15:37 1995 436490852 436490526 60 0 -9474 179 162
281 Sun May 14 22:15:44 1995 436490849 436490520 60 0 -9480 179 162
282 Sun May 14 22:15:45 1995 436490843 436490519 60 0 -9481 179 162
283 Sun May 14 22:15:46 1995 436490843 436490519 60 0 -9481 179 162
284 Sun May 14 22:15:47 1995 436490841 436490518 59 0 -9482 179 162
285 Sun May 14 22:15:48 1995 436490841 436490517 59 0 -9483 179 162
286 Sun May 14 22:15:49 1995 436490841 436490516 59 0 -9484 179 162
287 Sun May 14 22:15:50 1995 436490841 436490516 59 0 -9484 179 162
288 Sun May 14 22:15:51 1995 436490838 436490515 60 0 -9485 179 162
289 Sun May 14 22:15:52 1995 436490838 436490514 60 0 -9486 179 162
290 Sun May 14 22:15:53 1995 436490838 436490514 60 0 -9486 180 162
291 Sun May 14 22:15:54 1995 436490836 436490513 61 0 -9487 180 162
292 Sun May 14 22:15:55 1995 436490836 436490512 61 0 -9488 180 162
293 Sun May 14 22:15:56 1995 436490836 436490512 61 0 -9488 180 162
294 Sun May 14 22:15:57 1995 436490836 436490511 61 0 -9489 180 162
295 Sun May 14 22:15:58 1995 436490834 436490510 60 0 -9490 180 162
296 Sun May 14 22:15:59 1995 436490834 436490510 60 0 -9490 180 162
297 Sun May 14 22:16:00 1995 436490834 436490509 60 0 -9491 180 162
298 Sun May 14 22:16:01 1995 436490834 436490509 60 0 -9491 180 162
299 Sun May 14 22:16:02 1995 436490831 436490508 59 0 -9492 180 162
300 Sun May 14 22:16:03 1995 436490831 436490508 59 0 -9492 180 162
301 Sun May 14 22:16:04 1995 436490831 436490507 59 0 -9493 180 162
302 Sun May 14 22:16:05 1995 436490831 436490507 59 0 -9493 181 162
303 Sun May 14 22:16:06 1995 436490829 436490506 60 0 -9494 181 162
304 Sun May 14 22:16:07 1995 436490829 436490506 60 0 -9494 181 162

```
305 Sun May 14 22:16:08 1995 436490829 436490505 60 0 -9495 181 162
306 Sun May 14 22:16:09 1995 436490829 436490505 60 0 -9495 181 162
307 Sun May 14 22:16:10 1995 436490827 436490504 60 0 -9496 181 162
308 Sun May 14 22:16:11 1995 436490827 436490504 60 0 -9496 181 162
309 Sun May 14 22:16:12 1995 436490827 436490503 60 0 -9497 181 163
310 Sun May 14 22:16:13 1995 436490826 436490503 60 0 -9497 -1 343
```

1052. Help with TrakSat 2.80 on 286-*Mhz

Newsgroup: rec.radio.amateur.space
Date: 1995-05-15 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3p8cp3$7jq@acmex.gatech.edu>
Source record: 25054

Hello!!

I have a couple of questions about TrakSat 2.80. I am running it on a Tandy 1000 TL/2 (yeah, I know.. it was free :-) with a 286 processor at 8Hz. It has a CGA monitor. My questions:

1) When I run it, the default mode is to turn the Land Color ON. This produces nothing but an all-white screen while in ground-track mode. If I turn it OFF, it's ok, but justwhite on black. Is there a reason I can't get the color to work?? The menu screens are in color, I have changed the color in the first line of the settings file, and it hasn't changed the situation.

1A) Can I set the land color switch to default to OFF (No) or do I have to do it manually every time I run it??

2) I have used another program, I think it was called QuikSat or SatTrak. I can't seem to find them on the local BBS's. Has anyone out there done a comparison of all the tracking programs, listing pros and cons of each?? TrakSat isn't that bad, but I would like to have AOS and LOS countdowns.

Thanks for the help!! Reply to mwhaley@iu.net please! :-)

73 de KD4UGI
Mike "I will talk to Mir soon if it kills me" Whaley

****
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
****

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1053. Houston Balloon Launch Successful!

Newsgroup: rec.radio.amateur.space
Date: 1995-05-15 00:00:00 UTC
From: miles@mail.utexas.edu
Message-ID: <miles-1505951650560001@klingon.util.utexas.edu>
Source record: 25055

<Crosposted from APRSSIG list. Please direct replies to the author,
Richard Allen, whose address follows this article.>

<To subscribe to ARPSSIG list, send the command
subscribe aprssig YourFirstName YourLastName
to the e-mail address
listproc@tapr.org>
===

The Clear Lake Amatuer Radio Club NOSTS-2 Balloon Flight - de W5SXD
---

13 May 1995, Sugar Land, Texas

The Clear Lake Amatuer Radio Club (CLARC) launched their second balloon in the Near Outer Space Transportation System (NOSTS) series today from Wharton, Texas, about 50 miles west of Houston.

Project leaders, John Maca, AB5SS, and Dan Feeback, KJ5MX, and others burned the midnight oil for several weeks prior to the launch preparing for a great Saturday of amatuer activity. The CLARC group and many other local hams arrived in Wharton early Saturday morning after the weather was declared acceptable for a launch. Last minute tweaking and adjusting took most of the morning.

The balloon was ready to go shortly after one PM and the FAA gave launch approval for 3:30 PM. While several of the experiments had last minute problems, the GPS packet radio subsystem worked quite well, reporting the package position and allowing hams in the southeast part of Texas to use the digipeater. The GPS downlink was linked into several ground systems including APRS. Many APRS mobile units were employed, relaying through the balloon born system. Several stations used the DeLorme Map Expert package and during the recovery, and the local ATV repeater was showing street maps uplinked by John, WB5CHV, around the area in Pasadena, Texas where the balloon package landed. The local fox hunt folks and the GPS system produced good results in the recovery, locating the package within several hundred feet.

The package reached an estimated altitude of about 100,000 feet. Unfortunately, the GPS data clamped altitude at 60,000 feet, so for a while, the real position was not known. But after the ballon burst, and the altitude came back down below 60,000 feet, the GPS led the recovery team to the package. The parachute and attached package hit a power line and the package fell to the ground. A passing local resident picked up the package, put it into his van, and drove about a half mile to his house. He took the package inside his house but, since the GPS system was still operating, the recovery team located it within

an hour.

The tracking system here at W5SXD worked well, reading the GPS messages from the package, calculating elevation, azimuth, and range to 12 cities in the area and then sending status packets back through the digipeater in the package. A complete log of all this packet activity has been uploaded to various sites as NOSTS2.zip.

The GPS system consisted of a Motorola PVT6 GPS engine driving a Kantronics KPC-3. In a conversation with Tom Clark, W3IWI, it was determined that the particular PVT6 may not have had the correct version software. The version flown had a software government imposed limit of 60,000 feet. Newer software versions are said to have had this limit removed so anyone planning on flying this engine should check their version.

The Houston Balloon Launch Team led by Andy MacAllister, WA5ZIB, who are planning the launch of their tenth package, BLT-10, on 15 July 1995, were present at the launch in force. They enjoyed being spectators and took lots of notes that will be helpful in their flight. They are planning a similar GPS subsystem so the NOSTS-2 flight provided a good test run for tracking and recovery methods. Stay tuned ...

Richard Allen, w5sxd@amsat.org

1054. Awesome ham related WWW site

Newsgroup: rec.radio.amateur.space
Date: 1995-05-15 00:00:00 UTC
From: mouse@ag.net
Message-ID: <3p6kuk$kpt@agis.ag.net>
Source record: 25056

An awesome ham related WWW site that has callbook access is:

http://www.acs.ncsu.edu/HamRadio

Give it a whirl, I think you'll like it It has pictured in June's QST.

Jim N2ETE

1055. NASA Television Retransmissions

Newsgroup: rec.radio.amateur.space
Date: 1995-05-15 00:00:00 UTC
From: dgra@qmgate.eci-esyst.com
Message-ID: <dgra-1505950705370001@166.93.42.67>
Source record: 25057

This is addressed to the individual who posted a list of repeaters that carry the audio and/or video of NASA coverage of shuttle missions. The listing was signed "John Chapman, WB8INY". This list is very out-of-date. You might query the net to compile an updated list. Here is some corrections:

Delete:

Tampa, FL 444.525
St. Petersburg, FL 444.725

Add:

Largo, FL 51.840
Largo, FL 145.230
St. Petersburg, FL 147.285
Clearwater Beach, FL 442.075
St. Petersburg, FL 443.625

Largo, FL 421.250 (audio and video, cable channel 57)

73, Dana, AJ1R

1056. Modulation schemes in use?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-16 00:00:00 UTC
From: edsuom@u.washington.edu
Message-ID: <3pbb2d$1qi@nntp4.u.washington.edu>
Source record: 25058

I am interested in knowing what digital modulation schemes are currently being used, especially on 2M and 440Mhz, in order of expected popularity. If anyone has any references describing these schemes and can give me a feel for what schemes are expected to dominate in the next few years, I'd appreciate it. For example, is quadrature phase shift keying being used, or just FSK?

All my hamming was CW and SSB - I never got into packet, but now I need to know a little more about it.

Tnx,

Ed NM7T

1057. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-16 00:00:00 UTC
From: Tim Bray <Tim@mikebray.demon.co.uk>
Message-ID: <800639181snz@mikebray.demon.co.uk>
Source record: 25059
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

In article <3p62qa$sdk@turner.ecs.soton.ac.uk>
lsn92@ecs.soton.ac.uk "L S Ng" writes:

> 3 Sun May 14 22:00:38 1995 436509550 436509549 60 0 9549 181 358
> 4 Sun May 14 22:00:39 1995 436509550 436509548 60 0 9548 181 358
> 5 Sun May 14 22:00:40 1995 436509550 436509547 60 0 9547 181 358
> 6 Sun May 14 22:00:41 1995 436509550 436509547 60 0 9547 181 358
> 7 Sun May 14 22:00:42 1995 436509547 436509546 59 0 9546 181 358
> 8 Sun May 14 22:00:43 1995 436509547 436509546 59 0 9546 181 358
> 9 Sun May 14 22:00:44 1995 436509547 436509545 59 0 9545 180 358
> 10 Sun May 14 22:00:45 1995 436509547 436509544 59 0 9544 180 358
> 11 Sun May 14 22:00:46 1995 436509545 436509544 60 0 9544 180 358
> 12 Sun May 14 22:00:47 1995 436509545 436509543 60 0 9543 180 358
> 13 Sun May 14 22:00:48 1995 436509545 436509543 60 0 9543 180 358

[Massive snip 370 lines]

Rather than posting all of this perhaps in future your could have said
anyone that wants to look at the log file please email me and I will send it to
you, rather than taking up all this space here

--
Tim Bray
G7UBQ

So far as the laws of mathematics refer to reality, they are not certain.
And so far as they are certain, they do not refer to reality.
Albert Einstein

1058. DOVE: quick description please???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-16 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3pbnp9$qe9@acmex.gatech.edu>
Source record: 25060

hello folks:

Seems that I always used to see info posted here (or somewhere) about a satellite called DOVE. Is this the same as OSCAR 21 (Informator 1??)?

Could someone post it's name, frequencies (2m/440 esp.) and perhaps a brief description of what it is/does? (I seem to remember that it wasn't designed to receive, just transmit bulletins or something.) Thanks for any help!

Please reply to mwhaley@iu.net :-)
73 de KD4UGI

```
*******************************************************************************
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
*******************************************************************************
```

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1059. FT736R Computer Interface & Control

Newsgroup: rec.radio.amateur.space
Date: 1995-05-16 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3pan08$2v6@superb.csc.ti.com>
Source record: 25061

I bought a cable and connector interface with software for $49.95 that
is supposed to provide for controling the FT736 from the serial port of
a computer. The cable and connectors look OK, but the software only lists
a set of programs that the author intended to write someday. There was
software for Kenwood and Icom and some unfinished software for an HF rig
built by Yaesu (FT757 maybe.)

Does anyone know of a complete working program for use with the FT736? All info
to date has led to dead ends.

Ken K5MBV durham@lobby.ti.com

1060. Re: DOVE: quick description please???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-17 00:00:00 UTC
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Message-ID: <3pcr9v$3m8@niven.ksc.nasa.gov>
Source record: 24962

eew4aql@prism.gatech.edu (GT Amateur Radio Club) wrote:
>
> hello folks:
>
> Seems that I always used to see info posted here (or somewhere) about a
> satellite called DOVE. Is this the same as OSCAR 21 (Informator 1??)?
>
> Could someone post it's name, frequencies (2m/440 esp.) and perhaps a brief
> description of what it is/does? (I seem to remember that it wasn't designed
> to receive, just transmit bulletins or something.) Thanks for any help!
>
> Please reply to mwhaley@iu.net :-)
> 73 de KD4UGI
>
>
> **
> * MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
> * P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
> * "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
> **
>
> --
> Georgia Tech Amateur Radio Club
> eew4aql@prism.gatech.edu
> (404) 894-2971
>
Mike:
DOVE stands for Digital Orbiting Voice Encoder... it's orginal
purpose was to transmit voice messages that could be easily received
for educational purposes. Unfortunately the voice experiment has not
worked very well and is still being debugged. DOVE is listed in the
keplerian element sources as DO-17. The satellite itself is a
microsat,in the shape of a cube, measuring I think 9 inches on a side.
DOVE telemetry is broadcast via 1200 baud FSK packet (same as most
common earth bound packet setups). The telemetry may be found on a
frequency of 145.825 Mhz FM. I use a pretty basic packet setup, with
a groundplane antenna about 30 feet high, and have no trouble
copying the telemetry. I have also copyed the signal successfully
on an HT with the rubber duck antenna, but obviously not as well.
You will need a decoder program to turn the telemetry into
understandable data. If you use the decoder program,
the data will include all sorts of interesting information about
power levels, temperatures, voltages and currents in the electronics.
One of the most interesting data points to me is the transmitter

output power, which generally runs in the 20-26 MILLIWATT range.
This is about the output power of a toy walkie talkie!
Hope this information is of some use ...

73 de Roger, KD4ITU

1061. Re: DOVE: quick description please???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-17 00:00:00 UTC
From: jimkd0av@aol.com
Message-ID: <3pcs2u$j5v@newsbf02.news.aol.com>
Source record: 24963

DOVE

DOVE is short for Digital Orbiting Voice Encoder and is a transmit-only hamsat (it has no user accessible receiver). Built in Argentina, DOVE was launched in 1990 as a good will satellite to introduce children and newcomers
to amateur satellites. It was originally intened to transmit digitized voice
messages that could be picked up by students with simple receivers. Unfortunately, the digital voice hardware and software has been a constant source of problems since launch. Atempts to get DOVE to works properly are
proceeding as this is written, so the best bet is to tune your 2-meter rig or
scanner to 145.825 MHz and see what the bird is up to currently. Be ready for Morse, standard 1200 baud packet or (with luck) digitized voice messages.
The signals are strong enough so that an HT with a rubber duck will hear it
when it's overhead, although ground plane antennas will give better coverage
when the bird is near the horizon.

Jim KD0AV

1062. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-17 00:00:00 UTC
From: John Morris <John@kirsta.demon.co.uk>
Message-ID: <800741255snz@kirsta.demon.co.uk>
Source record: 24964
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

In article <3p62qa$sdk@turner.ecs.soton.ac.uk>
lsn92@ecs.soton.ac.uk "L S Ng" writes:

> I observed somewhat peculiar Doppler Shift of the carrier from KO-25,
> whose centre frequency I knew to be 435.600 MHz.

[info and long log mercifully trimmed]

At a guess, your computer clock was a couple of minutes or so fast.
If you time shift the observed doppler shift by 116 seconds it fits
the predicted one quite well.

> Please reply to my email account.

No. If you can't be bothered to read the group, don't ask questions
on it. Nettiquette-101.

> Time Measured Predicted FM DISC (centre=59)
> | Squelch (0=off=no signal
> | | -128=on=signal OK)
> | | Doppler Shift
> | | | Elevation
> v v v v Azimuth
> 2 Sun May 14 22:00:37 1995 436509550 436509549 0 0 9549 181 358
^^^
But there's definitely something screwy about your figures: What on
earth (or off it) does "elevation 181" mean?

(oh ok - I relented and copied this to him by e-mail - but including
the full log :-).

--
John Morris It won't take you two minutes to take a break
John@kirsta.demon.co.uk for five minutes! - Phyllis Morris
GM4ANB@GB7EDN.#77.GBR.EU

1063. AO-13 pointing angle

Newsgroup: rec.radio.amateur.space
Date: 1995-05-17 00:00:00 UTC
From: kinzer@dtsdev0.sps.mot.com
Message-ID: <3pd7qo$1lt3@newsgate.sps.mot.com>
Source record: 24965

I managed to get SatTrack going here, and it has a provision to calculate the antenna off-pointing (aka squint) angle. I need to find the spacecraft attitude information. Can anyone help me here?

Also, I would like to get the current mode data. I already have the next schedule (May 22 on,) but I would like to figure out why my signal level (or the beacon for that matter) is so variable at this time (other than the fact that I haven't built a reasonable downlink antenna yet. ;^)) Anyone with a pointer to where I can find the current data?

Thanks!

-dave

1064. Re: RFD: rec.radio.amateur.low-profile

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: dhartung@mcs.com
Message-ID: <3pg5rm$ouc_001@pr.mcs.net>
Source record: 24966
Cross-posted to: news.groups,rec.radio.amateur.antenna,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.space,rec.radio.amateur.policy

dmoorman@interaccess.com (Dave Moorman) wrote:
>In article <D83B43.Mt5@news.hawaii.edu>, jeffrey@math.hawaii.edu wrote:
>> With well over 7000 newsgroups some sites may have reached the saturation
>> point and choose not to subscribe to the new rec.radio.amateur.low-profile.
>
>Of those 7,000 newsgroups, how many are totally bogus and mostly or
>totally unused, such as:
>
>alt.brian.saunders.pot.kettle.black
>the whole alt.bonehead heirarchy
>alt.bubba-love.el-caminoville
>alt.bruce.it.was.just.an.accident
>alt.butt-keg.marmalade
>alt.cancel.bots
>alt.check.her.miss-jesus
>alt.choad
>
>etc., etc. This list could go on and on. I'm really curious as to how
>these newsgroups got started. They certainly don't serve a purpose
>because nobody ever uses most of them and their names are totally wierd.

You have to understand the difference between the Usenet Big 8 and
other hierarchies, specifically alt.

Here we have votes to determine before group creation if there's
enough interest, and an individual (tale) to send newgroup messages
that will be honored automatically.

In alt, there are no votes, anyone can send a newgroup message, and
any site can choose to honor it or not.

Nobody's BOUND by Tale, here, but I guarantee you a new rec group
will get at least 50% propagation, especially if it's part of an
existing subgroup such as rec.radio.amateur. A new alt group will
be extremely lucky to get 35-40% propagation.

And the more silly alt groups that get created, the more this
divergence occurs.

The flip side is that the big commercial sites (e.g. AOL, Prodigy,
Netcom <g>) newgroup practically everything that comes down the pike,
so that a large percentage of Usenet readers do have access despite
low propagation.

--
* Daniel A. Hartung * dhartung@mcs.com * http://www.mcs.net/~dhartung/ *
Mage: I see a great hand reaching out of the stars. The hand is yours, and
I hear the sounds of billions of people calling your name.
Londo: My followers?
Mage: Your victims.

A reminder that things we start, do not always end with us.

1065. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: gordy@gbscomms.win-uk.net
Message-ID: <570@gbscomms.win-uk.net>
Source record: 24967
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

```
>> Please reply to my email account.
>
>No. If you can't be bothered to read the group, don't ask questions
>on it. Nettiquette-101.
<snip>
>(oh ok - I relented and copied this to him by e-mail - but including
>the full log :-).

some (most?) .ac adresses do not allow rx of newsgroups, so users must post by email
and ask for email replies. Hence the seemingly snub-nosed requests for email
replies :-)

Gordy

--
SIGint, geddit?
```

1066. Re: DOVE: quick description please???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3perv6$j9g@acmex.gatech.edu>
Source record: 24968

Hello all...

Thanks for the replies to my question. I feel clued in now. :-)

73 de KD4UGI

****
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
****

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1067. Re: FT736R Computer Interface & Control

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3pfgod$ivu@superb.csc.ti.com>
Source record: 24969

In article <3pan08$2v6@superb.csc.ti.com>, durham@lobby.ti.com (ken) says:
>
does anyone know of a complete working program for use with the FT736? All info
>to date has led to dead ends.
>

Thanks for the e-mail guys. The program recommended by all is NOVA or
NOVA 1.0. NOVA is supposedly available from W9IP at 315-379-9669. I tried
leaving two messages at that number and have not received a response yet.
NOVA 1.0 is by Northern Lights Software (probably W9IP) but I don't have
a phone number for them. If anyone can tell me how to obtain these (this?)
programs, please e-mail me or post it.

I received an unidentified multi-page incoded program that I
couldn't figure out how to decode (uuencode or wincode wouldn't work.)
It must have been some kind of rig control program, but didn't get any info
with it.

Ken K5MBV durham@lobby.ti.com

1068. Re: Need help with mode B crossboom length

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3pfhd0$ivu@superb.csc.ti.com>
Source record: 24970

In article <3pe6l8$qck@marvin.scsn.net>, gsnellgr@scsn.net (Greg Snellgrove) says:
>
I need to know the minimum
>crossboom length I can get away with.>Greg, KN4NO

Greg, if you get a lot of responses to this they are all going to be
different. The minimum crossboom length is going to depend on how much
eccentricity in the circular polarization you can tolerate. The 2M ant
is the one that will be affected first since the wavelength is greater
at 2M and the spacing required to minimize circular distortion is greater.
About seven feet spacing may be acceptable to you under the circumstances.

Good Luck, Ken Durham K5MBV durham@lobby.ti.com

1069. Working RS-10 and RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: enguser@novell.com
Message-ID: <3pfms9$9e7@grok.provo.Novell.COM>
Source record: 24971

I have been listening to Radio Sputnik the past few days. Since the uplink to both birds is 145.xxx MHz could I work it with just a no-code technician (US) license?

Thanks,
rbohn@novell.com

1070. Need help with mode B crossboom length

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: gsnellgr@scsn.net
Message-ID: <3pe6l8$qck@marvin.scsn.net>
Source record: 24972

I am putting together a mode antenna array and I need to know the minimum crossboom length I can get away with. I live in an antenna restricted neighborhood and I plan to keep the antennas in my garage when they are not being used, so I want to keep everything as small as possible. Thanks.

73,

Greg, KN4NO

1071. Re: HELP:Yaesu 726R Info. Needed

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: bobw@col.hp.com
Message-ID: <3pe8v9$f29@nonews.col.hp.com>
Source record: 24973

Walt (N3JPR) (lrpst5@pitt.edu) wrote:
: I have been offered a Yaesu 726R at a very good price but I don't know
: anything about this rig.I would like the following info. if possible.
: 1.What is the power out on 2 and 440.
: 2.Does it have a computer interface.
: 3.Does it have a packet jack.
: 4.Can the 2 and 440 be displayed at the same time.
: 5.How does it stack up against the 736R preformance wise.
: Thanks for any help I really want to get started in
: Oscar sats. and hope this rig will do.
:

Most of your questions have been correctly answered by other posters.
A few comments:
Not all 726's are equipped for full duplex...there is a "satellite" option.
There are two different 70 cm modules, one does the 430 MHz portion
of the band (for SSB) and the other does the 440 MHz portion (for FM), oh, U.S. bias
plainly showing here.
Modules are options are getting harder to find, so make sure the
726 has everything you need.

Bob Witte / bobw@col.hp.com / HP / EMD / (719) 590-3230 / KB0CY / 7J1AUE

1072. Re: DOVE: quick description please???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3pekcg$94f@paperboy.ids.net>
Source record: 24974

In article <3pcs2u$j5v@newsbf02.news.aol.com> JimKD0AV, jimkd0av@aol.com writes:
>DOVE is short for Digital Orbiting Voice Encoder and is a transmit-only
>hamsat (it has no user accessible receiver). Built in Argentina, DOVE was
>launched in 1990

Actually DOVE is a Brazilian satellite - not Argentinian. Dr. Junior de Castro PY2BJO is the control operator and it has a call sign of PT2PAZ.

LUSAT (LO-19) was an Argentinian satellite launched at the same time as DOVE. In addition two more microsats, PACSAT (AO-16) and WEBERSAT (WO-18) were launched on the same vehicle with all four satellites sharing the same basic microsat bus. (Webersat is a bit taller to support its camera experiment). Two UOSATs were launched with the Microsats in February 1990.

Philip Chien, KC4YER
member of the Phase 3-D Spacecraft Integration Team

1073. Re: DOVE: quick description please???

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: forsberg@cts.com
Message-ID: <D8rDqy.MG2@crash.cts.com>
Source record: 24975

eew4aql@prism.gatech.edu (GT Amateur Radio Club) wrote:
>Seems that I always used to see info posted here (or somewhere) about a
>satellite called DOVE. Is this the same as OSCAR 21 (Informator 1??)?
>Could someone post it's name, frequencies (2m/440 esp.) and perhaps a brief
>description of what it is/does? (I seem to remember that it wasn't designed
>to receive, just transmit bulletins or something.) Thanks for any help!

The DOVE satellite primarily transmits on 145.825. It transmits
standard packet that you can recieve with a normal packet TNC. I have
written a program that decodes this data. If you are interested you
can get a copy of this program from:

ftp.amsat.org /amsat/software/windows/telemetry/dovedv12.zip

Good Luck Bruce Forsberg WB6IZG

1074. MIR QSL address?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: wilmac29@aol.com
Message-ID: <3perib$5cd@newsbf02.news.aol.com>
Source record: 24976

What address would I send a report of MIR 17 reception to? One of the male cosmonauts I heard was either Valery Polyakov or Alexander Viktorenko. They were using callsign R0MIR, which I can't locate in the callbooks.
Would MIR 18 (current mission) packet reception be sent to the same address?

Any help is most appreciated!

Bill McClintock
Mpls.

1075. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: auj@aber.ac.uk
Message-ID: <3pfbrb$cua@osfa.aber.ac.uk>
Source record: 24977
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

Further up the screen Gordon B. Slater (gordy@gbscomms.win-uk.net) wrote:
>
>some (most?) .ac adresses do not allow rx of newsgroups, so users must
>post by email and ask for email replies. Hence the seemingly snub-nosed
>requests for email replies :-)

No. Almost all .ac addresses do allow rx of newsgroups. Even when I first found news 7 years ago we had news (read-only) access.

Alun, news junkie
--
```
$_='\=*Sxw!jds@j$.jl.dt#Rw%^dcn"K1x(=Bl1nwl!\*1enab^h"F=!J$h%fhcq',
tr&J-ZA-Ij-za-i&A-Za-z&&s&\(&logic&&&s&\*&un&g&s&=&al&g&s&\^&it&g&&
s&%&st&g&&s&\$&ber&g&s&\#&\n&&s&"& of&g,s&([A-Z])& $1&g&&s&\\u&U&&&
s&!&es, &g&s&\\a&A&&s&1&i&g&&print" $_\n";sub liminal{"use perl!";}
```

1076. A General Relativity Paradox

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: davidS@connect2000.com
Message-ID: <7858282916103@connect2000.com>
Source record: 24978

File to follow.
============================ Automated Message ============================
There was a file attached to this message on the Bulletin Board System.
This file attachment has been routed in subsequent messages.
============================= End of Message ==============================

--
CONNECT 2000 BBS (205)859-4696 Huntsville, Al
Telnet/FTP: 204.177.193.251 WWW: http://204.177.193.251/index.htm
* TELNET * FTP * EMail * WWW Server *

1077. Re: Working RS-10 and RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <D8sFL3.GHz@murdoch.acc.Virginia.EDU>
Source record: 24979

Yep...go for it!!!

1078. Re: Working RS-10 and RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3pgc3r$i7@superb.csc.ti.com>
Source record: 24980

In article <3pfms9$9e7@grok.provo.Novell.COM>, enguser@novell.com (Engine Test User) says:
>
145.xxx MHz could I work it with just
>a no-code technician (US) license?

Yes, it is considered legal. If you get a copy of The Satellite Experimenters Handbook, you will find a discussion of license class vs satellite bands and operation. There is also some very good technical information in this book. Joining AMSAT and getting the freebies that come with initial membership is the best deal you can find if you are going to operate the satellites.

Good Luck, Ken K5MBV

Ken Durham K5MBV

1079. A General Relativity Paradox

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: davidS@connect2000.com
Message-ID: <785828291602@connect2000.com>
Source record: 24981

Filename: "66274". File Length: 2004 bytes.
This file is contained in 1 split message chunk(s).
This is message chunk 1 of 1 and was processed on
Thu, 18 May 95 13:52:03 EST:

---- cut here ----
A GENERAL RELATIVITY PARADOX

My brother and I were recently discussing a paradox in general relativity. An astronaut drops a small source of monochromatic light pulses into a black hole. This device emits flashes at millisecond intervals. The astronaut (thanks to rockets) maintains his distance from the black hole, but the flasher freefalls inward.

As the flasher approaches the event horizon, the astronaut observes that it marks time ever more slowly, compared to his own wristwatch. The frequency of the light from the flasher is observed to become increasingly redshifted. Asymptotically, the (astronaut observed) distance between the flasher and the event horizon approaches zero. Also asymptotically, the (astronaut observed) frequency of the pulses approaches zero--i.e., the photon energy is being redded to nothing and the interval between the flashes is being raised to infinity, in the astronaut's reference frame.

However long the astronaut waits and watches, the flasher never quite crosses the event horizon and the flashes never quite reach zero frequency. Those events (flasher crossing the event horizon, freqency redded out) occur at a time T=infinity with respect to the astronaut.

On the other hand, the black hole will evaporate due to quantum processes--the Hawking radiation--in some time less than infinity (albeit very large). The astronaut (if he lives long enough) will observe the black hole's evaporation, but he will not observe the flasher pass the event horizon.

Since the same events must occur both in the reference frame of the astronaut and in that of the flasher, does the flasher ever pass through the event horizon in ANY reference frame (including its own)? Wouldn't an observer falling with the flasher observe the event horizon falling away from him under the evaporation caused by the Hawking

radiation? Yes, no, why? All thoughtful replies welcome.

73, David Sims, KE4GXS, DavidS@connect.iquest.com

---- cut here ----

--
CONNECT 2000 BBS (205)859-4696 Huntsville, Al
Telnet/FTP: 204.177.193.251 WWW: http://204.177.193.251/index.htm
* TELNET * FTP * EMail * WWW Server *

1080. AO-13 mode schedule

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: John Maetta <maetta@rns.com>
Message-ID: <3pg9au$qfr@cmchub.rns.com>
Source record: 24982

I am in need of an AO-13 mode schedule for June/July

Thank you.

1081. AO-13 mode schedule

Newsgroup: rec.radio.amateur.space
Date: 1995-05-18 00:00:00 UTC
From: John Maetta <maetta@rns.com>
Message-ID: <3pg9e2$qfr@cmchub.rns.com>
Source record: 24983

I am in need of a current AO-13 mode schedule.

Thanks.

1082. banana beams... help

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: afs@southern.co.nz
Message-ID: <3pho3p$26h@southern.co.nz>
Source record: 24984

Does anyone have any information about banana beams. These are elongated transmission footprints from satellites, shaped so that the number of handoffs are minimised or at least reduced. They are aligned with the flyby direction.

I'm looking for information from pre 1991.

Any help would be greatly appreciated.

Alistair
afs@southern.co.nz
a.scott@bacchc.bsc.bscnz.synet.net.nz

1083. PD software for _u_wave path planning

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: wb8foz@netcom.com
Message-ID: <wb8fozD8unCM.D42@netcom.com>
Source record: 24985
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space

{I include .space since it's likely to have UHF folks...}

At Dayton, I heard mention of PD/shareware that does path planning for UHF/uwave links.

Anyone seen same?

1084. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: gordy@gbscomms.win-uk.net
Message-ID: <576@gbscomms.win-uk.net>
Source record: 24986
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

In article <3pfbrb$cua@osfa.aber.ac.uk>, Alun "Da Penguin" Jones (auj@aber.ac.uk) writes:
>Further up the screen Gordon B. Slater (gordy@gbscomms.win-uk.net) wrote:
>>
>>some (most?) .ac adresses do not allow rx of newsgroups, so users must
>>post by email and ask for email replies. Hence the seemingly snub-nosed
>>requests for email replies :-)
>
>No. Almost all .ac addresses do allow rx of newsgroups. Even when I first
>found news 7 years ago we had news (read-only) access.

oops, based on my affairs (is that the right word?) with a student from middlesboro
.ac who had been at a couple of other .acs beforehand. Obvioisly not universally
correct :-)

Gordy

--
SIGint, geddit?

1085. Latest Kepler data

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: speedy@news.cosy.sbg.ac.at
Message-ID: <3pibe4$1fd@esel.cosy.sbg.ac.at>
Source record: 24987

Hi folks,

I'm looking for an online site (www/ftp/whatever) where I can always
get the most recent kepler data from.

Does anybody know where I can get those ?

Thank you and 73 de Peter (OE2PBP)

--
/--\
| Peter Burgstaller| Student of Computerscience |
| (peter@cosy.sbg.ac.at)| in Salzburg, Austria (Europe) |
| "If a Trainstation is a place where a train stops, |
| what is a Workstation ?" |
\--/

1086. Computer Control of Satellite Radio With Tracking Program

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3pic1o$o09@superb.csc.ti.com>
Source record: 24988

I have been looking for software to control my Yaesu FT736R by computer
for some time with no success. Last night I was called by Michael Owen
who wrote NOVA, which is a tracking Program with rig and antenna control
through the popular tracking hardware systems. He e-mailed a description
with a list of features today.

The software works with Icom, Kenwood, and Yaesu radios.

If anyone else is interested, his e-mail address is: mowe@slumus.stlaw.edu
The phone number is (315) 379-0161.

The call and information is in a roundabout way, a response to my post in this
usegroup. Thanks for the help guys.

Ken Durham K5MBV durham@lobby.ti.com

1087. New SatPasses Web Page

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <3pilnv$6p6@agate.berkeley.edu>
Source record: 24989
Cross-posted to: rec.radio.amateur.space,sci.space.shuttle,sci.space

This Web page will allow users to determine when certain selected
spacecraft will be in range for visual observations or for radio
communications.

Data are presently provided in tabular form for 36 major cities in the
United States and for four different satellites: the current or upcoming
Space Shuttle Mission, the Russian Space Station Mir, HST and UARS.
The predictions are calculated every night for 6 days in advance.

The URL is:

http://ssl.berkeley.edu/isi_www/satpasses.html

Suggestions are most certainly welcome.

Enjoy,

Manfred Bester

1088. Re: Computer Control of Satellite Radio With Tracking Program

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3pindp$s56@superb.csc.ti.com>
Source record: 24990

The CORRECT e-mail address for Michael Owen is: mowe@slumus.stlawu.edu

K5MBV

1089. Re: Working RS-10 and RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3pj5qq$7qq@acmex.gatech.edu>
Source record: 24991

enguser@novell.com (Engine Test User) writes:

>I have been listening to Radio Sputnik the past few days. Since
>the uplink to both birds is 145.xxx MHz could I work it with just
>a no-code technician (US) license?
>Thanks,
>rbohn@novell.com

Yes. The Technician license class gives full access to all frequencies allo-
cated to amateurs above 30MHz, which means the 6 meter band and everything
up.

Trust me tho, you still will probably want to do the code... I'm getting a
bit bored stuck up on the high bands. :-)

73 DE KD4UGI

****
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
****

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1090. Re: Latest Kepler data

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3pj61e$8up@acmex.gatech.edu>
Source record: 24992

speedy@news.cosy.sbg.ac.at (Burgstaller Peter) writes:
>Hi folks,
>I'm looking for an online site (www/ftp/whatever) where I can always
>get the most recent kepler data from.

Try the Air Force Inst. of Technology FTP site:

archive.afit.af.mil (login as anonymous, you e-mail address as password.)

it's in the directory /pub/space . Look for files that end in .tle, such as
mir.tle, amateur.tle, visual.tle, etc. It seems to be updated very frequently.

73 DE KD4UGI

****
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
****

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1091. * SpaceNews 22-May-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-05-19 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3piq44$l9m@pilot.njin.net>
Source record: 24993
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0522
* SpaceNews 22-May-95 *

BID: $SPC0522

=========
SpaceNews
=========

MONDAY MAY 22, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* STUDENT WXSAT PROJECT *
========================
Four students of the Pavillon d'Ordinique of Lionel-Groulx college, in Ste-Therese, Quebec, Canada, were among the participants at an exhibition featuring end-of-session projects in Computer Systems Technology (TSO), on May 12th. Martin Rainville, Nathalie Caron, Jason Dumais and Paul-Andre Laroche VE2PLP designed and constructed a weather satellite VHF APT receiving station. They designed the control systems and software for the az-el rotors and the receiving and decoding equipment necessary for the project. Paul-Andre is a licensed amateur, and Jason Dumais holds an amateur certificate but has not yet applied for a callsign.

The Pavillon d'Ordinique has its own amateur radio station, VE2IOQ, which is well equipped for satellite work, with a Yaesu FT-736R transceiver, and a set of 2m/70cm OSCAR antennas turned with a Yaesu G5400 az-el rotor. The club at the college is sponsored by the Club Radio Amateur Laval Laurentides, which promotes satellite and space communications.

[Info via Mike, VE2TRV]

* FO-20 NEWS *
==============
James Tudehope, KL7QR reports having some success working FO-20 on Mode A from Valdez, Alaska to Tokyo, Japan this past week. He worked JN1GKZ, JK1DVX, and JK1EXF all on FO-20 at 01:20 GMT 5/14/95. Signals were excellent, peaking at 5x5.

James likes to operate on a downlink frequency of 435.850 MHz. On several passes, he noticed that he is the only one on the transponder. He only started working FO-20 the week before last, and it has become his favorite

LEO satellite because the signals are so clear from this bird.

[Info via James Tudehope, KL7QR]

* MIR NEWS *
============
G. Miles Mann, WF1F, reports that the current crew on Mir is getting the hang of the 2 meter transceiver and the packet radio Personal Mail System. Norman has been answering packet messages as fast as time allows.

Many Amateur Radio stations have learned the correct procedure for connecting to the Mir PMS. But unfortunately, there are many others who do not understand procedure for connection to Mir. The PMS on Mir can only connect to one (1) station at a time, and it only takes one station operating improperly to ruin a whole pass for everyone in North America. If you happen to find one of these stations please pass on the correct information or direct them to back issues of SpaceNews or QST.

The Keyboard port (R0MIR) is not used often. Unless there is a crew member actively typing on this port, you should NOT connect to the Keyboard port. Don't be fooled by the CQ message coming from the R0MIR port

R0MIR>CQ <UI>:

Anyting you send to the R0MIR port is not saved and just causes interference to people using the Mail port (R0MIR-1).

Stations attempting to connect to Mir should make sure the TNC parameter MCON is turned ON. Look for the packet message:

R0MIR-1>CQ <UI>:

before you call Mir! If you do not know how to read a packet string, then maybe should not try to call Mir until you study a little more. If you see a string with an Index number:

R0MIR-1>xx1xxx <I0 or I1,I2,...I7>:

Immediately abort any attempt to connect the Mir PMS, and wait until you see the <UI> packet.

QSL Information:
Norman said he is logging all voice contacts, and will bring the log back to earth next month. Most packet contacts are not logged, because there are three people using this PMS. Packet messages are read and deleted, but are not logged. It may not be possible to get a QSL card for a packet contact with Norman.

For those who made contact with Norman, his QSL address is:

Norman E. Thagard
Mail Code CB
Johnson Space Center
Houston, Texas 77058

[Info via WF1F]

* MIR TRAFFIC *
===============
Dave, N1PPP, has been in contact with Norm and the cosmonauts on Mir recently using Mir's packet radio personal message system. During a recent exchange, Dave asked how Norm enjoyed living in space as opposed to simply visiting as he did on his previous space missions. Norm's response was:

Stat : PR
Posted : 95/05/15 22:58
To : N1PPP
From : R0MIR
@ BBS :
BID :
Subject: hello

Well, I am truly living in space this time as opposed to just visiting on my previous four flights. Not only that, I got to ride on a Russian rocket, something no other American has done. Volodya, Gennady, and I, I believe, will land in a different country and on a different continent from the one we launched. I even had to turn in my unused return airline ticket from Moscow to Houston. Delta probably was disappointed about that. Best wishes from Norm and the Mir 18 Crew

Norm had the following to say on the subject of aurorae:

Stat : PR
Posted : 95/05/14 19:21
To : N1PPP
From : R0MIR
@ BBS :
BID :
Subject: Aurora

The Aurorae (Borealis and Australis) are plasmas which stream toward the Poles. They can be seen and are sometimes studied from space. During my second flight in 1985, we had an experiment involving photography of the Aurorae. To reflect solar activity, that can be indicators of altered ionospheric conditions which do affect radio transmission.
Norm and the MIR 18 crew

Dave, N6JLH has also been keeping in touch with the Mir 18 crew via Amateur Packet Radio. In a recent exchange, Norm Thagard reported on the success of a recent spacewalk outside the Mir complex:

Stat : PR
Posted : 95/05/12 20:19
To : N6JLH
From : R0MIR
@ BBS :
BID :
Subject: News

First of four planned EVA's took place today. Seemed successful although some question about the way the solar battery retracted. Only first three sections of the battery were planned to be folded today. Remaining sections should the battery will be re-installed on the KVANT module. I took some good video. Maybe some of it will be shown on the news.

Thanks,

Norm and the MIR 18 crew

[Info via N1PPP and N6JLH]

* THANKS! *
==========
Thanks to all who sent messages in appreciation of SpaceNews, especially:

EA2AFF VK2DFR VK2EE WI2T G3AAJ FG5GI AA6AE ZS6US
GI7TAY VE7ZOL

* FEEDBACK/INPUT WELCOMED *
==========
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

1092. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-20 00:00:00 UTC
From: guy@citystages.org
Message-ID: <3pjrpq$gr0@acara.snsnet.net>
Source record: 24994
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

```
In article <3oqtvq$hm1@hpbab.wv>, hanko@wv.mentorg.com (Hank Oredson) says:
>
>In article <3ofsbt$fem@krel.iea.com>, n0dh@comtch.iea.com (D.C. Henderson) writes:
>|> amsoft@epix.net wrote:
>|>
>|> : The World of Ham Radio CD-ROM MAY 1995 issue is now available.
>|> : For more information contact amsoft@epix.net or the new AmSoft
>|> : WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/
>|>
>|> : Pete, KC3TL voice: 717-938-8249 fax: 717-938-6767
>|>
>|> Pete
>|>
>|> you guys just don't get it do you......you didn't get enough flames the
>|> last time you used the rec.radio.****** bandwidth for commercial ads?
>|>
>|> :-(
>|> N0DH
>
>
>Or perhaps "YOU guys" (the self-annointed net cops) don't get it.
>
>There are many of us out here who welcome access to ANY and ALL
>information relating to our hobby.
>
>"If you don't like it, don't read it."
>
> ... Hank
>
I'm with you, Hank. If there are CD-ROMs and WWW sites out there, I for one
want to know about them. Anyone who thinks commerce and the net do not
mix needs to get an update and a clue!

GAL, man.
```

1093. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-20 00:00:00 UTC
From: guy@citystages.org
Message-ID: <3pjs16$gr0@acara.snsnet.net>
Source record: 24995
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

In article <3oulj4$fo1@ccnet3.ccnet.com>, rwilkins@ccnet.com (Bob Wilkins n6fri) says:
>
>Bob Smith (rsmith@internetmci.com) recently wrote
> in <3otdq2$bre@news.internetmci.com>:
>
>: I agree, NET COPS find something to do, like maybe try sex - you
>: may find that to be more fulfilling than criusing the highway
>: handing out citations.
>
>Lets look at this a little differently. This is not a NET COPS issue.
>
>What you are seeing is the local citizens here in these groups trying to
>clean up the graffitti and posters on all the telephone poles in our
>neighborhood.

This isn't graffiti; it's INFORMATION. Information I want to know about
without reading every damn newsgroup known to man.

I live in this neighborhood, too, and I want to hear about new products
like this one. So don't stop posting.

>This graffitti should be seen in rec.radio.swap where there is no
>confusion about the commercial nature of the offer.

See above.

All you self-appointed arbiters of good taste waste more bandwidth whining
than some of the worst spammers!

Just use a filter or an agent or something if you don't want to know
about new products. You can program your reader to just pass whiney-assed
complaints about posting "commercial" info, then you'll be happy as
a(n uninformed) clam.

1094. Re: Latest Kepler data

Newsgroup: rec.radio.amateur.space
Date: 1995-05-20 00:00:00 UTC
From: mcneills@landcare.cri.nz
Message-ID: <mcneills.29.014C65A1@landcare.cri.nz>
Source record: 24996

In article <3pibe4$1fd@esel.cosy.sbg.ac.at>
speedy@news.cosy.sbg.ac.at (Burgstaller Peter) writes:

>I'm looking for an
> online site (www/ftp/whatever) where I can always
>get the most recent kepler data from.
>
>Does anybody know where I can get those ?

Try archive.afit.af.mil (129.92.1.66). There are others too, but
this one is very stable.

Stephen ZL4HG

1095. ARLK020 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-05-20 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk020.1995@ampr.org>
Source record: 24997
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK020
ARLK020 Keplerian data

ZCZC SK45
QST de W1AW
Keplerian Bulletin 20 ARLK020
From ARRL Headquarters
Newington, CT May 20, 1995
To all radio amateurs

SB KEP ARL ARLK020
ARLK020 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95130.35718978 -.00000442 00000-0 10000-3 0 3514
2 14129 26.4892 268.9371 6005645 275.5410 22.9393 2.05881648 89520
RS-10/11
1 18129U 87054A 95138.01353715 .00000034 00000-0 20601-4 0 672
2 18129 82.9250 81.3717 0011531 167.8566 192.2867 13.72352236395833
UO-11
1 14781U 84021B 95136.04315805 .00000183 00000-0 38821-4 0 7981
2 14781 97.7825 140.0896 0010811 288.8939 71.1090 14.69342463599189
RS-12/13
1 21089U 91007A 95136.45525083 .00000039 00000-0 25343-4 0 7994
2 21089 82.9206 124.3134 0027353 261.8949 97.9105 13.74057315214415
AO-13
1 19216U 88051B 95135.11704533 -.00000236 00000-0 10000-4 0 389
2 19216 57.5427 187.4499 7289897 8.9363 359.2652 2.09724770 52964
UO-14
1 20437U 90005B 95136.24368057 .00000101 00000-0 56273-4 0 977
2 20437 98.5676 221.1279 0010161 295.2161 64.7995 14.29886837277189
RS-15
1 23439U 94085A 95136.83852279 -.00000039 00000-0 10000-3 0 500
2 23439 64.8200 305.6906 0167640 267.7982 90.3741 11.27523562 15988
AO-16
1 20439U 90005D 95136.77646162 .00000061 00000-0 40726-4 0 8961
2 20439 98.5787 223.2759 0011193 296.0432 63.9597 14.29940463277271
```

```
DO-17
1 20440U 90005E 95137.25781251 .00000009 00000-0 20599-4 0 8964
2 20440 98.5799 224.2000 0010849 292.6115 67.3880 14.30080896277363
WO-18
1 20441U 90005F 95136.74969285 -.00000001 00000-0 16618-4 0 9009
2 20441 98.5800 223.6743 0011530 295.2348 64.7637 14.30052339277293
LO-19
1 20442U 90005G 95136.77475614 .00000025 00000-0 26516-4 0 8968
2 20442 98.5814 224.0501 0011839 294.3346 65.6598 14.30154560277314
FO-20
1 20480U 90013C 95136.75419360 -.00000022 00000-0 32750-4 0 7923
2 20480 99.0710 231.1985 0540459 304.4834 50.6330 12.83229532246910
AO-21
1 21087U 91006A 95135.40268350 .00000093 00000-0 82657-4 0 5951
2 21087 82.9436 256.8339 0034004 237.1485 122.6396 13.74554405215228
UO-22
1 21575U 91050B 95137.16167047 .00000032 00000-0 25311-4 0 6024
2 21575 98.3981 209.2468 0008496 17.7574 342.3904 14.36974883201044
KO-23
1 22077U 92052B 95137.80168566 -.00000037 00000-0 10000-3 0 4935
2 22077 66.0881 299.3896 0008625 205.6569 154.4021 12.86291415129827
KO-25
1 22828U 93061F 95137.64329873 .00000042 00000-0 34577-4 0 3684
2 22828 98.6153 214.6071 0009722 301.2139 58.8090 14.28099258 53518
IO-26
1 22826U 93061D 95137.21926459 .00000001 00000-0 18255-4 0 3903
2 22826 98.6195 214.1542 0008980 319.2084 40.8419 14.27769110 85356
AO-27
1 22825U 93061C 95137.19292730 .00000005 00000-0 19783-4 0 3919
2 22825 98.6186 214.0372 0008567 318.5958 41.4577 14.27661720 85347
MIR
1 16609U 86017A 95137.13498051 .00004976 00000-0 75588-4 0 387
2 16609 51.6485 313.0730 0004156 313.8430 76.4998 15.56531870528119

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
May 23, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1096. Re: FT736R Computer Interface & Control

Newsgroup: rec.radio.amateur.space
Date: 1995-05-21 00:00:00 UTC
From: "Jeffrey L. Davis" <jdavis@one.net>
Message-ID: <3pm2cr$oh7@mail.one.net>
Source record: 24998

durham@lobby.ti.com (ken) wrote:
>
> Thanks for the e-mail guys. The program recommended by all is NOVA or
> NOVA 1.0. NOVA is supposedly available from W9IP at 315-379-9669. I tried
> leaving two messages at that number and have not received a response yet.
> NOVA 1.0 is by Northern Lights Software (probably W9IP) but I don't have
> a phone number for them. If anyone can tell me how to obtain these (this?)
> programs, please e-mail me or post it.
>

Ken,

Bob Myers Communications is a distributor for NOVA 1.0. His number
is 602-837-6492. Fax is 602-837-6872.

The program is quite nice, the core program being a satellite
tracking program. But the interface for the 736R is done very well
with numerous memory channel setups, scanning, automatic scripts,
etc. I have been using it since its release at this years Dayton
Hamvention and I am quite pleased with its performance.

73 es Good Luck!

Jeff [N9AVG]

1097. Intrernet to Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-05-21 00:00:00 UTC
From: martytt@ix.netcom.com
Message-ID: <3pnapn$8af@ixnews3.ix.netcom.com>
Source record: 24999

Is it possible to send a message from an Internet site to a satellite? Has this ever been proposed? It would seem that with certain restrictions in place that the folks who send messages to each other via satellite should be able to enjoy messages from Internet EMail.

What is the current situation and what is planned?

1098. Re: Need help with mode B crossboom length

Newsgroup: rec.radio.amateur.space
Date: 1995-05-21 00:00:00 UTC
From: Jeff Davis <jdavis@one.net>
Message-ID: <3pniuu$tpl@mail.one.net>
Source record: 25000

gsnellgr@scsn.net (Greg Snellgrove) wrote:
>I am putting together a mode antenna array and I need to know the minimum
>crossboom length I can get away with.

Greg,

I have experimented with the boom length but there are numerous
variables. For instance, what antennas will you be using and what
kind of radio will you use, how much uplink power?

I have found that the closer the two antennas are together the more
interference your uplink will create for your downlink (remember you will
be operating full-duplex).

Presently, I use the KLM "short" antennas (14 elements on 145 mhz, 18
elements on 435 mhz) and about 6' is as close as I can get them. The boom
should be non-conductive (like fiberglass or wood). I use a Yaesu FT-736R
transceiver and usually run about 75 watts.

Thru other discussions it has been noted that 'skewing' the yagis can
help this cross-modulation problem. Instead of mounting the yagis
perfectly in the + direction, you can tilt them in the X configuration.
This did NOT seem to allow me to get closer than 6' but others have
claimed it helps.

Good luck with your mode B station and I hope to see you on the birds!

73 de N9AVG

1099. New Wrekid Label

Newsgroup: rec.radio.amateur.space
Date: 1995-05-21 00:00:00 UTC
From: sbrymantra@aol.com
Message-ID: <3pnt3j$mvi@newsbf02.news.aol.com>
Source record: 25001

S T R A W B E R R Y M A N T R A R E C O R D S

To get zines distributed, Email us at the Email address below with a sample article and a description of the zine, or maybe even the whole zine, so we can make sure we want to distribute it, and if we say kuul, then send us some copies of the zine and yr in the catalog.
To get yr tapes distributed-Be good, and have nice sound quality. Send a good-sounding master tape and a master cover we can make black and white copies from to the address at the bottom. If you don't send a master cover, we'll just make one. Don't expect great artwork. John's taking drawing class.
We'll see what he can do. At least send a song list. The more you rock, the better. No Extreme-Hole Hearted Mr. Big shlock rock, please. We don't want Country or Offspring or Contemporary or R & B or Reggae or Rap tapes. So don't send them to us. If we don't like them, we put them away. Have any or all (?) of the following elements in yr music: rock, catchy rock, punk, or hardcore. Don't be lame, and, like we said, have nice sound quality.

Our royalty policy is real simple: When we distribute you, for each copy of the album you sell through us, (whether it's on vinyl or tape or cd) you get a dollar. Our royalty policy on zines is simple, too. You keep 70% of the money, we keep 30% of the money. If we (as in you and us) decide yr zine will be two dollars, we keep 60 cents for each sold zine. (60 cents just about covers postage costs. the zine department is really non-profit) The remaining $1.40 is yours! Because of this policy, we don't buy wholesale copies of zines in advance. mainly cos it's risky to us and yr zine gets more money this way.

*Online Zines: Don't wanna wait for snail mail to bring the zine to you?
Kuul! We'll Email it to you. Just send the money to the label address telling what zine you want and where we Email the zine to so you can download

it-and
the zine will be yours within seconds of receiving the money via a
download
file. Available when the catalog specifies "Online Version." Some zines
are
available Online only, some only by mail, some both. The royalty policies
for
Online Zines remain the same. (yes, postage costs don't exist when you
send
online zines, but really, it's not fair to the non-online zines. Some of
those zines have pictures and stuff, especially art/comic-type zines,
which
would be way impossible to do online. They don't have the advantage of not
paying for copying costs and postage. Just cos they have pix doesn't mean
they should lose money.)

SoundClips from Strawberry Mantra Records. Download 20-45 second long
samples as Wave Files from Strawberry Mantra releases.

Email the screen name below to request a SoundClip. I M P O R T A N
T!!!-Must
have a sound card to play these things. If you need help, after getting yr
clip, email me, i'll do what i can. Realize that mucho sound quality has
to
be sacrificed to make SoundClips possible, and that SoundClips do not at
ALL
represent the sound quality of Strawberry Mantra releases. If AOL said
"Welcome" when you signed on, then you probably, (unless yr sound runs
through that internal PC speaker that the modem noise comes through) can
play
these things.

All prices include tax and shipping and handling.

If you run a little label yrself, contact us. We'll trade tapes and
stuff.
We make sure the sound quality is nice on our releases. And, to smaller
bands, four-track recordings are just fine. There's a lot you can do with
four track recordings to make them sound really nice. We focus on the
music.
That's why we give the bands the extra money, to bring out new material.
It's
really money out of our pockets. But we're nice. We just want to make sure
we
don't make ourselves look bad by releasing poor-quality recordings. That's
all we ask. So talk to us! See ya later.
From John Mulhausen and Andrew Bales-Owners

Email SbryMantra@aol.com
Send zines, tapes and orders (cheks payable to John Mulhausen) to:
Strawberry Mantra Records
P.O. Box 701805

Tulsa, OK 74170-1805

COMING SOON
about 20 new albums are scheduled to be sent to us
The Video- a VHS tape w/ atticus finch, john, and others live. sketches, and
behind the scenes looks at kitty vamp and strawberry mantra records. probably
will cost 7 bux
Psychedelicatessen- Strawberry Mantra is putting together a compilation that
will be sent to 14 eager radio stations. (scary) and will include at least one
song from every band we distribute. (cept the ones on the kitty vamp
compilation, of course) and if yr on the label yr on the comp. and it's going
to 12 radio stations who happen to be rather interested in us. scary....
zines galore. zines zines zines
tell me right now if you want to be updated. we're gonna bring out good
stuff, but give us a second, the label is as of now, about 2 weeks old.

1100. ARTOB planned

Newsgroup: rec.radio.amateur.space
Date: 1995-05-21 00:00:00 UTC
From: welp@uni-muenster.de
Message-ID: <3poj3k$1uai@majestix.uni-muenster.de>
Source record: 25002

(This article does not reflect satellite communication, but I think hams who read this news group are a bit more interested in experiments like others...!)

To anybody who might be interested in:

We (local ham radio club in Muenster, NW-Germany) are about to start an amateur radio carrying ballon.

1st Flight:
Depending on weather - one of the next weekends (May or June 1995) - always on a Sunday afternoon (abt 12:00 UTC)

Place:
near Muenster, Germany, JO32pc

Flight hight:
up to 6000 ft

Call:
DL0ART/am

Frequencies:(1st flight)
2 m (probably 145.200): Telemetrics and call
10 m : only for ground control commands - receiving

That first flight is only for testing - no QSOs will be possible via this ARTOB. What's new on this flight compared to the flights in the 70s: We plan to achieve a controlled landing by a radio controlled deflating of the balloon - now blowing and dropping!

We would like to receive your reception reports and any comments, suggestions and so.

Our further plans are:
Translater for CW and SSB from 70 cm to 2 m.
More telemetric inormation available for anyone who is interested.
Video camera transmission on 10 GHz.

If you would like to watch our experiments or hear the balloon's sigs, I will be glad to inform you about every start we plan. We decide about a start on Friday night, and I will forward a mail to anyone who's interested. Just subscribe by sending a short mail to my E-mail-address (see below). Of course, reception of the balloon's sigs will only be possible in NW Germany (1st flight) or middle Europe (following flights), But also mails from other hams are welcome. We gladly will provide you with our experience made on the flights...

Vy 73s, Oliver (DL9QJ, also N3NSF)

[Oliver Welp
welp@uni-muenster.de
Tel./Fax: +49-2533-7312]

1101. Re: Intrernet to Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-05-21 00:00:00 UTC
From: wday@dfw.net
Message-ID: <wday-2105952050290001@fw9.dfw.net>
Source record: 25003

In article <3pnapn$8af@ixnews3.ix.netcom.com>, martytt@ix.netcom.com
(Martin Toomajian) wrote:

> Is it possible to send a message from an Internet site to a satellite?
> Has this ever been proposed? It would seem that with certain
> restrictions in place that the folks who send messages to each other
> via satellite should be able to enjoy messages from Internet EMail.
>
> What is the current situation and what is planned?

So, like how do you think internet messages from North America get to
places like Asia, Australia, Europe, etc.? Think all of them are going by
undersea cable?

You're already using satellites, dude, and just didn't know it!

73 Wayne KF5ZC

Wayne Day KF5ZC Fort Worth,Texas,USA |
CompuServe: 76703,376 Internet: 76703.376@CompuServe.Com | ,__o
or Internet: wday@dfw.net |--_<,
Member: Bicycle Mobile Hams of America (*)/'(*)
For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net
---

1102. Re: ARTOB planned

Newsgroup: rec.radio.amateur.space
Date: 1995-05-21 00:00:00 UTC
From: miles@mail.utexas.edu
Message-ID: <miles-2105952132510001@slip-30-8.ots.utexas.edu>
Source record: 25004

Hi Oliver!

> (This article does not reflect satellite communication, but I think hams who
> read this news group are a bit more interested in experiments like others...!)
Don't worry, this newsgroup is frequently used to announce amateur radio
balloon flights. From my perspective at elevation 150 meters above sea
level, a balloon and a satellite are both very far up :-)

> We (local ham radio club in Muenster, NW-Germany) are about to start an
> amateur radio carrying ballon.
Good luck! Keep us informed of this flight and others in the future!
--
Miles Abernathy, N5KOB, University of Texas
P. O. Box 7580, Austin, Texas 78713 USA

1103. Two-Line Orbital Element Sets (TLE609)

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.801179281@dolphin>
Source record: 24914

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #609 -
Alouette 1
1 00424U 62049A 95140.48094284 .00000047 00000-0 45062-4 0 1072
2 00424 80.4621 312.2131 0023049 329.3703 30.6089 13.67841699628513
ATS 1
1 02608U 66110A 95139.33355885 -.00000037 00000-0 10000-3 0 9330
2 02608 14.6359 356.9828 0010499 59.5751 300.4913 1.00320186 20904
ATS 3
1 03029U 67111A 95140.26187638 -.00000130 00000-0 10000-3 0 3612
2 03029 14.8102 3.9647 0007527 269.9565 312.4122 1.00272865100810
Cosmos 398
1 04966U 71016A 95141.96548348 .00228205 87678-5 25352-3 0 8592
2 04966 51.4167 347.4935 0625513 359.8604 0.2082 14.85039662821280
Starlette
1 07646U 75010A 95141.66526811 -.00000150 00000-0 -45623-5 0 8870
2 07646 49.8299 257.6715 0205729 14.0680 346.5831 13.82188415 24673
LAGEOS
1 08820U 76039A 95140.40333709 -.00000002 00000-0 10000-3 0 1080
2 08820 109.8439 251.0847 0044210 213.0900 146.6876 6.38664555188684
ETS-2
1 09852U 77014A 95139.35070524 .00000108 00000-0 10000-3 0 282
2 09852 12.7010 37.4732 0002616 51.9166 308.0407 1.00007076 13698
GOES 2
1 10061U 77048A 95141.49000372 .00000045 00000-0 10000-3 0 5279
2 10061 11.7647 41.6975 0010387 121.6381 76.0287 1.00259053 10500
IUE
1 10637U 78012A 95141.19108523 -.00000246 00000-0 10000-3 0 1375
2 10637 35.1597 89.4308 1328274 45.8121 116.6096 1.00286072 15998
GPS BI-01
1 10684U 78020A 95139.98738046 -.00000069 00000-0 10000-3 0 3598
2 10684 64.8191 35.5314 0061223 162.1046 198.1849 1.98069261111606
```

```
GPS BI-02
1 10893U 78047A 95136.04510653 -.00000020 00000-0 10000-3 0 1613
2 10893 63.3454 273.7651 0222773 14.4688 346.1349 2.01627362124784
GOES 3
1 10953U 78062A 95138.54030991 .00000074 00000-0 10000-3 0 4875
2 10953 10.7348 44.4959 0004518 100.8950 113.8847 1.00304079 15089
SeaSat 1
1 10967U 78064A 95140.50862554 -.00000029 00000-0 35136-4 0 3990
2 10967 107.9984 80.2215 0002045 279.6352 80.4561 14.38034149884850
GPS BI-03
1 11054U 78093A 95130.36911613 -.00000018 00000-0 10000-3 0 3286
2 11054 63.0577 272.0854 0044848 177.3802 182.6015 1.93505178120842
Nimbus 7
1 11080U 78098A 95140.70029916 -.00000060 00000-0 -16108-4 0 5023
2 11080 99.0019 15.8759 0008566 310.4227 49.6178 13.83710938836756
GPS BI-04
1 11141U 78112A 95129.96514157 -.00000050 00000-0 10000-3 0 9755
2 11141 64.8215 37.5926 0048656 26.5678 333.7191 1.92894877 10082
GPS BI-05
1 11690U 80011A 95140.96548533 -.00000075 00000-0 10000-3 0 9143
2 11690 65.1775 37.1275 0143165 196.7541 162.8111 2.00563868126319
GPS BI-06
1 11783U 80032A 95135.25203455 -.00000020 00000-0 10000-3 0 765
2 11783 62.4760 267.0727 0217943 29.2977 331.8639 2.03456585110711
GOES 5
1 12472U 81049A 95140.67714880 -.00000296 00000-0 10000-3 0 8595
2 12472 7.4793 54.2793 0007622 19.6259 340.2667 1.00285365 9150
Cosmos 1383
1 13301U 82066A 95140.26606751 .00000022 00000-0 82825-5 0 4069
2 13301 82.9298 62.6225 0025794 245.7743 114.0714 13.68065486643514
LandSat 4
1 13367U 82072A 95139.19310339 .00000068 00000-0 25094-4 0 6709
2 13367 98.1329 195.7558 0006399 294.9250 65.1283 14.57157697682993
DMSP B5D2-1
1 13736U 82118A 95142.00279499 .00000076 00000-0 50298-4 0 7664
2 13736 98.6304 331.6242 0009316 88.1527 272.0720 14.25733943645188
IRAS
1 13777U 83004A 95141.50426002 -.00000226 00000-0 -12600-3 0 9656
2 13777 98.9646 330.3528 0013390 102.9782 257.2881 13.99222926298454
Cosmos 1447
1 13916U 83021A 95141.00720107 .00000021 00000-0 61311-5 0 5032
2 13916 82.9425 121.8514 0037595 165.1995 195.0264 13.74325948609737
TDRS 1
1 13969U 83026B 95141.84951236 -.00000377 00000-0 10000-3 0 4161
2 13969 8.3400 47.6766 0001857 88.0622 154.3773 1.00740359 17443
GOES 6
1 14050U 83041A 95141.23672921 -.00000017 00000-0 10000-3 0 4042
2 14050 6.2976 57.4893 0006022 1.1515 143.9446 1.00318477102253
OSCAR 10
1 14129U 83058B 95130.35718978 -.00000442 00000-0 10000-3 0 3514
```

```
2 14129 26.4892 268.9371 6005645 275.5410 22.9393 2.05881648 61553
LandSat 5
1 14780U 84021A 95139.50378691 .00000070 00000-0 25298-4 0 2542
2 14780 98.1149 196.6559 0003215 316.3512 43.7433 14.57161184596458
UoSat 2
1 14781U 84021B 95140.53767885 .00000172 00000-0 36997-4 0 7990
2 14781 97.7825 144.3729 0010541 271.7927 88.2069 14.69344172599846
GPS BI-09
1 15039U 84059A 95139.04010450 -.00000065 00000-0 10000-3 0 3366
2 15039 64.4979 31.7282 0081568 17.2531 343.0541 1.92302285 79838
Cosmos 1574
1 15055U 84062A 95140.54708588 .00000055 00000-0 42922-4 0 7047
2 15055 82.9582 176.2528 0028301 0.8699 359.2504 13.73621613546948
GPS BI-10
1 15271U 84097A 95138.65457817 -.00000021 00000-0 10000-3 0 9968
2 15271 62.1769 267.2661 0155371 353.7312 6.0728 2.00598376 77338
Cosmos 1602
1 15331U 84105A 95141.87656304 .00000340 00000-0 37297-4 0 3915
2 15331 82.5324 120.5437 0020079 158.6824 201.5236 14.84620219574768
NOAA 9
1 15427U 84123A 95141.55825870 .00000074 00000-0 63339-4 0 2584
2 15427 99.0019 200.1229 0015202 347.9408 12.1400 14.13706828538150
GPS BI-11
1 16129U 85093A 95141.93327768 -.00000088 00000-0 10000-3 0 6559
2 16129 65.1582 34.7334 0153907 86.8565 274.9368 1.89368097 14493
Mir
1 16609U 86017A 95140.78907984 .00005845 00000-0 87430-4 0 433
2 16609 51.6474 294.7913 0004266 337.2875 22.7891 15.56580753 351
SPOT 1
1 16613U 86019A 95139.85737040 .00000090 00000-0 62356-4 0 8143
2 16613 98.6535 211.8323 0000635 85.1479 274.9779 14.20057978164349
Cosmos 1766
1 16881U 86055A 95140.66978619 .00000265 00000-0 29136-4 0 3069
2 16881 82.5196 179.5317 0018647 188.5190 171.5696 14.83624289475499
EGP
1 16908U 86061A 95141.03790340 -.00000083 00000-0 10000-3 0 00
2 16908 50.0075 125.7088 0011197 93.8431 266.3682 12.44412512 67452
NOAA 10
1 16969U 86073A 95141.89675661 .00000062 00000-0 44803-4 0 1671
2 16969 98.5113 145.5731 0014418 60.4922 299.7698 14.24936032450730
MOS-1
1 17527U 87018A 95140.17825307 -.00000273 00000-0 -17103-3 0 2080
2 17527 98.9919 206.0612 0001215 78.4217 281.7063 13.94921308419926
GOES 7
1 17561U 87022A 95141.29809663 .00000066 00000-0 10000-3 0 3936
2 17561 2.2749 72.7185 0004509 353.0090 145.0773 1.00291951 13362
Kvant-1
1 17845U 87030A 95142.07310841 .00011922 00000-0 17101-3 0 2562
2 17845 51.6462 288.3704 0004447 343.0492 17.0922 15.56592153528803
DMSP B5D2-3
```

```
1 18123U 87053A 95141.76656763 .00000049 00000-0 47742-4 0 9984
2 18123 98.7778 333.3370 0013619 298.5127 61.4670 14.15404945408989
RS-10/11
1 18129U 87054A 95141.87769520 .00000039 00000-0 25880-4 0 708
2 18129 82.9250 78.5158 0011776 157.0415 203.1265 13.72352418396360
Meteor 2-16
1 18312U 87068A 95140.90981875 .00000037 00000-0 19928-4 0 3986
2 18312 82.5526 304.0040 0010867 244.2706 115.7336 13.84056666391771
Meteor 2-17
1 18820U 88005A 95141.54654903 .00000075 00000-0 53641-4 0 6235
2 18820 82.5425 359.4457 0016510 315.8528 44.1313 13.84739241369184
DMSP B5D2-4
1 18822U 88006A 95141.52853284 .00000038 00000-0 35232-4 0 9798
2 18822 98.4068 346.8685 0007009 71.7935 288.4007 14.23153730378721
Glonass 34
1 19163U 88043A 95140.81736645 .00000039 00000-0 10000-3 0 9921
2 19163 65.1211 99.0833 0006638 158.4011 201.6001 2.13102557 53850
Glonass 36
1 19165U 88043C 95138.05810380 .00000034 00000-0 10000-3 0 3913
2 19165 65.1000 99.1497 0002872 313.7022 46.2565 2.13102182 54414
METEOSAT 3
1 19215U 88051A 95142.23401155 -.00000286 00000-0 10000-3 0 1287
2 19215 2.4533 70.0243 0002323 45.5826 138.9446 1.00262247 13310
AO-13
1 19216U 88051B 95135.11704533 -.00000236 00000-0 10000-4 0 389
2 19216 57.5427 187.4499 7289897 8.9363 359.2652 2.09724770 21476
OKEAN 1
1 19274U 88056A 95141.41105637 .00000222 00000-0 24804-4 0 64
2 19274 82.5110 279.1926 0020109 342.8464 17.2062 14.82335623371186
Meteor 3-2
1 19336U 88064A 95140.85822495 .00000051 00000-0 10000-3 0 3950
2 19336 82.5401 84.7537 0017423 133.6132 226.6412 13.16973045327705
Glonass 39
1 19503U 88085C 95139.49401109 -.00000046 00000-0 10000-3 0 2833
2 19503 65.7028 338.0070 0006317 156.6696 203.3956 2.13101920 51930
NOAA 11
1 19531U 88089A 95141.89260227 .00000035 00000-0 44114-4 0 681
2 19531 99.1925 144.5389 0010846 264.1490 95.8448 14.13051498343043
TDRS 2
1 19548U 88091B 95139.59781868 -.00000228 00000-0 00000+0 0 1255
2 19548 1.6852 75.2567 0004563 54.0833 70.5584 0.99469428 11578
Glonass 40
1 19749U 89001A 95136.24759439 .00000027 00000-0 10000-3 0 4982
2 19749 65.0781 98.8220 0006879 242.9696 116.9207 2.13101307 49373
Glonass 41
1 19750U 89001B 95138.18029062 .00000034 00000-0 10000-3 0 4114
2 19750 65.0733 98.7896 0007408 242.2198 117.6760 2.13101726 49433
GPS BII-01
1 19802U 89013A 95138.26806386 .00000044 00000-0 10000-3 0 540
2 19802 55.1900 126.3897 0028820 183.7162 176.2502 2.00576792 45770
```

```
Akebono
1 19822U 89016A 95141.13415046 .00010438 00000-0 52706-3 0 5030
2 19822 75.0768 350.6360 3782209 41.0219 342.0833 7.85728902135693
Meteor 2-18
1 19851U 89018A 95141.18138956 .00000050 00000-0 31502-4 0 3962
2 19851 82.5198 234.4258 0014897 4.7527 355.3774 13.84389433314458
MOP-1
1 19876U 89020B 95135.00000000 -.00000039 00000-0 00000+0 0 1166
2 19876 1.1369 359.9989 0002051 14.5204 211.5673 1.00402397 2686
TDRS 3
1 19883U 89021B 95141.26288357 -.00000282 00000-0 10000-3 0 774
2 19883 0.0632 64.0474 0001146 332.0379 256.1134 1.00272395195169
GPS BII-02
1 20061U 89044A 95141.60435706 -.00000064 00000-0 10000-3 0 676
2 20061 54.4527 302.5707 0142253 213.9546 145.1095 2.00563661 43583
Nadezhda 1
1 20103U 89050A 95141.66522245 .00000040 00000-0 26096-4 0 3973
2 20103 82.9612 38.1541 0039105 67.1523 293.3755 13.73853053294782
GPS BII-03
1 20185U 89064A 95137.95663894 .00000043 00000-0 10000-3 0 901
2 20185 55.0034 126.9785 0015477 291.9799 67.8419 2.00576592 42088
GMS 4
1 20217U 89070A 95135.18902199 -.00000293 00000-0 10000-3 0 1887
2 20217 0.9727 76.2938 0003663 44.9924 318.8621 1.00260562 21424
INTERCOSMOS 24
1 20261U 89080A 95140.55312866 .00000134 00000-0 39006-4 0 4110
2 20261 82.5941 162.1362 1241126 216.6293 134.3416 12.47248881256830
GPS BII-04
1 20302U 89085A 95137.48839548 -.00000016 00000-0 10000-3 0 635
2 20302 53.3804 242.7915 0010935 188.1424 171.8857 2.00555432 40870
Meteor 3-3
1 20305U 89086A 95142.17995289 .00000044 00000-0 10000-3 0 3178
2 20305 82.5544 35.6252 0007761 173.6660 186.4594 13.04426537267099
COBE
1 20322U 89089A 95138.56454443 -.00000273 00000-0 -14646-3 0 1219
2 20322 98.9624 155.0476 0009946 57.5185 302.6941 14.03444474281434
Kvant-2
1 20335U 89093A 95142.07310841 .00011922 00000-0 17101-3 0 2695
2 20335 51.6462 288.3704 0004447 343.0492 17.0922 15.56592153312015
GPS BII-05
1 20361U 89097A 95141.98926762 -.00000051 00000-0 10000-3 0 9311
2 20361 55.7516 68.8221 0086090 113.4286 247.3881 2.00562651 30449
SPOT 2
1 20436U 90005A 95139.70111298 -.00000044 00000-0 00000+0 0 9331
2 20436 98.7355 214.1479 0001369 69.5124 290.6200 14.20025164275859
UO-14
1 20437U 90005B 95140.72211734 -.00000015 00000-0 11297-4 0 987
2 20437 98.5676 225.5333 0010357 282.3190 77.6827 14.29886440277822
UO-15
1 20438U 90005C 95141.65754747 .00000030 00000-0 28851-4 0 8952
```

```
2 20438 98.5649 225.0041 0009508 284.0357 75.9771 14.29206494277851
PACSAT
1 20439U 90005D 95141.25472800 .00000002 00000-0 17650-4 0 8972
2 20439 98.5789 227.6896 0010864 281.0102 78.9832 14.29940422277919
DO-17
1 20440U 90005E 95141.73563783 .00000025 00000-0 26432-4 0 8971
2 20440 98.5799 228.6142 0010659 277.9429 82.0543 14.30081672278006
WO-18
1 20441U 90005F 95141.22760654 .00000025 00000-0 26798-4 0 9013
2 20441 98.5800 228.0882 0011460 281.6819 78.3077 14.30053114277932
LO-19
1 20442U 90005G 95141.18238868 .00000023 00000-0 25728-4 0 8970
2 20442 98.5815 228.3965 0011680 280.8510 79.1357 14.30155064277945
GPS BII-06
1 20452U 90008A 95138.39601149 .00000027 00000-0 10000-3 0 342
2 20452 54.0207 182.8845 0056580 81.8275 278.8826 2.00572215 38875
MOS-1B
1 20478U 90013A 95140.36775861 .00000091 00000-0 10000-3 0 7831
2 20478 98.9952 210.5335 0000657 93.6728 266.4501 13.94925904189656
DEBUT
1 20479U 90013B 95140.80414875 -.00000031 00000-0 12497-4 0 8969
2 20479 99.0707 234.6415 0540293 294.9642 59.6263 12.83329080247448
FO-20
1 20480U 90013C 95141.19816995 -.00000033 00000-0 64004-5 0 7933
2 20480 99.0716 234.8170 0540295 294.4359 60.1300 12.83229209247487
MOS-1B R/B
1 20491U 90013D 95139.46539353 .00000391 00000-0 79278-3 0 1333
2 20491 99.0365 286.8340 0470812 138.8304 224.9334 13.02999540250455
LACE
1 20496U 90015A 95139.47564200 .00002362 00000-0 77487-4 0 5403
2 20496 43.1023 294.6126 0010393 9.8846 350.2212 15.34511457293169
Nadezhda 2
1 20508U 90017A 95141.76799209 .00000040 00000-0 26417-4 0 3959
2 20508 82.9536 172.6535 0045524 19.7193 340.5708 13.73493581262022
OKEAN 2
1 20510U 90018A 95141.25331401 .00000273 00000-0 34133-4 0 4068
2 20510 82.5222 230.8404 0019452 158.2383 201.9677 14.78489677281614
GPS BII-07
1 20533U 90025A 95141.79817474 -.00000064 00000-0 10000-3 0 532
2 20533 54.8226 303.1796 0049099 79.1669 281.3505 2.00563160 37715
PegSat
1 20546U 90028A 95139.42423911 .00009528 00000-0 19726-3 0 8013
2 20546 94.1109 127.9653 0069132 87.7014 273.2362 15.43190338284044
HST
1 20580U 90037B 95142.25435638 .00000579 00000-0 42304-4 0 6660
2 20580 28.4690 217.5417 0006544 34.9064 325.1977 14.90879868 80033
MACSAT 2
1 20608U 90043B 95141.43142661 .00000204 00000-0 32551-4 0 974
2 20608 89.9265 176.7283 0106530 350.5458 9.3751 14.64833621268791
Glonass 44
```

```
1 20619U 90045A 95139.43194326 -.00000046 00000-0 10000-3 0 1891
2 20619 65.2911 337.4532 0024442 206.2128 153.6897 2.13102598 38896
Glonass 45
1 20620U 90045B 95135.79666450 -.00000032 00000-0 10000-3 0 1985
2 20620 65.2931 337.5755 0010519 38.7391 321.3656 2.13102555 38854
Glonass 46
1 20621U 90045C 95141.49407435 -.00000043 00000-0 10000-3 0 7973
2 20621 65.3362 337.4255 0014337 193.1479 166.8729 2.13101696 38974
Kristall
1 20635U 90048A 95142.07310841 .00011922 00000-0 17101-3 0 609
2 20635 51.6462 288.3704 0004447 343.0492 17.0922 15.56592153528758
ROSAT
1 20638U 90049A 95138.38739402 .00000153 00000-0 28992-4 0 4609
2 20638 52.9904 281.1897 0012168 15.6091 344.5270 15.07175710272624
Meteor 2-19
1 20670U 90057A 95139.43327786 .00000022 00000-0 63440-5 0 8954
2 20670 82.5428 301.3971 0014739 286.7995 73.1538 13.84163490247133
CRRES
1 20712U 90065A 95141.87866127 .00000139 00000-0 25428-3 0 940
2 20712 18.0329 49.5858 7179380 84.2246 346.1892 2.35403767 33867
GPS BII-08
1 20724U 90068A 95139.12658412 .00000046 00000-0 10000-3 0 9044
2 20724 54.8338 124.5298 0116833 173.5915 186.5462 2.00559925 33524
Feng Yun1-2
1 20788U 90081A 95142.04891776 .00000100 00000-0 94426-4 0 3934
2 20788 98.8134 155.9739 0016241 141.2601 218.9733 14.01340849241170
Meteor 2-20
1 20826U 90086A 95141.24285701 .00000064 00000-0 44654-4 0 9076
2 20826 82.5248 236.9871 0013024 173.9649 186.1677 13.83607415234502
GPS BII-09
1 20830U 90088A 95138.17607093 -.00000030 00000-0 10000-3 0 9119
2 20830 55.6869 66.9517 0065540 100.1785 260.5498 2.00570743 34144
GPS BIIA-10
1 20959U 90103A 95141.07639675 .00000060 00000-0 10000-3 0 8675
2 20959 55.0694 126.4304 0098475 229.8360 129.2878 2.00554900 32792
DMSP B5D2-5
1 20978U 90105A 95141.58095265 .00000155 00000-0 71487-4 0 2020
2 20978 98.6407 209.9038 0078062 248.0275 111.2604 14.32546371233508
Glonass 47
1 21006U 90110A 95141.98941805 .00000030 00000-0 10000-3 0 7641
2 21006 65.0455 97.9547 0058912 187.7047 172.1580 2.13102772 34653
Glonass 48
1 21007U 90110B 95141.23926592 .00000035 00000-0 10000-3 0 8967
2 21007 65.0734 98.0385 0033783 177.6596 182.3405 2.13101218 34622
Glonass 49
1 21008U 90110C 95141.12964038 .00000036 00000-0 00000+0 0 736
2 21008 65.0394 98.0037 0011133 276.8181 83.0322 2.13098830 34615
AO-21
1 21087U 91006A 95142.24513797 .00000094 00000-0 82657-4 0 5972
2 21087 82.9419 251.7686 0034427 216.9259 142.9523 13.74554645216168
```

```
RS-12/13
1 21089U 91007A 95140.46025146 .00000035 00000-0 21447-4 0 8005
2 21089 82.9199 121.3409 0027435 249.8238 109.9966 13.74057402214962
MOP-2
1 21140U 91015B 95138.10963580 -.00000019 00000-0 00000+0 0 50
2 21140 0.2434 92.0904 0002085 334.2706 208.7316 1.00264826 17630
Nadezhda 3
1 21152U 91019A 95141.88429017 .00000023 00000-0 85187-5 0 866
2 21152 82.9176 76.3578 0042657 356.4962 3.5888 13.73518781209895
Glonass 50
1 21216U 91025A 95136.84608382 -.00000040 00000-0 10000-3 0 4075
2 21216 65.0481 337.2104 0007877 211.6811 148.2979 2.13102776 32056
Glonass 51
1 21217U 91025B 95141.13801592 -.00000045 00000-0 10000-3 0 8183
2 21217 65.0452 337.0393 0011073 237.5514 122.3292 2.13101146 32133
Glonass 52
1 21218U 91025C 95133.74221016 -.00000019 00000-0 10000-3 0 2915
2 21218 65.0246 337.3111 0021804 239.7528 120.4822 2.13102683 31985
GRO
1 21225U 91027B 95140.52182819 .00003110 00000-0 63399-4 0 2651
2 21225 28.4595 47.5303 0003554 80.8973 279.2066 15.42610671109051
Meteor 3-4
1 21232U 91030A 95139.85478466 .00000051 00000-0 10000-3 0 8054
2 21232 82.5388 291.5697 0014537 65.4087 294.8551 13.16467122195658
NOAA 12
1 21263U 91032A 95141.81113398 .00000162 00000-0 91940-4 0 4916
2 21263 98.5859 166.5520 0012866 340.0666 20.0007 14.22520564208676
OKEAN 3
1 21397U 91039A 95137.64335528 .00000204 00000-0 26162-4 0 1051
2 21397 82.5209 147.1908 0020650 248.2525 111.6488 14.76368272212854
GPS BIIA-11
1 21552U 91047A 95141.84267060 -.00000057 00000-0 10000-6 0 8550
2 21552 55.9753 64.4863 0060758 251.3424 107.9894 2.00567149 28405
ERS-1
1 21574U 91050A 95140.24661448 -.00000017 00000-0 10000-4 0 1534
2 21574 98.5507 214.9596 0001371 75.1632 284.9703 14.32244258201053
UO-22
1 21575U 91050B 95141.20025567 .00000038 00000-0 27383-4 0 6032
2 21575 98.3976 213.1860 0008183 7.5261 352.6044 14.36975532201626
ORBCOMM-X
1 21576U 91050C 95141.69480991 .00000061 00000-0 35303-4 0 6983
2 21576 98.3952 212.1183 0004413 20.0951 340.0401 14.36382427201607
TUBSAT-A
1 21577U 91050D 95141.69275094 -.00000019 00000-0 80885-5 0 5978
2 21577 98.3952 212.6345 0006775 10.2022 349.9302 14.36482991201634
SARA
1 21578U 91050E 95140.29503465 .00000289 00000-0 10770-3 0 7974
2 21578 98.4149 216.5113 0005523 13.7942 346.3391 14.39003310201680
TDRS 4
1 21639U 91054B 95137.52365491 .00000070 00000-0 10000-3 0 8923
```

```
2 21639 0.0348 243.3287 0004371 166.4519 199.0918 1.00271118107910
Meteor 3-5
1 21655U 91056A 95141.24285630 .00000051 00000-0 10000-3 0 8034
2 21655 82.5499 237.9707 0014765 72.7807 287.4934 13.16838294180952
UARS
1 21701U 91063B 95140.74757897 .00000163 00000-0 35367-4 0 6741
2 21701 56.9837 246.5566 0005362 109.2344 250.9270 14.96388674201468
DMSP B5D2-6
1 21798U 91082A 95141.50434701 .00000086 00000-0 69029-4 0 8444
2 21798 98.9612 153.1933 0011818 261.9073 98.0753 14.13887017179432
Glonass 53
1 21853U 92005A 95140.05427873 .00000038 00000-0 10000-3 0 53
2 21853 64.9930 97.6971 0007612 198.1869 161.7615 2.13102270 25720
Glonass 54
1 21854U 92005B 95141.28291210 .00000034 00000-0 00000+0 0 1359
2 21854 64.9960 97.6563 0017255 11.1925 348.8240 2.13103773 25734
Glonass 55
1 21855U 92005C 95141.34659899 .00000034 00000-0 00000+0 0 1268
2 21855 64.9948 97.6577 0007015 217.2690 142.6647 2.13101964 25727
JERS-1
1 21867U 92007A 95141.73650102 .00000514 00000-0 47741-4 0 5922
2 21867 97.7135 218.8186 0001243 159.2371 200.8336 14.98626014179088
GPS BIIA-12
1 21890U 92009A 95140.31738489 -.00000046 00000-0 10000-3 0 6602
2 21890 53.9470 242.8767 0059220 174.8619 185.2427 2.00545146 23742
GPS BIIA-13
1 21930U 92019A 95139.52043542 -.00000087 00000-0 10000-3 0 6322
2 21930 55.7067 4.4006 0039777 173.4496 186.6129 2.00565955 22653
EUVE
1 21987U 92031A 95138.70893604 .00001101 00000-0 41385-4 0 4538
2 21987 28.4374 320.9843 0009289 52.1615 307.9845 15.19267879163465
SAMPEX
1 22012U 92038A 95141.47799924 .00000198 00000-0 15015-4 0 6328
2 22012 81.6678 173.8858 0119138 15.6180 344.8659 14.91404144156697
GPS BIIA-14
1 22014U 92039A 95138.56755070 .00000026 00000-0 10000-3 0 5508
2 22014 54.8527 184.3720 0081722 307.8980 51.4433 2.00572883 14473
Glonass 56
1 22056U 92047A 95140.77714728 -.00000046 00000-0 00000+0 0 383
2 22056 64.8780 337.2011 0003443 288.1972 71.7907 2.13103125 21808
Glonass 57
1 22057U 92047B 95140.13374416 -.00000047 00000-0 00000+0 0 392
2 22057 64.8953 337.2470 0007260 334.7941 25.1926 2.13102635 21769
Glonass 58
1 22058U 92047C 95136.78916835 -.00000040 00000-0 10000-3 0 181
2 22058 64.8967 337.3657 0008419 270.5556 89.3866 2.13102965 21748
TOPEX
1 22076U 92052A 95138.53166179 -.00000061 00000-0 00000+0 0 8782
2 22076 66.0419 314.4691 0007677 270.2033 89.8099 12.80931266129448
KO-23
```

```
1 22077U 92052B 95141.84472213 -.00000037 00000-0 10000-3 0 4942
2 22077 66.0864 290.9227 0008530 205.0074 155.0527 12.86291437130344
S80/T
1 22078U 92052C 95138.43568135 -.00000037 00000-0 10000-3 0 4910
2 22078 66.0833 296.9852 0008861 197.6181 162.4532 12.86575286129986
GPS BIIA-15
1 22108U 92058A 95141.51713639 -.00000059 00000-0 10000-3 0 5683
2 22108 54.1754 243.5947 0127559 155.8864 204.7001 2.00565609 19716
FREJA
1 22161U 92064A 95140.48398764 .00000117 00000-0 91480-4 0 5138
2 22161 62.9945 158.9044 0808339 344.4751 13.2722 13.21836667126389
LAGEOS II
1 22195U 92070B 95141.24861697 -.00000009 00000-0 10000-3 0 4034
2 22195 52.6538 240.0171 0138321 264.8582 93.6179 6.47293566 60838
GPS BIIA-16
1 22231U 92079A 95138.20954457 .00000028 00000-0 10000-3 0 5416
2 22231 54.6756 185.5723 0037087 296.0344 63.5945 2.00567047 18225
GPS BIIA-17
1 22275U 92089A 95139.35759044 .00000022 00000-0 10000-3 0 5545
2 22275 54.6287 183.0443 0052793 254.3475 105.1373 2.00558399 17651
TDRS 5
1 22314U 93003B 95139.25748837 -.00000295 00000-0 10000-3 0 5108
2 22314 1.8159 72.0049 0001506 321.5800 249.8783 1.00276363 8626
GPS BIIA-18
1 22446U 93007A 95140.42838259 -.00000059 00000-0 10000-3 0 5464
2 22446 54.4654 303.4770 0081575 2.0154 357.9825 2.00546592 16661
Glonass 59
1 22512U 93010A 95140.05572712 .00000037 00000-0 10000-3 0 7030
2 22512 65.0097 97.5615 0008396 193.2528 166.7032 2.13101946 17291
Glonass 60
1 22513U 93010B 95140.61528682 .00000037 00000-0 00000+0 0 7585
2 22513 65.0018 97.5517 0005741 221.1085 254.6351 2.13102577 17490
Glonass 61
1 22514U 93010C 95139.35008738 .00000037 00000-0 00000+0 0 7557
2 22514 65.0255 97.5811 0010136 195.7259 164.2165 2.13102636 17477
ASTRO-D
1 22521U 93011A 95139.15321244 .00001337 00000-0 89051-4 0 4081
2 22521 31.1077 62.6068 0056523 210.6044 149.1427 15.02237204123009
UFO F1
1 22563U 93015A 95139.72848656 -.00000183 00000-0 10000-3 0 4148
2 22563 26.0444 294.7676 0000319 46.6806 265.3044 0.99249786 12173
GPS BIIA-19
1 22581U 93017A 95136.08285221 -.00000066 00000-0 10000-3 0 4307
2 22581 55.2055 4.1119 0057767 37.1455 323.2576 2.00550582 15635
ARSENE
1 22654U 93031B 95116.38491222 -.00000118 00000-0 10000-3 0 3111
2 22654 2.4802 86.0751 2900787 209.2691 130.9572 1.42202808 5656
GPS BIIA-20
1 22657U 93032A 95139.70193676 -.00000089 00000-0 10000-3 0 4699
2 22657 55.2312 3.8075 0059804 211.2359 148.2988 2.00571265 11037
```

```
RADCAL
1 22698U 93041A 95140.84229135 .00000010 00000-0 -13201-5 0 4019
2 22698 89.5394 291.9311 0090120 166.5434 193.8213 14.21344942 98552
GPS BIIA-21
1 22700U 93042A 95142.16246534 -.00000064 00000-0 10000-3 0 4238
2 22700 54.3243 244.3464 0036005 345.2076 14.7061 2.00563162 13886
NOAA 13
1 22739U 93050A 95140.91515095 -.00000017 00000-0 15749-4 0 8059
2 22739 98.9922 89.7283 0009260 253.6974 106.3183 14.10932667 91599
GPS BIIA-22
1 22779U 93054A 95141.74909010 -.00000065 00000-0 10000-3 0 4696
2 22779 54.6062 303.4021 0019233 244.0187 115.7736 2.00567340 12638
Meteor 2-21
1 22782U 93055A 95137.96889374 .00000052 00000-0 34265-4 0 4022
2 22782 82.5449 301.1350 0023521 11.0834 349.0836 13.83032130 86368
UFO F2
1 22787U 93056A 95142.06020255 -.00000081 00000-0 00000+0 0 4400
2 22787 4.5464 324.9494 0004082 61.0868 306.1458 1.00270169 4905
SPOT 3
1 22823U 93061A 95142.20797895 -.00000044 00000-0 90319-7 0 4414
2 22823 98.7382 216.6566 0002582 92.5525 267.5966 14.20023838 85604
STELLA
1 22824U 93061B 95141.20059370 -.00000021 00000-0 94683-5 0 3907
2 22824 98.6155 217.6827 0006004 309.0801 50.9844 14.27101434 85884
AO-27
1 22825U 93061C 95141.39799204 .00000034 00000-0 31606-4 0 3925
2 22825 98.6184 218.1840 0008249 305.5472 54.4933 14.27662458 85949
IO-26
1 22826U 93061D 95142.19488417 .00000023 00000-0 27197-4 0 3913
2 22826 98.6198 219.0639 0008887 304.0986 55.9376 14.27769866 86065
HEATHSAT
1 22827U 93061E 95141.65739793 .00000012 00000-0 22723-4 0 4526
2 22827 98.6172 218.4720 0008503 291.8291 68.2002 14.27891991 85998
ITAMSAT
1 22828U 93061F 95142.19739387 .00000029 00000-0 29456-4 0 3691
2 22828 98.6155 219.1007 0009480 287.7229 72.2912 14.28099638 54165
PO-28
1 22829U 93061G 95142.20864129 .00000042 00000-0 34407-4 0 3830
2 22829 98.6157 219.1429 0009724 288.9478 71.0647 14.28078668 86084
KO-25
1 22830U 93061H 95140.37768425 .00000024 00000-0 26910-4 0 4011
2 22830 98.5178 210.8579 0010665 268.7407 91.2555 14.28088663 85825
GPS BIIA-23
1 22877U 93068A 95140.80644793 -.00000047 00000-0 10000-3 0 2766
2 22877 55.4260 64.8860 0038127 310.4589 49.2114 2.00550639 11501
METEOSAT 6
1 22912U 93073B 95141.51288208 -.00000100 00000-0 00000+0 0 3098
2 22912 0.1579 267.9397 0001105 209.2499 296.2101 1.00272402 3928
HST Array
1 22920U 90037C 95139.49626792 .00006893 00000-0 51511-3 0 3240
```

```
2 22920 28.4681 198.8733 0003344 222.7485 137.2851 15.00942093 79993
Meteor 3-6
1 22969U 94003A 95142.13528001 .00000051 00000-0 10000-3 0 1694
2 22969 82.5602 177.1102 0016159 133.1334 227.1150 13.16728895 63458
TUBSAT-B
1 22970U 94003B 95141.18743083 .00000051 00000-0 10000-3 0 1600
2 22970 82.5600 177.7223 0016573 133.1857 227.0647 13.16825280 63331
GPS BIIA-24
1 23027U 94016A 95139.88483930 -.00000090 00000-0 10000-3 0 2081
2 23027 55.0756 5.8284 0063305 196.8278 162.9954 2.00554072 8794
Glonass 62
1 23043U 94021A 95141.77458899 -.00000045 00000-0 00000+0 0 2043
2 23043 64.7652 337.5839 0005084 169.4712 190.5637 2.13102768 8648
Glonass 63
1 23044U 94021B 95139.31096661 -.00000048 00000-0 00000+0 0 1813
2 23044 64.7633 337.6703 0028006 202.1286 157.7727 2.13102936 8595
Glonass 64
1 23045U 94021C 95140.42566513 -.00000047 00000-0 00000+0 0 1938
2 23045 64.7537 337.6426 0011154 35.3919 324.7031 2.13102591 8610
GOES 8
1 23051U 94022A 95142.25701565 -.00000268 00000-0 10000-3 0 3142
2 23051 0.0320 268.6847 0002793 206.8667 141.7814 1.00263927 11430
MSTI 2
1 23101U 94028A 95141.52779258 .00007036 00000-0 12571-3 0 1969
2 23101 97.1002 335.1426 0011014 349.7178 10.3836 15.50273809 58394
STRV-1A
1 23125U 94034B 95141.01131377 .00001055 00000-0 51636-3 0 1522
2 23125 7.4824 42.2519 7256987 97.7889 342.1531 2.29885715 7020
STRV-1B
1 23126U 94034C 95138.09749881 -.00001025 00000-0 -35647-3 0 1479
2 23126 7.4857 43.7238 7258543 95.0943 343.1710 2.29513204 7002
Nadezhda 4
1 23179U 94041A 95141.13906017 .00000017 00000-0 12359-5 0 1026
2 23179 82.9477 167.9085 0037521 139.5470 220.8486 13.75667466 42753
Glonass 65
1 23203U 94050A 95140.09408696 -.00000012 00000-0 00000+0 0 1444
2 23203 64.8010 217.3538 0007065 153.8863 206.2063 2.13101739 6004
Glonass 66
1 23204U 94050B 95141.26672494 -.00000020 00000-0 00000+0 0 1544
2 23204 64.7848 217.3484 0014880 345.0706 14.9447 2.13102227 6022
Glonass 67
1 23205U 94050C 95141.14960647 -.00000020 00000-0 00000+0 0 1429
2 23205 64.7896 217.3371 0002277 299.3854 60.6490 2.13102120 6021
DMSP B5D2-7
1 23233U 94057A 95141.55202983 .00000113 00000-0 85069-4 0 3454
2 23233 98.8797 199.8805 0011715 209.4689 150.5840 14.12606170 37399
OKEAN 1-7
1 23317U 94066A 95140.23335770 .00000195 00000-0 26355-4 0 665
2 23317 82.5457 61.4134 0024664 283.5625 76.2868 14.73930988 32500
ELEKTRO
```

```
1 23327U 94069A 95139.61747235 -.00000117 00000-0 10000-3 0 701
2 23327 0.8125 264.4310 0005032 157.0916 113.7055 1.00269834 2045
RESURS 1-3
1 23342U 94074A 95141.27013714 .00000190 00000-0 40022-4 0 1144
2 23342 98.0179 201.4093 0001628 89.7384 270.4009 14.69737797 29097
Glonass 68
1 23396U 94076A 95141.93143103 .00000029 00000-0 00000+0 0 1007
2 23396 64.9494 97.5986 0029134 194.0897 165.8442 2.13108838 3885
Glonass 69
1 23397U 94076B 95141.63755804 .00000032 00000-0 00000+0 0 1017
2 23397 64.9224 97.6131 0015429 316.6106 43.2418 2.13102170 3871
Glonass 70
1 23398U 94076C 95141.05171996 .00000035 00000-0 00000+0 0 1077
2 23398 64.9099 97.6079 0010715 214.5487 145.4676 2.13100716 3879
RS-15
1 23439U 94085A 95140.91844346 -.00000039 00000-0 10000-3 0 511
2 23439 64.8183 299.0903 0167654 266.9588 91.2142 11.27523492 16448
NOAA 14
1 23455U 94089A 95141.73229573 .00000076 00000-0 66379-4 0 1830
2 23455 98.8998 84.4554 0008641 274.2477 85.7726 14.11511746 20080
ODERACS II A
1 23471U 95004C 95141.54204966 .00028914 00000-0 14043-3 0 1172
2 23471 51.6496 274.1731 0013864 353.4526 6.6290 15.82069372 16952
ODERACS II B
1 23472U 95004D 95141.55478122 .00067696 12746-4 24639-3 0 1212
2 23472 51.6604 271.2107 0016065 0.7443 359.2813 15.88536852 16995
Glonass 71
1 23511U 95009A 95141.12956190 -.00000046 00000-0 00000+0 0 506
2 23511 64.7619 337.8834 0005733 334.9277 25.0751 2.13102547 1596
Glonass 72
1 23512U 95009B 95140.48452297 -.00000047 00000-0 00000+0 0 550
2 23512 64.7798 337.9165 0011966 196.0766 163.9075 2.13102380 1583
Glonass 73
1 23513U 95009C 95140.54294672 -.00000047 00000-0 00000+0 0 515
2 23513 64.7847 337.8932 0004847 205.9658 154.0320 2.13102613 1583
Soyuz TM-21
1 23519U 95010A 95142.07310841 .00011922 00000-0 17101-3 0 843
2 23519 51.6462 288.3704 0004447 343.0492 17.0922 15.56592153 10769
GMS 5
1 23522U 95011B 95137.46050101 -.00000130 00000-0 00000+0 0 289
2 23522 0.9703 294.3687 0009298 210.3963 55.3411 1.00272142 475
DMSP B5D2-8
1 23533U 95015A 95141.78127490 .00000001 00000-0 24232-4 0 768
2 23533 98.8339 144.5314 0008330 85.8951 274.3143 14.12684601 8229
1995017C
1 23547U 95017C 95139.71254123 .00000406 00000-0 13232-3 0 226
2 23547 69.9859 5.3778 0012239 7.7793 352.3509 14.45355595 6660
1995017D
1 23548U 95017D 95139.59144615 .00000001 00000-0 17640-4 0 259
2 23548 69.9910 5.7938 0011890 356.2351 3.8693 14.44799630 6646
```

```
OFEQ 3
1 23549U 95018A 95139.46267739 .00010605 00000-0 29032-3 0 382
2 23549 143.3751 358.5185 0257160 77.5992 285.3410 15.07231384 6636
Progress M-27
1 23555U 95020A 95142.07310841 .00011922 00000-0 17101-3 0 462
2 23555 51.6462 288.3704 0004447 343.0492 17.0922 15.56592153 6696
1986017JD
1 23557U 86017JD 95139.46440631 .00031553 00000-0 37235-3 0 316
2 23557 51.6470 300.9437 0010664 146.8413 213.3580 15.60987008528345
GFZ-1
1 23558U 86017JE 95140.43911854 .00004874 00000-0 65946-4 0 267
2 23558 51.6496 296.1949 0006906 180.2372 179.8697 15.59760226528500
ERS-2
1 23560U 95021A 95142.22469018 .00012355 00000-0 45894-2 0 524
2 23560 98.5491 216.9220 0001889 100.8304 259.3101 14.32260015 4467
1995021B
1 23561U 95021B 95140.74821596 .00000024 00000-0 24366-4 0 223
2 23561 98.4777 215.3844 0007684 162.0209 198.1247 14.33197120 4257
1995023A
1 23571U 95023A 95140.56127315 -.00000128 00000-0 00000+0 0 123
2 23571 0.4593 149.3766 1836642 179.4646 22.8715 1.29146564 96
1995023B
1 23572U 95023B 95139.71494738 -.00000058 00000-0 10000-4 0 22
2 23572 11.6922 126.7536 7079800 202.8169 173.2631 2.25632924 111
1995024A
1 23579U 95024A 95142.26891141 .00073857 13187-4 21091-3 0 136
2 23579 51.6581 288.9421 0059419 106.1418 254.6167 15.90269749 336
1995024B
1 23580U 95024B 95141.88161985 .00374355 11580-4 33904-3 0 83
2 23580 51.6688 290.8178 0061965 84.0521 276.7546 16.07696112 271
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1104. Feedline attachment question.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: <>
Message-ID: <1775975882-950522105959@blackboard.com>
Source record: 24915

From: Chris Oesterling <chris@angus.mystery.com>
I just purchased a KLM 16C (I think) 2 meter OSCAR antenna and had
a question about where to attached the feedline. I have a seperated
Yaseu 5400B rotor on my Rohn 45G tower. (The az rotor is in the
tower and elv rotor is attached to the mast connected to the az
rotor.) The feedling attaches to the back end of the KLM antenna.
So do I attached the feedline from the antenna to to boom then to the
tower or the antenna to mast to tower or what? I feel a little silly
asking such a simple question but I really what to minimize my time
at the top of the tower! Thanks - Chris N8UDK

--
Chris Oesterling (chris@angus.mystery.com)
Mystery Spot BBS, Royal Oak, MI --?--

---
* Processed by ViaUUCP! v4.00r for WILDCAT! *

1105. FAQ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: boyer@rd.bbc.co.uk
Message-ID: <D8z4L3.Hys@bbc.co.uk>
Source record: 25005

I wonder where the FAQ is?
I have some stupid questions and they have probably been asked before.
Regards John B.

internet: john.boyer@rd.eng.bbc.co.uk
packet: g6sed@g6sed.ampr.org (44.131.244.84)

home page: http://www.bbc.co.uk/john_wxpics/index.html

1106. Re: Intrernet to Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: martytt@ix.netcom.com
Message-ID: <3ppu8f$3ch@ixnews4.ix.netcom.com>
Source record: 25006

In <wday-2105952050290001@fw9.dfw.net> wday@dfw.net (Wayne Day) writes:

>
>In article <3pnapn$8af@ixnews3.ix.netcom.com>, martytt@ix.netcom.com
>(Martin Toomajian) wrote:
>
>> Is it possible to send a message from an Internet site to a
satellite?
>> Has this ever been proposed? It would seem that with certain
>> restrictions in place that the folks who send messages to each other
>> via satellite should be able to enjoy messages from Internet EMail.
>>
>> What is the current situation and what is planned?
>
>So, like how do you think internet messages from North America get to
>places like Asia, Australia, Europe, etc.? Think all of them are
going by
>undersea cable?
>
>You're already using satellites, dude, and just didn't know it!
>

I was not as explicit as I should have been. I am referring to all the hams who use amateur radio satellites. Many of these people have no Internet EMail accounts. It would be of service to them for a node to forward Internet EMail messages to and from the satellites.

If I didn't make it clear enough this time reply and I will try again.

1107. Re: AO-13 mode schedule

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: Jeff Davis <jdavis@one.net>
Message-ID: <3ppujt$6tj@mail.one.net>
Source record: 25007

John Maetta <maetta@rns.com> wrote:
>I am in need of a current AO-13 mode schedule.
>
>Thanks.

John,

May 22, 1995 - July 31, 1995

Mode B: MA 0 to MA 70
Mode BS: MA 70 to MA 110
Mode S: MA 110 to MA 112 S Beacon Only
Mode S: MA 112 to MA 135 S transponder; B trsp. is OFF
Mode S: MA 135 to MA 140 S Beacon Only
Mode BS: MA 140 to MA 180
Mode B: MA 180 to MA 256

Omnis: MA 230 to MA 25

Attitude was moved to Alon/Alat 180/0 on May 22, 1995

Attitude will be moved to 225/0 on July 31, 1995

Enjoy the bird before it gets another BAD attitude on 7/31/95!

73, N9AVG

1108. Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: g7uph@cromer.demon.co.uk
Message-ID: <19950522.011849.93@cromer.demon.co.uk>
Source record: 25008

I am a newby, so please excuse me if this is a naive question:

Has anyone built a system that will 'lock on' to a satellite by feedback after it has been pointed at it, rather than relying on prediction alone? Or are there commercial systems which do this?

There may be other ways, but it seems to me this should be possible to do this without ancilliary antennas. These are my thoughts so far:

(The method relies on the assumption that the rx signal is strong enough when the antenna is pointing slightly off-line).

First consider elevation angle, on the assumption that azimuth is being maintained correct. When the rx antenna is pointing slightly off-line and lower than the true direction, the signal-strength will increase if the satellite elevation decreases, and will weaken if it increases.

I figured that it should be possible to use this information to operate the motor to maintain the rx antenna slightly off-line to the true direction. However, I foresaw various problems - one being that the antenna direction might happen to get on the 'wrong side' of the satellite direction. Possibly, suitable software could reverse the relation between the signal strength and the motor control signals when this happens.

However the major problem comes in when you want to control both azimuth and elevation, ie, deciding which of the two motors should be operated when the signal strength changes. The only way I can think of is to have a mechanism that would make the rx antenna array continuously 'gyrate', ie, moving its pointing-direction in a circle (ie, a cone).

In this scheme the aim would be to maintain the axis of the cone pointing at the satellite, so the angle of this conical motion to its own axis would be the off-line angle that one had decided should give an adequate signal, as well as a suitable sloping-off of signal-strength for control purposes (based on the known lobe shape of a the particular rx antenna being used).

This is how it works: when the axis of the cone of the gyrating motion is pointing exactly at the satellite, the signal strength will be constant. (Or to be more accurate, in case the lobe is not circularly symmetrical, the signal-strength should be the same at '12-oclock' as at '6-oclock' and the same at '9-oclock' as at '3-oclock'). However, when the satellite moves off line to the axis of the cone of this will change.

If the signal is stronger at '12-oclock' than at '6-oclock', then the elevation must be raised; if stronger at '3-oclock' than at '9-oclock', then the azimuth must swing to the right; etc.

Now, just as I was thinking that a gyrating mechanism added to two rotators, was beginning to look far too complicated, it dawned on me that one ordinary motor, and four brakes might be made to do the whole job (and overcome certain directly-overhead problems). By applying brakes at the right times, in the gyration cycle perhaps both azimuth and elevation might be controlled. However I'm still not home and dry, because I envisage problems with wind.

I would be interested to hear from anyone who has had any thoughts on this, or other ways, of 'locking on' to a satellite - or indeed, from anyone who thinks it is fundamentally unworkable (perhaps, because of the periodic rx signal-strength fluctuation produced by the gyratory motion?)

I forgot to mention that the tx antenna would point in the same direction as the axis of the cone, and therefore always point more accurately than the rx.

73 de Louis - G7UPH

1109. subscribe help

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: aa766@freenet.hamilton.on.ca
Message-ID: <D8ys8z.51G@mcshub.dcss.mcmaster.ca>
Source record: 25009

Hello and thanks for reading this,

Could someone please forward to me the proper addressing,
so I can permanently subscribe to this newsgroup?

Many thanks,

73, Mike VE3AHQ

--

--

1110. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: hanko@wv.mentorg.com
Message-ID: <3pr4t5$dgi@hpbab.wv>
Source record: 25010
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

```
|> In article <3oulj4$fo1@ccnet3.ccnet.com>, rwilkins@ccnet.com (Bob Wilkins n6fri) says:
|> >
|> >Bob Smith (rsmith@internetmci.com) recently wrote
|> > in <3otdq2$bre@news.internetmci.com>:
|> >
|> >: I agree, NET COPS find something to do, like maybe try sex - you
|> >: may find that to be more fulfilling than criusing the highway
|> >: handing out citations.
|> >
|> >Lets look at this a little differently. This is not a NET COPS issue.
|> >
|> >What you are seeing is the local citizens here in these groups trying to
|> >clean up the graffitti and posters on all the telephone poles in our
|> >neighborhood.

Yup. Reminds me a lot of the local citizens in my neighborhood.
They are doing their best to clean up the neighborhood: no outdoor
antennas of any nature are allowed. That's what the majority wants,
and that's exactly what they got.

Seems to me there are two kinds of people: those who think everything
not specifically permitted is forbidden, and those who think everything
not specifically forbidden is permitted.

I have no time for folks who fall into the first group.

To put it bluntly: STOP TELLING ME WHAT I AM ALLOWED TO READ.

Thank you for your consideration.

Also thank you for your consideration in removing at least 4 or 5
of the 6 or 7 groups this has been posted to. "Spam by any other
name tastes just as bad."

... Hank

--

Hank Oredson @ Mentor Graphics Library Operations
Internet : hank_oredson@mentorg.com "Parts 'R Us!"
Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM
```

1111. Feedline attachment question.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-22 00:00:00 UTC
From: Chris Oesterling <chris@angus.mystery.com>
Message-ID: <omFi6c1w165w@angus.mystery.com>
Source record: 25011

I just purchased a KLM 16C (I think) 2 meter OSCAR antenna and had
a question about where to attached the feedline. I have a seperated
Yaseu 5400B rotor on my Rohn 45G tower. (The az rotor is in the
tower and elv rotor is attached to the mast connected to the az
rotor.) The feedling attaches to the back end of the KLM antenna.
So do I attached the feedline from the antenna to to boom then to the
tower or the antenna to mast to tower or what? I feel a little silly
asking such a simple question but I really what to minimize my time
at the top of the tower! Thanks - Chris N8UDK

--
Chris Oesterling (chris@angus.mystery.com)
Mystery Spot BBS, Royal Oak, MI ----------?--

1112. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-23 00:00:00 UTC
From: steve@hi.com
Message-ID: <steve-2305951233210001@brainiac.hi.com>
Source record: 24916
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

In article <3pjrpq$gr0@acara.snsnet.net>, guy@citystages.org (Guy McCullough) wrote:
> I'm with you, Hank. If there are CD-ROMs and WWW sites out there, I for one
> want to know about them. Anyone who thinks commerce and the net do not
> mix needs to get an update and a clue!
>
> GAL, man.

And when these newgroups get even more noisy due to self-interested businesses posting hundreds or thousands of ads, will you still be reading netnews?

I think netnews is, in economic terms, a "public good". There is very little direct cost in posting an ad; moreover, once someone posts an ad, it is to one's advantage to join in before the resource is ruined - to "beat the curve". So it eventually becomes polluted with advertisements, diluting the information content below the point where it is worthwhile to bother trying to find the gems.

It's rather like clean air and water; there's little direct cost to polluting, and there is benefit in having such "cheap" waste disposal, so the market forces drive business to pollute. However, the total social cost is enormous.

Please don't pollute cyberspace. Keep ads in rec.radio.swap.

--
Steve Byan internet: steve@hi.com
Hitachi Computer Products (America), Inc.
1601 Trapelo Road phone: (617) 890-0444
Waltham, MA 02154 FAX: (617) 890-4998

1113. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-23 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3ptkeb$2s1@superb.csc.ti.com>
Source record: 24917
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

alt.misc.forsale.non-computer and alt.whine seem to be more appropriate newsgroups for the above postings. This one would fit into alt.whine. :)

Ken K5MBV

1114. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-05-23 00:00:00 UTC
From: FLETCHER@vilas.uwex.EDU
Message-ID: <MAILQUEUE-101.950523060135.640@vilas.uwex.edu>
Source record: 24918

unsubscribe fletcher@vilas.uwex.edu

Bill Fletcher AF9B
fletcher@vilas.uwex.edu

1115. Station Advice.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-23 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3ptj3n$6ap@news.internetmci.com>
Source record: 24919

I could use advice on setting up a Satellite station for OSCARS (primarily PACSATS AND KITSATS).

Here is my plan:

RADIO NOW: ICOM 281H 2M RX/TX 50W 440 RX 9.6 ready

RADIO PLANNED: Plan to move to ICOM 820 or YAESU 736 this summer which would you suggest - I already have an ICOM 737 with ICOM computer interface so I would like to stick with ICOM if possible.

TNC: PK-900
WILL BUY: Either TAPR G3RUH 9.6 modem (limited to KITSATS ONLY) or the DSP-93

ANTENNA: Don't want to skimp but I live in a restricted neighborhood so I am limited to the 20' X 7' high attic space I have.

WAS thinking about the LOG LOG PERIODIC featured in the latest issue (OVERSIPLIFIED I UNDERSTAND) of QST. I would point 22 degrees up and spin on axis with a rotor. Where can I get on of these guys.

WAS thinking about a dual band EGGBEATER. I have read that these perform well in this application. Again, where can I get on of these guys.

Will need a 440 preamp - What do you suggest.

Will FEED the whole thing 50' to my shack in the basement with RG/8 coax.

WISP is my program of choice for the software part of this project.

Please any help would be appreciated. As you can see I am trying to step into this lightly because I am not sure if I will be able to use the sats from my site. I am able to hit MIR on just about every pass, that's easy I know.

At this point I would not mind trying a minimal setup just to see if I can hear the birds and go from there with better radios, rotators etc.

Any advice would be great. Thanks in advance.

Bob Smith
N3FTU@amsat .org

```
-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-
| Bob Smith N3FTU |
| rsmith@internetMCI.COM Atlanta, GA |
-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-
```

1116. Help with Data General 1 Laptop

Newsgroup: rec.radio.amateur.space
Date: 1995-05-23 00:00:00 UTC
From: an275@FreeNet.Carleton.CA
Message-ID: <D90I3K.Jq5@freenet.carleton.ca>
Source record: 24920

I need a manual for the Data General 1. If you have any
ideas on this laptop and its operation please let me know.
I know its a boat anchor but the box of them were free and I
want to use it in the camper with a packet radio.

Thanks
Beau Bushor.....N1MJD

--

1117. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-23 00:00:00 UTC
From: wave@mindspring.com
Message-ID: <3ptpbt$tr0@firehose.mindspring.com>
Source record: 24921
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

G7UBQ Writes:

[Massive snip 370 lines]

+Rather than posting all of this perhaps in future your could have said
+anyone that wants to look at the log file please email me and I will send
+it to
+you, rather than taking up all this space here
+
+
+--
+Tim Bray
+G7UBQ
+
+So far as the laws of mathematics refer to reality, they are not certain.
+And so far as they are certain, they do not refer to reality.
+Albert Einstein

I don't see anything wrong with posting the data the way it was. Noone is
forcing you to read it. It is also more effecient this way since no more
e-mailing is required to obtain the data. As far as your reply is
concerned, I believe it to be a total waste of bandwidth.

P.

1118. The Key To Organizing Your Health Records

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: 1186606.42663942
Message-ID: <3puhp2$i69@baygull.rtd.com>
Source record: 24922
Cross-posted to: control,rec.radio.amateur.space,rec.radio.broadcasting,rec.radio.cb

THE KEY TO ORGANIZING YOUR HEALTH RECORDS

"If you care about yourself and your children, you will do everything you can to know your family's medical history. It can save your life, and the lives of those who are dear to you." -- Dr. Aubry Milunsky, Director, Boston University's Center for Human Genetics (Life Magazine, March, 1995).

Your Lifetime Health Planner offers the simplest, most effective way to take charge of your health. Enter important facts about your health history, keep a record of the names of medications and their effects, document each doctor visit and diagnosis. You will have the information you need, and in the event of an emergency, so will your family.

Your Lifetime Health Planner, 198 pages in a compact, loose-leaf binder, contains a variety of sections which include "Doctor Visits," "Medications," "Family Health History," and "Doctors and Specialists." The Planner is a must for the busy executive who needs to stay organized, for seniors who are receiving care and for newborns who need a record of their health care.

Parents Magazine recommended the Planner to its readers (April, 1994) and MCI called it "a useful resource in managing your personal health records." Margie Smotherman, Coordinator, Employee Health and Wellness, Blue Shield/Blue Cross of Iowa, said: "The employees felt that these (Planners) were great tools to not only record their pertinent numbers, but to plan for doctor's visits."

To get your copy, send a check or money order for $19.95 (plus shipping and handling) to :

Your Lifetime Health Planner
1955 W Grant Rd., # 230
Tucson AZ 85745
USA

Shipping and handling charges: $4.95 US; $8 Canada/Mexico; $14 Europe; $18 Asia/Pacific Rim.

Include your name, address and telephone number.*

Visa/MasterCard orders, call 520-798-1530.

*Large corporate discounts available for orders of 1,000 copies or more.

Your Lifetime Health Planner
1955 West Grant Road, #230

Tucson, AZ 85747

Enclosed is $_____ for _____ copies of Your Lifetime Health Planner.

Please ship to:

YOUR NAME _____

YOUR ADDRESS _____
Street

_____
City State Zip or Postal Code Country

YOUR TELEPHONE NUMBER _____

1119. NOVA users?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: "Alan K. Adamson" <ne1h>
Message-ID: <3pu3q0$pgq@wa4mei.radio.org>
Source record: 24923

Any NOVA users out there, I would like to compare some notes?

Thanks,
Alan Adamson
ne1h@tornado.ne1h.radio.org

1120. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Jon Bell <ehsjbel@ehs.ericsson.se>
Message-ID: <3pv7lo$jqm@erinews.ericsson.se>
Source record: 24924
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

> In article <3ofsbt$fem@krel.iea.com>, n0dh@comtch.iea.com (D.C. Henderson) writes:
> |> amsoft@epix.net wrote:
> |>
> |> : The World of Ham Radio CD-ROM MAY 1995 issue is now available.
> |> : For more information contact amsoft@epix.net or the new AmSoft
> |> : WWW site at: http:/hamster/business.uwo.ca:80/~amsoft/
> |>
> |> : Pete, KC3TL voice: 717-938-8249 fax: 717-938-6767
> |>
> |> Pete
> |>
> |> you guys just don't get it do you......you didn't get enough flames the
> |> last time you used the rec.radio.****** bandwidth for commercial ads?
> |>
> |> :-(
> |> N0DH
>
>
> Or perhaps "YOU guys" (the self-annointed net cops) don't get it.
>
> There are many of us out here who welcome access to ANY and ALL
> information relating to our hobby.
>
> "If you don't like it, don't read it."
>
> ... Hank
>
>
> --
>
> Hank Oredson @ Mentor Graphics Library Operations
> Internet : hank_oredson@mentorg.com "Parts 'R Us!"
> Amateur Radio: W0RLI@W0RLI.OR.USA.NOAM

You can't get it here!!! See below:

Fatal Error 500

Can't Access Document: http:/hamster/business.uwo.ca:80/~amsoft/.

Reason: No host name found:

Regards, Jon
SM0PRB

1121. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Frank Tabor <phranc@inmind.com>
Message-ID: <3pve1b$h0p@crucible.inmind.com>
Source record: 24925
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Try http://hampster.business.uwo.ca:80/~amsoft/

--

Frank Tabor
http://www.inmind.com/people/phranc
(-: Left handers are the only ones in their right minds.

1122. Interface for DSP-2232 Icom 765 Yaesu 736r

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Jean-Francois Tanguy <tanguy@CAM.ORG>
Message-ID: <3pvhqa$8o1@Tandem.CAM.ORG>
Source record: 24926

Hi , Salut

I buy the dsp-2232 for my satellites station, and I need some informations.

The dsp-2232 will be connected to a Icom-765 hf and a Yaesu FT-736-R.

For the Icom, my 765 as 100mv rms input, and 100-300 mv rms output, so it
is ok for the input, but for the output, it look like I will be short of
output for weak signal, and cw. Also I would like to have a threshold
adjustement for cw.
Did you designe a circuit to boost the signal from the Icom 765?

The Yaesu, for the data pin in/out jack, the input is 30mv rms at 600 ohm,
and output is 200 mv rms at 10 kohm, it is looking ok for the data jack for
1200 afsk.

But I would like to use the rig for 1200 and 9600 bauds, and in the
modifications for 9600 from G3RUH, I need 800mv p,p of output from the dsp,
and I do not have the output from the discriminator.
Also, it's look like I need differrents adjustement for 1200 and 9600 bauds.
How can I use the direct discriminator and varactor connection of the Yaesu,
to run both 1200 and 9600 without playing with the adjustement of the dsp?

I know there is someone there who have the same setup, and solve the problems
I badly need plans for a interface to connect my radios to the dsp-2232, I
already try with AEA, and they never answer to my specifique question, or
send me plans, they only suggest to play around the r203 and r206 for
more transmit audio, without more infos.

Thank you.

Best 73 de Jean-F VE2KAD@AMSAT.ORG
tanguy@CAM.ORG

ps: hope my english is not to bad hi

Jean-F Tanguy VE2KAD
6229 LIDIA C.P. 931
Rawdon Quebec
Canada J0K1S0

1123. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Alan.Holmes@brunel.ac.uk
Message-ID: <3pv7mj$bdt@cook.brunel.ac.uk>
Source record: 24927
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

In article <3ptpbt$tr0@firehose.mindspring.com>,
Pieter Ibelings <wave@mindspring.com> wrote:
>G7UBQ Writes:

>[Massive snip 370 lines]

>+Rather than posting all of this perhaps in future your could have said
>+anyone that wants to look at the log file please email me and I will send
>+it to
>+you, rather than taking up all this space here

>I don't see anything wrong with posting the data the way it was. Noone is
>forcing you to read it. It is also more effecient this way since no more
>e-mailing is required to obtain the data. As far as your reply is
>concerned, I believe it to be a total waste of bandwidth.

So, you are another one who doesn't care about those who have to
pay for every byte.

Alan

1124. Reply: E-mail to Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: g8tzj@ve4umr.ampr.ORG
Message-ID: <14679@ve4umr.ampr.org>
Source record: 24928

>From: martytt@ix.netcom.com (Martin Toomajian)
>Subject: Intrernet to Satellite
>
>Is it possible to send a message from an Internet site to a satellite?
>Has this ever been proposed? It would seem that with certain
>restrictions in place that the folks who send messages to each other
>via satellite should be able to enjoy messages from Internet EMail.
><CR> Continue <A>bort <C>ontinue no paging <N>ext Message..>
>
>What is the current situation and what is planned?

Hi Martin, I am assuming that you are referring to the PACSAT type of amateur radio satellites and that you hold an amateur radio callsign.

There are currently two ways for the AX25 type of mail to get onto a satellite. One is via a SATGATE but this is for BBS to BBS only and not for a satellite user directly and secondly via a SATNODE. Satnodes are designed for PACSAT users to send / receive messages to the packet network. So if you can get your E-mail through an Internet to packet gateway (there are a few in the USA) and direct it to a SATNODE then you will get your message onto a PACSAT. A PACSAT user can then use the reverse route to get mail back to you.

I do not have a list of SATNODES but maybe a message to this newsgroup or to the amsat-bb mailing list will bring this info.

NOTE: International regulations govering 3rd party messages vary ENORMOUSLY. Beware who you are trying to contact.

73 Andrew g8tzj@lurpac.lancs.ac.uk g8tzj@amsat.org

1125. Shuttle HF frequencies ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Jeff Krul <JKrul@equist.com>
Message-ID: <3pvb66$duo@noc.tor.hookup.net>
Source record: 24929

I will be venturing into the HF world soon, and I have heard that the shuttle sometimes makes contacts on HF. If this is true, does anyone know the frequencies they typically use?

Jeff

Please e-mail responses to jkrul@equist.com

Thanks!

1126. DSP-2232 and Yaesu 736r interface

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Jean-Francois Tanguy <tanguy@CAM.ORG>
Message-ID: <3pvf7g$7p6@Tandem.CAM.ORG>
Source record: 24930

Hi
I am looking for plans for a interface between the 736 and the 2232 from AEA.
I look on compuserve, and send a lots of packets on radio, and no luck.

Also If you are using the Icom 765 with the dsp-2232, do you need some amplification from the radio to drive the dsp ?

Thank you best 73 de Jean-F VE2KAD

1127. DSP-2232 and Yaesu 736r interface

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Jean-Francois Tanguy <tanguy@CAM.ORG>
Message-ID: <3pvf87$7p6@Tandem.CAM.ORG>
Source record: 24931

Hi
I am looking for plans for a interface between the 736 and the 2232 from AEA.
I look on compuserve, and send a lots of packets on radio, and no luck.

Also If you are using the Icom 765 with the dsp-2232, do you need some amplification from the radio to drive the dsp ?

Thank you best 73 de Jean-F VE2KAD

1128. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3pvpcl$cli@news.internetmci.com>
Source record: 24932

Hey Gary, me again - I was looking at the MIR Atenna thread and saw you mention that you built a Lindenblad. I am considering sticking this or a eggbeater up in my attic (HOA antenna restrictions) to work the PACSATS. Can you steer me in the direction of the plans for the above antennas - you also said that you built one - I would be interested in your experiences.

Thanks.

-=-
| Bob Smith N3FTU |
| rsmith@internetMCI.COM Atlanta, GA |
-=-

1129. Re: Shuttle HF frequencies ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3q04kp$8uc@over.mhv.net>
Source record: 24933

Jeff Krul (JKrul@equist.com) wrote:
: I will be venturing into the HF world soon, and I have heard that the
: shuttle sometimes makes contacts on HF. If this is true, does anyone
: know the frequencies they typically use?
:
: Jeff
:
: Please e-mail responses to jkrul@equist.com
:
: Thanks!

As far as I know they do not make contacts on HF. Only 2 meters.

Tom Randall - KB2SMS

1130. Re: Shuttle HF frequencies ?

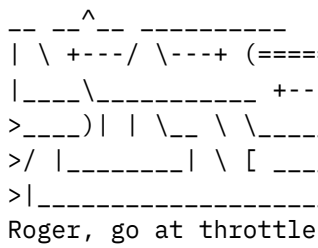
Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3q0c83$qd0@paperboy.ids.net>
Source record: 24934

In article <3pvb66$duo@noc.tor.hookup.net> Jeff Krul, JKrul@equist.com writes:
>I will be venturing into the HF world soon, and I have heard that the
>shuttle sometimes makes contacts on HF. If this is true, does anyone
>know the frequencies they typically use?

Considering that, by definition, HF works by bouncing signals off the ionosphere, it would be rather difficult for te shuttle, or any spacecraft, to have much success trying to communicate with ground stations via HF. 10 meters is the practical limit for space communications.

All amateur operations from the shuttle are on the 2 meter band. It's been reported that Mir will be upgrading its 2 meter radio to a 2 meter / 70 cm unit.

NASA audio from shuttle mission is retransmitted on H-F by the Goddard Spaceflight Center's amateur radio club WA3NAN. The planned HF operating frequencies are:
3.860 MHz 7.185 MHz
14.295 21.395 28.650

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1131. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-05-24 00:00:00 UTC
From: taboo@itnlinx.win-uk.net
Message-ID: <51@itnlinx.win-uk.net>
Source record: 24935

In article <19950522.011849.93@cromer.demon.co.uk>, Louis Gidney
(g7uph@cromer.demon.co.uk) writes:
>
>I am a newby, so please excuse me if this is a naive question:
>
>Has anyone built a system that will 'lock on' to a satellite by feedback
>after it has been pointed at it, rather than relying on prediction alone?
>Or are there commercial systems which do this?
>
>There may be other ways, but it seems to me this should be possible to do
>this without ancilliary antennas. These are my thoughts so far:
>
snip

I don't know of any amateur tracking system but in the sixties I worked at a
NASA STADAN station (Satellite Tracking and Data Acquisition Network) at
Winkfield near Windsor UK.

One of the systems used there on 136 MHz used an array of Yagis.(3x3 I think)
It measured the phase between the outer most Yagis and fed the errors to the
control system and hence to the hydraulic pumps.

You had to steer the antenna to the predicted position and once you had AOS
postion it using AGC volts, then switch to auto.

BTW are there any readers out there who used to work in the STADAN or
Minitrack networks?

Nowadays I uplink to satellites on 14 GHz for SNG. (Satellite News Gathering)

Ashley Booth G8DPH taboo@itnlinx.win-uk.net

1132. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-25 00:00:00 UTC
From: scott@rcp.co.uk
Message-ID: <x2JxvAvHBh107h@rcp.co.uk>
Source record: 24936
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

In <3ptpbt$tr0@firehose.mindspring.com> wave@mindspring.com (Pieter Ibelings) writes:
>G7UBQ Writes:

>[Massive snip 370 lines]

>+Rather than posting all of this perhaps in future your could have said
>+anyone that wants to look at the log file please email me and I will send
>+it to
>+you, rather than taking up all this space here
>+
>+
>+--
>+Tim Bray
>+G7UBQ
>+
>+So far as the laws of mathematics refer to reality, they are not certain.
>+And so far as they are certain, they do not refer to reality.
>+Albert Einstein

>I don't see anything wrong with posting the data the way it was. Noone is
>forcing you to read it. It is also more effecient this way since no more
>e-mailing is required to obtain the data. As far as your reply is
>concerned, I believe it to be a total waste of bandwidth.

>P.

Some of us have to pay for all news, and only get to see what it is when it's
already been downloaded. If you are not one of these people, then you're
very lucky. However, you should bear the rest of the world in mind when making
comments like this.

Scott

--
==
Scott Earle	Internet : scott@rcp.co.uk
Senior Software Engineer	Ham Radio Callsigns : G0SWG, AA2WX
RCP Consultants Ltd	Ham Radio BBS : G0SWG@GB7AVM.#49.GBR.EU
Dales, High Street	Amprnet mail : g0swg@g0swg.ampr.org
Didcot, Oxon. OX11 8EQ	Tel (work): +44 1235 510116
United Kingdom	FAX (work): +44 1235 511084
==

1133. Re: DSP-2232 and Yaesu 736r interface

Newsgroup: rec.radio.amateur.space
Date: 1995-05-25 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <D94xKp.Ko0@murdoch.acc.Virginia.EDU>
Source record: 24937

Look in AMSAT's fileserver, ftp.amsat.org, under "mods" and
you'll find directions for modifying FT-736R, TS-790, and Icom
radios, as well as others for 9600 baud.

The ouput level of the DSP2232 can be increased by clipping one
side of a 5 to 1 power divider resistor for each of the two
ports. I can't remember the resistor numbers off the top of my
head, but you may find this mod in the fileserver as well.

good luck de wb4qkt/stacey

1134. Re: [long] Peculiar Carrier Doppler Shift from KO-25 ?? Why ??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-25 00:00:00 UTC
From: David Hough <dave@llondel.demon.co.uk>
Message-ID: <801408297snx@llondel.demon.co.uk>
Source record: 24938
Cross-posted to: rec.radio.amateur.space,uk.radio.amateur

In article <3ptpbt$tr0@firehose.mindspring.com>
wave@mindspring.com (Pieter Ibelings) writes:
>
>I don't see anything wrong with posting the data the way it was. Noone is
>forcing you to read it. It is also more effecient this way since no more
>e-mailing is required to obtain the data. As far as your reply is
>concerned, I believe it to be a total waste of bandwidth.
>
You obviously don't have to pay the downloading costs.....

Dave
--

dave@llondel.demon.co.uk My other sig is a work of art.

1135. RE: Ham-Space Digest V95 #140

Newsgroup: rec.radio.amateur.space
Date: 1995-05-25 00:00:00 UTC
From: Jim.Hansen@stpete.honeywell.COM
Message-ID: <2FC4E72C@vax-flcgr.stpete.honeywell.com>
Source record: 24939

>I will be venturing into the HF world soon, and I have heard that the
>shuttle sometimes makes contacts on HF. If this is true, does anyone
>know the frequencies they typically use?

There is definitely no amateur HF on the shuttle. All there contacts are 2 meter FM.

The shuttle downlink frequency (your listening frequency) is 145.550 MHz. There are several uplink frequencies, but the only one they use is 144.95 MHz. The only time a reliable contact can be made is when the shuttle is orientated with it's top side towards earth.

Note that MIR uses 145.550 MHz simplex. Therefore STS-71 (the docking mission with MIR) will use a downlink of 145.840 MHz and uplinks of 144.45 or 144.47 MHz.

good luck

Jim
WS0DIA
jim.hansen@stpete.honeywell.com

1136. Re: Interface for DSP-2232 Icom 765 Yaesu 736r

Newsgroup: rec.radio.amateur.space
Date: 1995-05-25 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3q2g5s$ejc@newshost.lanl.gov>
Source record: 24940

Jean-Francois,

I have a FT-736 which I use for both 9600 and 1200 baud. The best solution I have found is to use the original data port for 1200 and the G3RUH mod port for 9600. I use a 3.5mm stereo jack for the 9600 baud port also just like the 1200. This way I can easily move the cable to the proper port for the operation intended. Also you must remove the plug from the radio or the TNC to use the radio in FM voice. This could be made simpler with a switching arrangement.

Also be warned the Yaesu pinout for the data port is incorrect. The tip is transmit audio and the ring receive audio the sleeve ground. I believe it is backward in most manuals. I don't think the Yaesu drives the DSP-2232 hard enough at 9600 so you may have to change some resistors.

1137. AEAFAX2 & Pacsats

Newsgroup: rec.radio.amateur.space
Date: 1995-05-25 00:00:00 UTC
From: millerj@dnaco.net
Message-ID: <3q0sqi$idi@sisko.dnaco.net>
Source record: 24941

Has anyone ever tried to decode any acii text from any of thw sats.
with the AEAFAX2.
TIA
millerj@dnaco.net

1138. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-05-26 00:00:00 UTC
From: g7uph@cromer.demon.co.uk
Message-ID: <19950526.004050.71@cromer.demon.co.uk>
Source record: 24942

In message <51@itnlinx.win-uk.net> Ashley Booth wrote:
>In article <19950522.011849.93@cromer.demon.co.uk>, Louis Gidney
(g7uph@cromer.demon.co.uk) writes:
>>Has anyone built a system that will 'lock on' to a satellite by feedback
>>after it has been pointed at it, rather than relying on prediction alone?
>>Or are there commercial systems which do this?
>>
>>There may be other ways, but it seems to me this should be possible to do
>>this without ancilliary antennas. These are my thoughts so far:
>
> [... snipt ...]
> One of the systems used there on 136 MHz used an array of Yagis.(3x3 I
>think). It measured the phase between the outer most Yagis and fed the
^^^^^
>errors to the control system and hence to the hydraulic pumps.

You do mean 'phase' ? If so how should I use phase information ?

> You had to steer the antenna to the predicted position and once you had
>AOS, position it using AGC volts, then switch to auto.

Sounds fine, but I was hoping to do it with no ancilliary antennas.

--
73 de Louis - G7UPH

1139. What is Bahn Lat./Bahn Long.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-26 00:00:00 UTC
From: millerj@dnaco.net
Message-ID: <3q3ntj$e1@sisko.dnaco.net>
Source record: 24943

What are these two words Bahn Lat. and Bahn Long. They are used in a sat.tracking program I have. the manual is not clear.
millerj@dnaco.net

1140. Jonathans Space Report in Pkt format

Newsgroup: rec.radio.amateur.space
Date: 1995-05-26 00:00:00 UTC
From: H14763@ngynfs02.ESkom.co.ZA
Message-ID: <37021C66E76@ngynfs02.eskom.co.za>
Source record: 24944

Hi All,

I am considering setting up a redistribution list to allow Sysops of Packet Radio (and all digital MBO's) to receive the "Jonathans Space Report" in a packet ready format.

I have been in touch with Jonathan McDowell, the author of the document have his permission to do so. My reasons for wanting to set up the distribution list are to assist sysops who don't have newsgroup access, and secondly, to introduce a BID to try and minimise the amount of duplication of this report that is taking place. I currently have 5 copies of one edition on my BBS, all obviously from well meaning users (and sysops?) each with a different BID.

My proposed format for the address and title is:

SB SPACE @ WW $JSR(xxx)
Jonathans Space Report #(xxx)

where (xxx) is the bulletin number provided by the author.

Please e-mail subscriptions to:
h14763@ngynfs02.eskom.co.za
Subject: SUBSCRIBE JSR-LIST

You will be added to list against the <return-to field> address of your e-mail note.

Best Regards

Brian Ellse
h14763@ngynfs02.eskom.co.za Tel: **27-31-7105499 Work (6-14h UTC)
briane@goofy.iaccess.za Tel: **27-31-861581 Home
briane@iafrica.com Packet: zr5dts@zs0wte.kzn.zaf.af

1141. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-05-26 00:00:00 UTC
From: julian@kesteven.win-uk.net
Message-ID: <681@kesteven.win-uk.net>
Source record: 24945

In article <51@itnlinx.win-uk.net>,
Ashley Booth (taboo@itnlinx.win-uk.net) writes:
> In article <19950522.011849.93@cromer.demon.co.uk>,
> Louis Gidney (g7uph@cromer.demon.co.uk) writes:

>>Has anyone built a system that will 'lock on' to a satellite by feedback
>>after it has been pointed at it, rather than relying on prediction alone?

>I don't know of any amateur tracking system but in the sixties I worked at a
>NASA STADAN station (Satellite Tracking and Data Acquisition Network) at
>Winkfield near Windsor UK.
>
> One of the systems used there on 136 MHz used an array of Yagis.(3x3 I think)
>It measured the phase between the outer most Yagis and fed the errors to the
>control system and hence to the hydraulic pumps.
>
> You had to steer the antenna to the predicted position and once you had AOS
>postion it using AGC volts, then switch to auto.

What was the minimum antennae separation required to ensure a
measurable phase difference between signals at that frequency.
How was it calculated? Is there any reason why a similar system
could not be employed in amateur areas other than groundspace
required and potential cost?

Regards,
Julian.
--

1142. Re: SAREX/Mir Antenna

Newsgroup: rec.radio.amateur.space
Date: 1995-05-26 00:00:00 UTC
From: mckee@fc.hp.com
Message-ID: <3q5jce$9bl@tadpole.fc.hp.com>
Source record: 24946

Bob Smith (rsmith@internetmci.com) wrote:
: restrictions) to work the PACSATS. Can you steer me in the
: direction of the plans for the above antennas - you also said
: that you built one - I would be interested in your experiences.

I'm not Gary, but I can help. I hope to put the finishing touches
on my Lindenblad this weekend. The plans are in the ARRL's
The Satellite Experimenters Handbook. I have finished the
construction but have not tested my yet.

The construction was really easy. I used a 2x2, 4 yard
sticks and 300 ohm twinlead for the dipoles.

73,

Bret

1143. ARLS006 SAREX To Fly In June

Newsgroup: rec.radio.amateur.space
Date: 1995-05-26 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls006.1995@ampr.org>
Source record: 24947
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS006
ARLS006 SAREX To Fly In June

ZCZC AS85
QST de W1AW
Space Bulletin 006 ARLS006
From ARRL Headquarters
Newington, CT May 26, 1995
To all radio amateurs

SB SPACE ARL ARLS006
ARLS006 SAREX To Fly In June

The Shuttle Amateur Radio EXperiment, or SAREX, will be carried on the 100th US human space mission when the Space Shuttle Discovery launches on June 8, 1995 at 1326 UTC. The mission is designated STS-70, and the crew includes one Amateur Radio-licensed astronaut, Mission Specialist Donald A. Thomas, KC5FVF. The crew has scheduled voice contacts with 8 school groups in the US and one in Argentina. Landing is targeted for June 16 at 1136 UTC at the Kennedy Space Center in Florida.

On this mission, the SAREX hardware will be flown in configuration C which includes 2 meter FM voice and packet. Amateurs should use the usual frequency set to make random SAREX contacts. The astronauts will operate split, transmitting and receiving on separate frequencies. Please do not transmit on the shuttle's downlink frequency. The downlink is your receiving frequency. The uplink is your transmitting frequency. The FM voice downlink is 145.55 MHz. The FM voice uplinks are 144.91, 144.93, 144.95, 144.97 and 144.99 MHz. The crew will not favor any of the uplink frequencies, so your ability to communicate with SAREX will be the ''luck of the draw.'' To avoid causing interference to other stations, transmit only when the shuttle is within range and when the SAREX station is on the air. The crew will use KC5FVF as the primary voice call sign. On packet, use W5RRR-1 to log a contact on the SAREX ROBOT.

The following Keplerian tracking elements were provided by Gil Carman, WA5NOM, of the NASA Johnson Space Center:

STS-70
1 99970U 95160.80510237 .00017899 00000-0 55675-4 0 123
2 99970 28.4680 279.2253 0016417 154.9557 205.1895 15.89705110 219

Satellite: STS-70
Catalog number: 99970
Epoch time: 95160.80510237 = (09-Jun-95 19:19:20.84 UTC)
Element set: 012
Inclination: 28.4680 deg
RA of node: 279.2253 deg Space Shuttle Flight STS-70
Eccentricity: .0016417 Prelaunch element set JSC-012
Arg of perigee: 154.9557 deg Launch: 08-Jun-95 13:26:00 UTC
Mean anomaly: 205.1895 deg
Mean motion: 15.89705110 rev/day Gil Carman
Decay rate: 1.7899e-04 rev/day sq NASA Johnson Space Center
Epoch rev: 21
Checksum: 316

Send reports and QSLs to ARRL EAD, STS-70, 225 Main Street, Newington CT 06111-1494 USA. Include the mission number, date, time in UTC, frequency and mode in your report. You must also include a self-addressed stamped business-sized envelope if you wish to receive a card. The Sterling Park Amateur Radio Club in Sterling, VA has generously volunteered to manage the cards for this mission.

The flight will highlight the deployment of a sixth Tracking and Data Relay Satellite. Once deployed, an engine on the satellite will boost it into a geostationary orbit. The TDRS System provides NASA with communication and tracking capability to meet its mission support requirements.

SAREX will also be carried on mission STS-71, which is scheduled for no earlier than June 23. During that mission, the Shuttle Atlantis will rendezvous and, for the first time, dock with the Russian Space Station Mir. The shuttle will carry two new Mir crew members (Mir 19) to the station, and return to Earth with the three Mir 18 crew members, including US astronaut Norm Thagard.

For more information on SAREX, contact the ARRL Educational Activities Department.
NNNN
/EX

1144. Re: New CD-ROM & WWW site.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3q74cq$bfs@news4.primenet.com>
Source record: 24948
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

In <3pjrpq$gr0@acara.snsnet.net>, guy@citystages.org (Guy McCullough) writes:
>In article <3oqtvq$hm1@hpbab.wv>, hanko@wv.mentorg.com (Hank Oredson) says:
>>
>>In article <3ofsbt$fem@krel.iea.com>, n0dh@comtch.iea.com (D.C. Henderson) writes:
>>|> amsoft@epix.net wrote:
Original deleted

>>|> you guys just don't get it do you......you didn't get enough flames the
>>|> last time you used the rec.radio.****** bandwidth for commercial ads?
>>|>
>>|> :-(
>>|> N0DH
>>
>>
>>Or perhaps "YOU guys" (the self-annointed net cops) don't get it.
>>
>>There are many of us out here who welcome access to ANY and ALL
>>information relating to our hobby.
>>
>>"If you don't like it, don't read it."
>>
>> ... Hank
>>
>I'm with you, Hank. If there are CD-ROMs and WWW sites out there, I for one
>want to know about them. Anyone who thinks commerce and the net do not
>mix needs to get an update and a clue!
>
>GAL, man.

At the risk of fanning flames...

There are appropriate areas to post commercial announcements. This is a
moderated forum, so the announcement passed whatever criteria the moderator
uses. I didn't find it objectionable since it is short.
Jim N7TCF n7tcf@primenet.com

1145. Re: Latest Kepler data

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: jeffrey s austin <74733.2407@compuserve.com>
Message-ID: <3q671v$n75@dub-news-svc-4.compuserve.com>
Source record: 24949

if you are a subscriber to compuserve, they have the elements in both amsat and nasa formats. i have found that the new elements come out around thursday.
-73's jeff n8vna/4

1146. Re: Feedline attachment question.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3q758b$bfs@news4.primenet.com>
Source record: 24950

In <1775975882-950522105959@blackboard.com>, chris@angus.mystery.com@blackboard.com (Chris) writes:
>From: Chris Oesterling <chris@angus.mystery.com>
>I just purchased a KLM 16C (I think) 2 meter OSCAR antenna and had
>a question about where to attached the feedline. I have a seperated
>Yaseu 5400B rotor on my Rohn 45G tower. (The az rotor is in the
>tower and elv rotor is attached to the mast connected to the az
>rotor.) The feedling attaches to the back end of the KLM antenna.
>So do I attached the feedline from the antenna to to boom then to the
>tower or the antenna to mast to tower or what? I feel a little silly
>asking such a simple question but I really what to minimize my time
>at the top of the tower! Thanks - Chris N8UDK
>
>--
>Chris Oesterling (chris@angus.mystery.com)
>Mystery Spot BBS, Royal Oak, MI ----------?--

I draped a long length of coax from the tail end of the antenna back to the mast. Allow for max rotation at 0 deg elevation, this is the longest length you need.
The advantage to this method is the feedline has the least effect on the antenna pattern. However, it changes the balance point of the antenna. I use a barely adequate $70 rotor that must be statically balanced or else it stalls. So I spent a lot of time up there tweaking the system.
Running the coax back to the cross-boom and then down the mast, looks neater but takes the same amount of line. It also affects the static balance.
Jim N7TCF n7tcf@primenet.com

1147. Re: Station Advice.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3q762s$bfs@news4.primenet.com>
Source record: 24951

In <3ptj3n$6ap@news.internetmci.com>, rsmith@internetmci.com (Bob Smith) writes:
>I could use advice on setting up a Satellite station for OSCARS
>(primarily PACSATS AND KITSATS).
>
>Here is my plan:
>
>RADIO NOW: ICOM 281H 2M RX/TX 50W 440 RX 9.6 ready
>
>RADIO PLANNED: Plan to move to ICOM 820 or YAESU 736 this summer
>which would you suggest - I already have an ICOM 737 with ICOM
>computer interface so I would like to stick with ICOM if
>possible.
>
>TNC: PK-900
>WILL BUY: Either TAPR G3RUH 9.6 modem (limited to KITSATS ONLY)
>or the DSP-93
>
>ANTENNA: Don't want to skimp but I live in a restricted
>neighborhood so I am limited to the 20' X 7' high attic space I
>have.
>
>WAS thinking about the LOG LOG PERIODIC featured in the latest
>issue (OVERSIPLIFIED I UNDERSTAND) of QST. I would point 22
>degrees up and spin on axis with a rotor. Where can I get on of
>these guys.
>
>WAS thinking about a dual band EGGBEATER. I have read that these
>perform well in this application. Again, where can I get on of
>these guys.
>
>Will need a 440 preamp - What do you suggest.
>
>Will FEED the whole thing 50' to my shack in the basement with
>RG/8 coax.
>
>WISP is my program of choice for the software part of this
>project.
>
>Please any help would be appreciated. As you can see I am trying
>to step into this lightly because I am not sure if I will be able
>to use the sats from my site. I am able to hit MIR on just about
>every pass, that's easy I know.
>
>At this point I would not mind trying a minimal setup just to see

>if I can hear the birds and go from there with better radios,
>rotators etc.
>
>Any advice would be great. Thanks in advance.
>
>Bob Smith
>N3FTU@amsat .org
>
>-=-
>| Bob Smith N3FTU |
>| rsmith@internetMCI.COM Atlanta, GA |
>-=-

A good place to start learning is the "Satellite Experimenter's Handbook" published by the ARRL. The book is getting a bit old, but the background info is useful.
MIR is only 300 miles up, so it's signal is louder than most digital sats. I doubt the eggbeater will be adequate, unless simply accessing the sat is OK and actually downloading files is not wanted. Some experianced eggbeater user can enlighten us here.
Rotatable beams maximize the throughput by maximizing signal strength. Low signals cause retries and most files need multiple passes to complete anyway.
DSP, if you can afford it and build it, is the safest investment. The 1200 baud PSK birds are dying off. 9600 baud is ok for now, but future birds will have even higher rates.
Check out the Amsat Web site, if you have Web access, or FTP some of the info files.

ftp.amsat.org

Correct me if this is the wrong address.

73 Jim n7tcf@primenet.com

1148. Re: Intrernet to Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3q768r$bfs@news4.primenet.com>
Source record: 24952

In <3ppu8f$3ch@ixnews4.ix.netcom.com>, martytt@ix.netcom.com (Martin Toomajian) writes:
>In <wday-2105952050290001@fw9.dfw.net> wday@dfw.net (Wayne Day) writes:
>
>>
>>In article <3pnapn$8af@ixnews3.ix.netcom.com>, martytt@ix.netcom.com
>>(Martin Toomajian) wrote:
>>
>>> Is it possible to send a message from an Internet site to a
>satellite?
>>> Has this ever been proposed? It would seem that with certain
>>> restrictions in place that the folks who send messages to each other
>>> via satellite should be able to enjoy messages from Internet EMail.
>>>
>>> What is the current situation and what is planned?
>>
>>So, like how do you think internet messages from North America get to
>>places like Asia, Australia, Europe, etc.? Think all of them are
>going by
>>undersea cable?
>>
>>You're already using satellites, dude, and just didn't know it!
>>
>
>I was not as explicit as I should have been. I am referring to all the
>hams who use amateur radio satellites. Many of these people have no
>Internet EMail accounts. It would be of service to them for a node to
>forward Internet EMail messages to and from the satellites.
>
>If I didn't make it clear enough this time reply and I will try again.

The recent QST had an article about Internet/Packet gateways. The key is finding a gateway and wrapping your message properly. Check the June '95 QST.
Jim n7tcf@primenet.com

1149. Re: Need help with mode B crossboom length

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3q773j$bfs@news4.primenet.com>
Source record: 24953

In <3pniuu$tpl@mail.one.net>, Jeff Davis <jdavis@one.net> writes:
>gsnellgr@scsn.net (Greg Snellgrove) wrote:
>>I am putting together a mode antenna array and I need to know the minimum
>>crossboom length I can get away with.
>
>Greg,
>
>I have experimented with the boom length but there are numerous
>variables. For instance, what antennas will you be using and what
>kind of radio will you use, how much uplink power?
>
>I have found that the closer the two antennas are together the more
>interference your uplink will create for your downlink (remember you will
>be operating full-duplex).
>
>Presently, I use the KLM "short" antennas (14 elements on 145 mhz, 18
>elements on 435 mhz) and about 6' is as close as I can get them. The boom
>should be non-conductive (like fiberglass or wood). I use a Yaesu FT-736R
>transceiver and usually run about 75 watts.
>
>Thru other discussions it has been noted that 'skewing' the yagis can
>help this cross-modulation problem. Instead of mounting the yagis
>perfectly in the + direction, you can tilt them in the X configuration.
>This did NOT seem to allow me to get closer than 6' but others have
>claimed it helps.
>
>Good luck with your mode B station and I hope to see you on the birds!
>
>73 de N9AVG

I also used 6 feet spread. Later I changed to 10 feet. Both booms were 1-1/4
inch EMT conduit. With the X configuration it minimizes pattern distortion.
A paper was presented at an AMSAT conference regarding this matter. The
gist of it is that it is not a big deal, using the X, even if the boom is metal. The
spacing is though. Six feet is about one wavelength for 2 meters, closer and the
70cm antenna gets overloaded.
I used a tip from the ARRL handbook to reduce the 3rd harmonic of 145.8...
getting into the 70cm system. Take a 1/4 wave stub (at 435.???), short the far
end, and 'T' this into the 2 meter feedline. This is a cheap low-pass filter and costs
just a little signal strength. The higher quality coax, the better the filtering. Same
for the connectors used.
The exact length will vary by the velocity factor of your coax, and at 435, a
1/4 can move it alot. Be prepared to experiment. A free bonus of this method is
coax is now DC grounded for static bleed-off.

Jim n7tcf@primenet.com

1150. ARLK021 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk021.1995@ampr.org>
Source record: 24954
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK021
ARLK021 Keplerian data

ZCZC SK46
QST de W1AW
Keplerian Bulletin 21 ARLK021
From ARRL Headquarters
Newington, CT May 27, 1995
To all radio amateurs

SB KEP ARL ARLK021
ARLK021 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95142.49849230 -.00000182 00000-0 10000-3 0 3520
2 14129 26.4824 266.9437 6003509 278.8425 21.5500 2.05881910 61803
RS-10/11
1 18129U 87054A 95141.87769520 .00000039 00000-0 25880-4 0 708
2 18129 82.9250 78.5158 0011776 157.0415 203.1265 13.72352418396360
UO-11
1 14781U 84021B 95140.53767885 .00000172 00000-0 36997-4 0 7990
2 14781 97.7825 144.3729 0010541 271.7927 88.2069 14.69344172599846
RS-12/13
1 21089U 91007A 95140.46025146 .00000035 00000-0 21447-4 0 8005
2 21089 82.9199 121.3409 0027435 249.8238 109.9966 13.74057402214962
AO-13
1 19216U 88051B 95135.11704533 -.00000236 00000-0 10000-4 0 389
2 19216 57.5427 187.4499 7289897 8.9363 359.2652 2.09724770 21476
UO-14
1 20437U 90005B 95140.72211734 -.00000015 00000-0 11297-4 0 987
2 20437 98.5676 225.5333 0010357 282.3190 77.6827 14.29886440277822
RS-15
1 23439U 94085A 95140.91844346 -.00000039 00000-0 10000-3 0 511
2 23439 64.8183 299.0903 0167654 266.9588 91.2142 11.27523492 16448
AO-16
1 20439U 90005D 95141.25472800 .00000002 00000-0 17650-4 0 8972
2 20439 98.5789 227.6896 0010864 281.0102 78.9832 14.29940422277919
```

```
DO-17
1 20440U 90005E 95141.73563783 .00000025 00000-0 26432-4 0 8971
2 20440 98.5799 228.6142 0010659 277.9429 82.0543 14.30081672278006
WO-18
1 20441U 90005F 95141.22760654 .00000025 00000-0 26798-4 0 9013
2 20441 98.5800 228.0882 0011460 281.6819 78.3077 14.30053114277932
LO-19
1 20442U 90005G 95141.18238868 .00000023 00000-0 25728-4 0 8970
2 20442 98.5815 228.3965 0011680 280.8510 79.1357 14.30155064277945
FO-20
1 20480U 90013C 95141.19816995 -.00000033 00000-0 64004-5 0 7933
2 20480 99.0716 234.8170 0540295 294.4359 60.1300 12.83229209247487
AO-21
1 21087U 91006A 95138.82391007 .00000094 00000-0 82657-4 0 5968
2 21087 82.9427 254.3005 0034199 226.6920 133.1382 13.74554473215691
UO-22
1 21575U 91050B 95141.20025567 .00000038 00000-0 27383-4 0 6032
2 21575 98.3976 213.1860 0008183 7.5261 352.6044 14.36975532201626
KO-23
1 22077U 92052B 95141.84472213 -.00000037 00000-0 10000-3 0 4942
2 22077 66.0864 290.9227 0008530 205.0074 155.0527 12.86291437130344
KO-25
1 22828U 93061F 95142.19739387 .00000029 00000-0 29456-4 0 3691
2 22828 98.6155 219.1007 0009480 287.7229 72.2912 14.28099638 54165
IO-26
1 22826U 93061D 95142.19488417 .00000023 00000-0 27197-4 0 3913
2 22826 98.6198 219.0639 0008887 304.0986 55.9376 14.27769866 86065
AO-27
1 22825U 93061C 95141.39799204 .00000034 00000-0 31606-4 0 3925
2 22825 98.6184 218.1840 0008249 305.5472 54.4933 14.27662458 85949
PO-28
1 22829U 93061G 95142.20864129 .00000042 00000-0 34407-4 0 3830
2 22829 98.6157 219.1429 0009724 288.9478 71.0647 14.28078668 86084
Mir
1 16609U 86017A 95143.03610361 .00003819 00000-0 59483-4 0 474
2 16609 51.6468 283.5504 0004497 345.6553 14.4287 15.56594137529037

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
May 30, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1151. Re: Shuttle HF frequencies ?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: Tom Woolner <Tom@woolner.demon.co.uk>
Message-ID: <801606420snz@woolner.demon.co.uk>
Source record: 24955

In article <3q0c83$qd0@paperboy.ids.net> Pchien@ids.net "Philip Chien" writes:

" In article <3pvb66$duo@noc.tor.hookup.net> Jeff Krul, JKrul@equist.com
" writes:
" >I will be venturing into the HF world soon, and I have heard that the
" >shuttle sometimes makes contacts on HF...
"
" Considering that, by definition, HF works by bouncing signals off the
" ionosphere, it would be rather difficult for te shuttle, or any
" spacecraft, to have much success trying to communicate with ground
" stations via HF. 10 meters is the practical limit for space
"

No, not true. There is no reason why HF should not be used provide
the path is not precluded by the critical angle of reflection/refraction
defined by the ionospheric situation current at the time of transmission.

Practically, though, this is unpredictable in detail just as terestrial HF
propagation is. That is only why VHF is preferred. Don't forget the first
SPUTNIKS used 20 MHz +/- 5 KHz (Mc/s in those days!) I still have a few old
tapes of those signals. Some wild signal level changes took place as the craft
passed through the critical angle - a bit before going below the geographic
horizon.

Even I was still at school then ...

Regards to all,
Tom Woolner
"Good reasons must, of force, give place to better."

1152. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-05-27 00:00:00 UTC
From: taboo@itnlinx.win-uk.net
Message-ID: <53@itnlinx.win-uk.net>
Source record: 24956

In article <19950526.004050.71@cromer.demon.co.uk>, Louis Gidney
(g7uph@cromer.demon.co.uk) writes:
>In message <51@itnlinx.win-uk.net> Ashley Booth wrote:
>>In article <19950522.011849.93@cromer.demon.co.uk>, Louis Gidney
> (g7uph@cromer.demon.co.uk) writes:
>>>Has anyone built a system that will 'lock on' to a satellite by feedback
>>>after it has been pointed at it, rather than relying on prediction alone?
>>>Or are there commercial systems which do this?
>>>
>>>There may be other ways, but it seems to me this should be possible to do
>>>this without ancilliary antennas. These are my thoughts so far:
>>
>> [... snipt ...]
>> One of the systems used there on 136 MHz used an array of Yagis.(3x3 I
>>think). It measured the phase between the outer most Yagis and fed the
> ^^^^^
>>errors to the control system and hence to the hydraulic pumps.
>
>You do mean 'phase' ? If so how should I use phase information ?
>
>
>> You had to steer the antenna to the predicted position and once you had
>>AOS, position it using AGC volts, then switch to auto.
>
>Sounds fine, but I was hoping to do it with no ancilliary antennas.
>
>--
>73 de Louis - G7UPH

Yes I mean phase. If the array is pointing directly at the satellite the
received signal at each of the outer Yagis will be in phase. If the satellite
is slightly to the left of the array then the signal in the left Yagi will be
leading in phase wrt the right Yagi and vice versa.

Ashley Booth G8DPH taboo@itnlinx.win-uk.net

1153. Suggested Reading?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-28 00:00:00 UTC
From: bad1679@osfmail.isc.rit.edu
Message-ID: <1995May28.184626.7422@ultb.isc.rit.edu>
Source record: 24957

Hi all,

I don't know much about operation through OSCAR satellites and would like to get started with it and aim toward a 23cm up and 70 cm downlink (portable station) that I could take on backpacking trips.

In the literature department I came across the Satellite Experimenter's Handbook which seems to still be in the first edition (any info in it on the new Microsats?) or does anyone know if there has been a new edition that came out since the first one in 1990?

I also came across the Hamsat Handbook.

Does anyone consider one of the handbooks inferior/more outdated than the other?

Thanks for your input.

73 Bernie NU1S

1154. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-05-29 00:00:00 UTC
From: blanton@ni.net
Message-ID: <blanton-2905952305370001@xband.ni.net>
Source record: 24864

In article <19950522.011849.93@cromer.demon.co.uk>,
g7uph@cromer.demon.co.uk wrote:

> Has anyone built a system that will 'lock on' to a satellite by feedback
> after it has been pointed at it, rather than relying on prediction alone?
> Or are there commercial systems which do this?
> ...
>
> In this scheme the aim would be to maintain the axis of the cone pointing
> at the satellite, so the angle of this conical motion to its own axis would
> be the off-line angle that one had decided should give an adequate signal,
> as well as a suitable sloping-off of signal-strength for control purposes
> (based on the known lobe shape of a the particular rx antenna being used).

The scheme of conical scanning you describe was widely used in radar systems in the 1940s and 1950s (and was called conical scanning). You can find detailed descriptions of it in old radar books. It should work well if the satellite emits a continuous (constant power) beacon signal.

The other scheme mentioned is phase-comparison monopulse. This is a tracking technique used in radar from the 1960s to the present, and detailed technical descriptions can be found in radar textbooks. Since it relies on phase information it is relatively immune to amplitude variations on the signal being tracked. This technique usually requires the antenna to be divided into subapertures whose signals are processed through separate receiver channels. This gets to be expensive, so is less suitable for amateur projects.

73,
Lee Blanton, WA8YBT/6
Lockheed Martin Corporation
Advanced Development Operations, San Diego

1155. FOR SALE OR TRADE-VARIAN MICROWAVE AMPS+++...ect.

Newsgroup: rec.radio.amateur.space
Date: 1995-05-29 00:00:00 UTC
From: ando@ix.netcom.com
Message-ID: <3qbt65$3rq@ixnews4.ix.netcom.com>
Source record: 24958
Cross-posted to: rec.radio.swap,rec.radio.amateur.space,misc.forsale

FOR SALE OR TRADE-VARIAN MICROWAVE AMPS+++...ect.
From: ando@ix.netcom.com (ANDERS KAUFMANN)

NEW-VZX6983G5GLM 8-12.4ghz.53db.gain 200w x band $16,000.
NEW-VZM6993051505 12-18 ghz.53db.gain 200w ku band $13,000.
USED-1008.7hrs VZX6981KADEH 8-12.4ghz.40db.gain 20w x band $7,500.
L&R COMMUNICATIONS-low noise amp local controle and monitor
ARBITER SYSTEMS-satelite controled clock
LAMDA-LFS-44-48
DIGITAL-H7100A
SCIENTIFIC ATLANTA-3267260 model4663R
" "-Digital Processing Unit model7325
" "-Signal Source model2180
" "-Antenna Motor Controler model8841A
DATUM-Digital Clock,TEXAS INSTRUMENTS-XDS/22 Illuminater,300'Wave Guid,
Tuners,Servo Motors,Baseband Noise Test Set,Step Attenuators,Many Microwave GIZMOS
S.C.I.F-Industrial Accoustics 560sq.ft. 3 rooms all electronics filters
A C,ductwork,everything to be EMI certified,dishes,way too much to list
I would like to make a package deal, but will part out.Intrested in
trading for aircraft or muscle/sports car.404-925-2887
404-923-5726

1156. Source of amateur satellite photos?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-29 00:00:00 UTC
From: wblair@rmii.com
Message-ID: <3qbcks$f9l@natasha.rmii.com>
Source record: 24959

Anyone know of a good www or ftp source for amateur satellite photos (i.e. photos of the satellites themselves and/or photos they take from orbit)?

1157. Help: WIN95,WISP,KCTT

Newsgroup: rec.radio.amateur.space
Date: 1995-05-29 00:00:00 UTC
From: "Lawrence F. Johnston" <ljohnsto@carbon.cudenver.edu>
Message-ID: <Pine.OSF.3.91.950529114836.10080A-100000@carbon.cudenver.edu>
Source record: 24960

I am running the WIN95 Preview. I have loaded WISP and unzipped the KCTT.DRV and OEMSETUP.INF in the \SATDRV directory.

I can't find the equivalent operations to add the driver.

Any ideas?

Thanks.

Larry, W0EIE

1158. Re: Suggested Reading?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-29 00:00:00 UTC
From: n2ete@ag.net
Message-ID: <3qcq32$gdp@agis.ag.net>
Source record: 24961

In article <1995May28.184626.7422@ultb.isc.rit.edu>,
bad1679@osfmail.isc.rit.edu says...
>
>
>Hi all,
>
>I don't know much about operation through OSCAR satellites and would
like to
>get started with it and aim toward a 23cm up and 70 cm downlink
(portable
>station) that I could take on backpacking trips.
>
>In the literature department I came across the Satellite Experimenter's
>Handbook which seems to still be in the first edition (any info in it
>on the new Microsats?) or does anyone know if there has been a new
edition
>that came out since the first one in 1990?
>
>I also came across the Hamsat Handbook.
>
>Does anyone consider one of the handbooks inferior/more outdated than
the
>other?
>
>Thanks for your input.
>
>73 Bernie NU1S

From what I can see, looking at my list from AMSAT, there is a book called "How to use amateur radio satellites" from AMSAT. It's only $5.00 US, so it won't kill the budget. The address is AMSAT, 850 Slingo Ave., Silver Spring, MD 20910. Or if you want to use VISA/MC, call 301-589-6062. I hope that helps!!

Jim N2ETE

1159. What sat can reach with 144/440 FM radio?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: ve2yag@ve2noq.ampr.ORG
Message-ID: <74387@ve2noq.ampr.org>
Source record: 24865

I have mobile FM dual bander 144/440Mhz. What sat I can make qso with this equipment? I have heard AO-27 are open weekend for cross-repeater 144->440 but I never heard it. Can you help me?

73 de VE2YAG (ve2yag@ve2noq.ampr.org)

1160. Traksat?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: David Johnson <djohnson@acpub.duke.edu>
Message-ID: <Pine.ULT.3.91.950530134209.10013B-100000@bio7.acpub.duke.edu>
Source record: 24866

Hello enthusiasts-of-the-sats:

First, thanks to all who replied to my earlier, basic query from a newbie. I have started to follow some of the good advice on getting started. I have obtained Traksat, and am trying to figure out how to use it with my own keps input file (like the ARRL bulletin with the keps). Is anyone adept at this who can provide directions for a simpleton? I hope to get on the 10m/15m bird soon. Thanks, and best wishes to all the bird-watchers and bird-talkers!

Dave

David W. Johnson Power is no substitute for skill
Amateur Extra WA4NID QRP ARCI 6546
email: djohnson@acpub.duke.edu G-QRP 4864
packet WA4NID@KB4WGA.NC.USA.NA NorCal 355

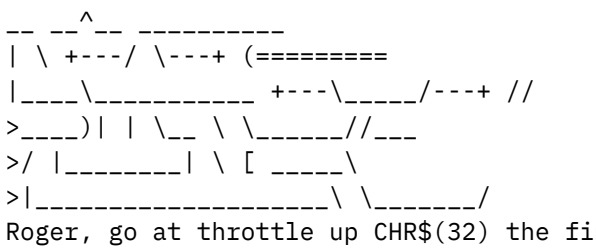
1161. Re: Source of amateur satellite photos?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3qe4g9$2v7@paperboy.ids.net>
Source record: 24867

In article <3qbcks$f9l@natasha.rmii.com> William B. Blair,
wblair@rmii.com writes:
>Anyone know of a good www or ftp source for amateur satellite photos
>(i.e. photos of the satellites themselves and/or photos they take from
>orbit)?
>
Check out the AMSAT www site for many digitized photos of the Phase 3-D
spacecraft under construction by Dick Jansson, WD4FAB and myself.

I also sent a couple of digitized images of Ron Parise, WA4SIR, from his
recent shuttle mission and they may be available for download.

I hope to get a bunch more up there some time soon when I get the chance
to digitize them, along with some photos of the earlier satellites.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1162. Re: Source of amateur satellite photos?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: Tom Woolner <Tom@woolner.demon.co.uk>
Message-ID: <801860972snz@woolner.demon.co.uk>
Source record: 24868

In article <3qbcks$f9l@natasha.rmii.com>
wblair@rmii.com "William B. Blair" writes:

" Anyone know of a good www or ftp source for amateur satellite photos
" (i.e. photos of the satellites themselves and/or photos they take from
" orbit)?
"
"

I have ++hundreds++ of pictures recieved from NOAA 9, 10, 11, 12, 13 (few), 14 - these craft being of US origin. Also in my archive are many METEOR 2/21 3/3, 3/4, 3/5 and a very few OKEAN 4 pictures - this group is of Russian (Soviet) origin. My pictures are *of course* as received from craft over or near the UK, generally extending from the north Sahara to close to the North Pole and rather less distance East and West.

These are weather, polar orbiting satellites. They transmit data of many kinds in an internationally agreed format known as APT (Automatic Picture Transmission) - broadly an analogue form of the shore-to-ship and aircraft fax chart system. The data is open to all who wish to use it, again by international agreement.

As for public sources - no idea, I get my own!

Regards to all,
--

Tom Woolner
"Good reasons must, of force, give place to better."

1163. TAPR DSP93 + WISP + PK900

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3qfsi3$o4h@news.internetmci.com>
Source record: 24869

TAPR DSP93 + WISP + PK900

Anyone use the above combination? Any thoughts you could share
would be most appreciated. Thanks

[0]~~~~~~[0]
| Bob Smith N3FTU |
| rsmith@internetMCI.COM Atlanta, GA |
[0]~~~~~~[0]

1164. Re: Traksat?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3qgi4h$r8@acmez.gatech.edu>
Source record: 24870

David Johnson <djohnson@acpub.duke.edu> writes:

>Hello enthusiasts-of-the-sats:

>First, thanks to all who replied to my earlier, basic query from
>a newbie. I have started to follow some of the good advice on
>getting started. I have obtained Traksat, and am trying to figure
>out how to use it with my own keps input file (like the ARRL
>bulletin with the keps). Is anyone adept at this who can provide
>directions for a simpleton? I hope to get on the 10m/15m bird
>soon. Thanks, and best wishes to all the bird-watchers and
>bird-talkers!

I use TrakSat 2.80 on a pokey 286, and I have found it to be a little quirky.
One thing I have found is that if I download two-line keps from e-mail, I
have to use a DOS editing program (the EDIT for DOS 6 will work with version
3.3, and is good... hint, hint!) and remove the e-mail headers. A better
solution is to ftp to archive.afit.af.mil in the /pub/space directory and
get the *.tle files. (ie, amateur.tle, mir.tle, etc.) They are updated
frequently.

Good luck with the birds!
73 de KD4UGI

```
*****************************************************************************
* MIKE "GATOR" WHALEY KD4UGI mwhaley@iu.net *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
*****************************************************************************
```

>Dave

>David W. Johnson Power is no substitute for skill
>Amateur Extra WA4NID QRP ARCI 6546
>email: djohnson@acpub.duke.edu G-QRP 4864
>packet WA4NID@KB4WGA.NC.USA.NA NorCal 355

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1165. Is DOVE still operating?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: Jim Jaworski <soo696@freenet.mb.ca>
Message-ID: <Pine.SUN.3.91.950530203107.12271B-100000@winnie.freenet.mb.ca>
Source record: 24871

I haven't heard anything from the DOVE satellite in over 6 months
now and haven't heard any news about its current status. Could someone
update me on this? Thanks.

Also what is the current status/plans for AO-21. This is the
first 2 metre satellite I have ever heard and it would be nice to hear it
AGAIN on 145.9875.

Winnipeg MB Canada soo696@freenet.mb.ca
TEAM OS/2 MIME OK
Proud to be a non-hyphenated Polish Canadian!

1166. * SpaceNews 29-May-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3qfg81$7ct@pilot.njin.net>
Source record: 24872
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0529
* SpaceNews 29-May-95 *

BID: $SPC0529

=========
SpaceNews
=========

MONDAY MAY 29, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* PANSAT NEWS *
===============
The Petite Amateur Navy Satellite (PANSAT) is a small, spread-spectrum communication satellite developed by the Naval Postgraduate School (NPS) as an educational project for officer students. PANSAT will be a tumbling spacecraft with a weight of 150 pounds to be completed in 1996. PANSAT will most likely be launched from the Space Shuttle by means of the HitchHiker program. The launch will place PANSAT in a Low Earth Orbit (LEO) with an inclination of at least 28 degrees. The spacecraft will supply direct-sequence, spread-spectrum modulation with an operating center frequency of 436.5 MHz, a bit rate of 9600 bits per second and 4 MB of message storage. Amateur radio ground stations will be able to utilize PANSAT for store-and-forward communication.

Through use by the amateur radio community PANSAT will supply a means to demonstrate spread-spectrum communications. In addition, PANSAT provides many potential applications for low-cost communications. The low probability-of-intercept would be an important feature for the military in downed-pilot-rescues. The pilot could obtain his/her location through a GPS system and uplink the information to the orbiting satellite at low risk. Examples of civilian uses include emergency rescue and communication to remote areas.

To prepare the spacecraft for flight it will undergo functional and environmental testing at the system and subsystem level. The environmental testing includes thermal vacuum, random vibration, and electromagnetic interference and compatibility (EMI/EMC) testing. All testing will be conducted using NPS space test facilities.

A modified amateur satellite ground station is needed to communicate with PANSAT. The NPS ground station utilizes off-the-shelf software, is microcomputer controlled, and is equipped with a spread-spectrum modem.

The NPS ground station is similar to a typical amateur radio user station, except it has spacecraft command capability. The NPS ground station is also utilized as a classroom instructional laboratory.

[Info via the Naval Postgraduate School]

* MIR SCHOOL CONTACT *
======================
Dave, N1PPP reports that the Russian space station Mir made a scheduled radio contact with Chris Edscorn at Crotched Mountain school in New Hampshire over the past week. Chris teaches a special education communications class, and since there is no third party agreement with Russia, asked questions of Dr. Norm Thaggard for the class. The contact lasted about six minutes. Dr. Thaggard was very busy with a communications satellite and wasn't sure he would be able to make the contact, but managed to take a few moments to make the contact.

* WO-18 CRASH *
===============
Bob Argyle, KB7KCL, at Weber State University has reported that sometime between 17-May-95 21:30 UTC and 18-May-95 19:12 UTC, Webersat/OSCAR-18 experienced a software crash. The transmitter has been turned back on and is sending MBL telemetry. After determining the cause of the crash, the spacecraft controllers will reload the satellite with its software, adding a few new features.

The following MBL frames were received from WO-18 by KD2BD in New Jersey on Saturday 27-May-95:

WEBER-1>TIME-1 <UI>:
PHT: uptime is 003/12:22:01. Time is Sat May 27 18:11:29 1995

WEBER-1>LSTAT <UI>:
A: 0x0B97, P:0x3000, o:0 l:11065 f:11065 d:0 st:2

WEBER-1>CAST <UI>:

05:55 24-May-95
Initial software reloaded.
Expect improved software aboard in about 3 weeks.

73,
KB7KCL and IK3WVJ
Webersat command team

* LOST SATELLITE LOGS *
=======================
Benoit, VE2VB, of St-Felix de Valois Quebec (Grid FN36ic) has reported that he lost a computer file containing logs of some of his recent satellite contacts. He made about 30 contacts on AO-10 and AO-13 in the month of April, and asks anyone who may have worked him during this period to contact him so he can build his log up again and issue QSL cards to those who need them.

Benoit can be reached on packet radio at: VE2VB@VE2CLJ.PQ.CAN.NA, or via
the Internet at: ve2vb@mtlgw.ampr.org. Benoit's postal address may be
found in any Callbook from 1987 to the present.

* SATELLITE NEWS *
==================
Benoit, VE2VB, reports that is in Mode JA and FO-20 is working great.
On 25-May-95 he reported very strong downlink signals and worked stations
in Europe and in the USA while the satellite was along the U.S. east coast.
He also reports receiving very strong downlink signals from AO-10 on
24-May-95 using a 22 element yagi and no preamp.

* FEEDBACK/INPUT WELCOMED *
==========================
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any
of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

1167. Which NOSS is brightest?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-30 00:00:00 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3qejcf$pkl@news.cc.utah.edu>
Source record: 24873

Anyone have any idea as to which of the 28 or so NOSS satellites is/are brightest?

I'd like to add visibility predictions for these "secret" satellites to our Satellite Observing Information line but only if any of them are easy naked eye targets.

Thanks!

Patrick Wiggins, Hansen Planetarium, SLC, UT
patrick.wiggins@k12.uen.gen.ut.us

1168. vhf/uhf equipment sale

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: Conrad Farlow <conrad@g0ruz.demon.co.uk>
Message-ID: <409521925wnr@g0ruz.demon.co.uk>
Source record: 24874

VHF/SHF equipment sale on Behalf of G0LBK(all prices UK sterling)

SSB electronics 1296/144 transverter
includes Mitsubishi Pa 15 watts O/P 195

MMT 144/28R 25 watt O/P transverter(new model) 100

F1EHN EME tracking system PCB,components & s/ware 70

2 lengths ldf 4-50 with N connectors 20 each

various coax relays cx540,dow key,transco 5 each

Parts for 3 of N6CA 1296 cavities 15

18 inch sat actuator new 30

Philips D6350 Tape recorder with MS mods 20

uhf compendium vols 1 & 2 5

vhf/uhf manual 3rd edition 5

The Vhf/Uhf Dx Book 8

WANTED:
1kw 1-30 Mhz plug in for Bird Model 43 or swap for 1000C element
2 of 1MB simms
1 meg SVGA card
will swap/px any of above for HF gear (sigh G0RUZ)
Contact Dave Law G0LBK @ GB7SYP (if you can get away with it!)
or tel. (eves/weekends) (++44)(0)1709 545010.

--
Conrad Farlow

1169. Re: Reply: E-mail to Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: mntbobv@aol.com
Message-ID: <3qh4lg$fne@newsbf02.news.aol.com>
Source record: 24875

The following info may be a way for you to E-Mail to Satellite:

Internet/Packet Radio BBS Gateway

Are there any gateways for mail or news between Internet and Amateur
Packet
radio?

Jim Durham, W2XO, maintains a gateway between Internet and the Packet
radio
BBS system.

To mail from Internet to Packet:
1. Mail to: "bbs@w2xo.pgh.pa.us"
2. where bbs is AA1AA%W1ABC.MN.USA.NOAM
NOTE: Because of FCC regulations, Jim must hand filter each message
sent
FROM Internet TO the Amateur Packet Radio BBS system. Messages should be
of
minimal length and appropriate content. Read Section 1.9 (Do's and
Don'ts:
Rules and Regulations) regarding appropriate usage of packet radio for
more
information. Always include the routing hints with the BBS callsign.

To mail from Packet to Internet:
1. The amateur radio operator must have his callsign registered in the
gateway alias list. If you want to mail from packet to a specific amateur
on
Internet, send mail to 'durham@w2xo.pgh.pa.us' (Internet) or 'W2XO @
W2XO.#SWPA.PA.USA.NAOM' (Packet BBS mail) with his/her amateur callsign
and
their Internet address.
2. Once the above is accomplished, packet BBS mail should be sent to
'CALL
@ W2XO.#WPA.PA.USA.NAOM'. The mail will automatically be forwarded to the
Internet address of the amateur with the 'CALL' callsign.

Jim Durham's Internet address is 'durham@w2xo.pgh.pa.us'.

LAN Gateways (Packet wormholes via Internet)

Currently a group of amateurs are experimenting with connecting packet
LANs
together via Internet IP inside IP Encapsulation. Some of the gateways
only
accept TCP/IP packets, others AX.25 packets. These gateways uses the

Internet as a transport medium, thus it is impossible to access the packet radio network from Internet. For more information, join the Gateways mailing
list by sending mail to "gateways-request@uhm.ampr.org".

Transmitted: 94-07-31 15:25:36 EDT

1170. Re: Which NOSS is brightest?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: Geoff Chester <geoff@holstein>
Message-ID: <Pine.SOL.3.91.950531104153.2804A-100000@holstein>
Source record: 24876

Patrick;

None of the NOSS clusters are particularly bright. I've seen reports of the NOSS 2-8 cluster approaching 4.5-6.0-6.0 mag for the meber sats, but that's about the best I have seen. I've never had a good look at one myself...

I got a -1 mag flash from KH 11-8 last night though....

+===+
| Geoff Chester Albert Einstein Planetarium nasep007@sivm.si.edu |
|____|
| "If you push something hard enough it will fall over" |
| -- Fudd's First Law of Opposition |
+===+

1171. Re: Is DOVE still operating?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3qi4lf$1ec@over.mhv.net>
Source record: 24877

Jim Jaworski (soo696@freenet.mb.ca) wrote:
: I haven't heard anything from the DOVE satellite in over 6 months
: now and haven't heard any news about its current status. Could someone
: update me on this? Thanks.

: Also what is the current status/plans for AO-21. This is the
: first 2 metre satellite I have ever heard and it would be nice to hear it
: AGAIN on 145.9875.

: Winnipeg MB Canada soo696@freenet.mb.ca
: TEAM OS/2 MIME OK
: Proud to be a non-hyphenated Polish Canadian!

Yup, Dove is still operating, voice mode has been off for a while now
though.

Tom

1172. LAT LONG GRID SQ Software

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: hawk@zinger.sps.mot.com
Message-ID: <D9Fovq.9xs@oakhill.sps.mot.com>
Source record: 24878

TNX! In advance. Post the net or direct to me.
George Hawkins KI5X

George Hawkins Internet: hawk@hawk.sps.mot.com
Principal Staff Engineer UUCP: cs.utexas.edu!oakhill!hawk!hawk
Motorola Digital Signal Processor Division
6501 William Cannon Drive West Phone (512) 891-4543
Austin Texas 78735-8598 FAX (512) 891-2947

1173. Re: What sat can reach with 144/440 FM radio?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3qibac$om5@superb.csc.ti.com>
Source record: 24879

In article <74387@ve2noq.ampr.org>, ve2yag@ve2noq.ampr.ORG says:
>
I have heard AO-27 are open weekend for cross-repeater 144->440
>but I never heard it. Can you help me?
>
Sorry to bring bad news, but unless AO-27 changes management the schedule
of operation is erratic at best. It was turned on for the weekends (daylight hours) before
the present management took over, but now is on at random.

AO-21 was on continuously until its' recent demise due to the phase out
of the mother satellite by Russian controllers.

There are no other FM birds up and unless there are some plans in the
works, there will be none in the next few years. P3D does not have any
provision for FM (although with some careful planning it would have been
possible.) Other planned satellites are all digital store and forward or
special interest experimental (semi-commercial.)

Ken K5MBV durham@lobby.ti.com

1174. DEM maps of mars

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: mpelletr@eciad.bc.ca
Message-ID: <3qif2g$ls2@oswald.eciad.bc.ca>
Source record: 24880

I'm looking for Den Maps of Mars. Does anyone know here I can get them???

Please E-mail.

Thanks, Marc.

mpelletr@eciad.bc.ca

1175. Re: LAT LONG GRID SQ Software

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: hawk@zinger.sps.mot.com
Message-ID: <D9G79K.H43@oakhill.sps.mot.com>
Source record: 24881

Does anyone know of grid square to lat/long conversion software?

KI5X George...

1176. Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.801962709@dolphin>
Source record: 24882

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated several times weekly. Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated weekly) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1177. RE: Mode S portable

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: reinhart=40marlboro#%forwarder@shipco.geis.COM
Message-ID: <199505311732.AA140911567@relay2.geis.com>
Source record: 24883

In article <1995May28.184626.7422@ultb.isc.rit.edu>,
bad1679@osfmail.isc.rit.edu says...
>
>
>Hi all,
>
>I don't know much about operation through OSCAR satellites and
would like to
>get started with it and aim toward a 23cm up and 70 cm downlink
(portable >station) that I could take on backpacking trips. >
>In the literature department I came across the Satellite
Experimenter's >Handbook which seems to still be in the first
edition (any info in it >on the new Microsats?) or does anyone
know if there has been a new edition
>that came out since the first one in 1990? >
>I also came across the Hamsat Handbook. >
>Does anyone consider one of the handbooks inferior/more outdated
than the
>other?
>
>Thanks for your input.
>
>73 Bernie NU1S

Within the last year or so, Zack Lau, KH6CP/1 (zlau@arrl.org) had an article in QST about portable QRP Mode S. I don't know what month. Drop him a line and ask.

73,

David Reinhart
wa6ilt@amsat.org
WA6ILT@K1UGM.#EMA.MA.NA

1178. unix sattrak help needed

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3qj6bb$1d48@ns3-1.CC.Lehigh.EDU>
Source record: 24884

Hello up there....

i got sattrak.tar.z from some FTP site <oakland or amsat>, and i'm trying to
get it to work on pc ver. of Linux......it might if a can help. But does it?

also, any ftp sites for actual PC LINUX/Xwindoze sat. traking progs?

thanks
DavID

|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1179. Re: NOVA users?

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: daveb@delphi.com
Message-ID: <Z809knl.daveb@delphi.com>
Source record: 24885

"Alan K. Adamson" <ne1h> writes:

>Any NOVA users out there, I would like to compare some notes?
>
>Thanks,
>Alan Adamson
>ne1h@tornado.ne1h.radio.org

I have just started using it. Very nice but it acts like a paint program eraser under certain conditions. Had to change to a different mouse to make that problem go away. Also has two major drawbacks: cannot be operated by the keyboard, does'nt provide a hook to a callsign database. I suspect the callsign thing will be taken care of in future releases. I have used most of the major traking programs and in all honesty it is the best one I have used. They also need to get it into windows as well (not as a DOS task !). Very nice program !!!!!!!!!!!!!

Dave

1180. Icom GPS or Others??

Newsgroup: rec.radio.amateur.space
Date: 1995-05-31 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <D9GLn1.C0F@murdoch.acc.Virginia.EDU>
Source record: 24886

How does Icom's GPS receiver (GP-22) compare to some of the others on the market? The price is now down to about $430.00. What functions does it lack when compared to the higher priced models? Same sensitivity?? Calculate 3-D coordinates? Give grid squares, etc??

Thanks for the help!! Please E-mail direct to: sem2r@galen.med.virginia.edu

1181. Space tours

Newsgroup: rec.radio.amateur.space
Date: 1995-06-01 00:00:00 UTC
From: rayban3418@aol.com
Message-ID: <3qjg6d$1lv@newsbf02.news.aol.com>
Source record: 24887

modem in to Galaxy SuperBoard 612-890-4828, download the terminal (Excal) sit at the helm, and gaze into space. Areas available for messages and chat.

1182. Re: NOVA users?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-01 00:00:00 UTC
From: dkaherl@aol.com
Message-ID: <3qk7g6$4v8@newsbf02.news.aol.com>
Source record: 24888

I am using nova what are some of your questions ? I have a problem with the program using a bus mouse. It makes the screen go blank in some areas. It doesn't do it with all bus mouses. I am using a COMM-5 bus mouse, but a microsoft mouse works ok I guess. The program really wasn't ready for distribution I don't think. The author wanted to get some sales at Dayton. I like the program. I just hope they fix the bugs.....

1183. Lat/Long to Grid Square Software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-01 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <D9IB90.1uM@murdoch.acc.Virginia.EDU>
Source record: 24889

I know there's software to convert lat/long to maidenhead grid
squares down to the 2 letter suffix, but I don't know where I
saw it.

Anyone know an anonymous ftp site where I can get it?

E-mail direct to: sem2r@galen.med.virginia.edu

I'll post the "best" site answer.

thanks for your help!!!

'73's de wb4qkt/stacey

1184. Re: Shuttle HF frequencies ?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-01 00:00:00 UTC
From: horse1@ix.netcom.com
Message-ID: <3qj7bg$rj0@ixnews4.ix.netcom.com>
Source record: 24890

In stations via HF. 10 meters is the practical li
>No, not true. There is no reason why HF should not be used provide
>the path is not precluded by the critical angle of
reflection/refraction
>defined by the ionospheric situation current at the time of
transmission.
>
>Practically, though, this is unpredictable in detail just as
terestrial HF
>propagation is. That is only why VHF is preferred. Don't forget the
first
>SPUTNIKS used 20 MHz +/- 5 KHz (Mc/s in those days!) I still have a
few old
>tapes of those signals. Some wild signal level changes took place as
the craft
>passed through the critical angle - a bit before going below the
geographic
>horizon.
>
>Even I was still at school then ...
>
>Regards to all,
>Tom Woolner
>"Good reasons must, of force, give place to better."

Good point! When I first saw those responses a little alarm bell started ringing in my head. Besides SPUTNICK, there was also the first Chinese sattelite which I remember listening to on my Zenith Transoceanic shortwave! I was only a kid, but I remember it like it was last week because it was such a thrill

Len Winter

1185. Two-Line Orbital Element Sets (TLE613)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-01 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.801968335@dolphin>
Source record: 24891

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #613 -
Alouette 1
1 00424U 62049A 95148.89272666 .00000006 00000-0 -26355-5 0 1090
2 00424 80.4618 303.9092 0022385 306.7688 53.1403 13.67841857629668
ATS 1
1 02608U 66110A 95139.33355885 -.00000037 00000-0 10000-3 0 9330
2 02608 14.6359 356.9828 0010499 59.5751 300.4913 1.00320186 20904
ATS 3
1 03029U 67111A 95150.23871968 -.00000116 00000-0 10000-3 0 3643
2 03029 14.8130 3.8457 0007306 273.2983 310.6704 1.00272691100910
Cosmos 398
1 04966U 71016A 95150.83843479 .00178652 90320-5 19467-3 0 8735
2 04966 51.4097 307.0975 0611374 30.4498 333.0718 14.88495957822607
Starlette
1 07646U 75010A 95150.34160125 -.00000168 00000-0 -18080-4 0 8894
2 07646 49.8300 223.4370 0205448 42.8491 318.8209 13.82188378 25873
LAGEOS
1 08820U 76039A 95149.48563818 -.00000005 00000-0 10000-3 0 1109
2 08820 109.8451 254.1978 0044063 211.1951 148.5975 6.38664488189269
ETS-2
1 09852U 77014A 95139.35070524 .00000108 00000-0 10000-3 0 282
2 09852 12.7010 37.4732 0002616 51.9166 308.0407 1.00007076 13698
GOES 2
1 10061U 77048A 95150.44556171 .00000055 00000-0 10000-3 0 5313
2 10061 11.7778 41.5782 0005671 147.8225 42.4203 1.00261550 10596
IUE
1 10637U 78012A 95148.71501199 -.00000267 00000-0 10000-3 0 1380
2 10637 35.1740 89.3085 1328908 46.0230 312.8769 1.00284019 16062
GPS BI-01
1 10684U 78020A 95148.57022551 -.00000058 00000-0 10000-3 0 3600
2 10684 64.8175 35.2818 0060544 162.7597 197.5228 1.98069189111777
```

```
GPS BI-02
1 10893U 78047A 95147.94821613 -.00000061 00000-0 10000-3 0 1632
2 10893 63.3412 273.3818 0222967 14.7738 345.8452 2.01627567125029
GOES 3
1 10953U 78062A 95147.47359222 .00000086 00000-0 10000-3 0 4927
2 10953 10.7513 44.3867 0004542 98.5223 102.2011 1.00307097 15171
SeaSat 1
1 10967U 78064A 95147.81273024 -.00000071 00000-0 20983-4 0 4025
2 10967 107.9931 95.3330 0002680 307.5875 52.5007 14.38036149885907
GPS BI-03
1 11054U 78093A 95142.77187810 -.00000063 00000-0 10000-3 0 3299
2 11054 63.0513 271.7199 0044960 177.1919 182.8318 1.93505233121089
Nimbus 7
1 11080U 78098A 95149.66654622 -.00000077 00000-0 -31731-4 0 5044
2 11080 99.0024 24.4604 0008329 284.8411 75.1821 13.83710083837990
GPS BI-04
1 11141U 78112A 95129.96514157 -.00000050 00000-0 10000-3 0 9755
2 11141 64.8215 37.5926 0048656 26.5678 333.7191 1.92894877 10082
GPS BI-05
1 11690U 80011A 95149.94013880 -.00000048 00000-0 10000-3 0 9186
2 11690 65.1850 36.8564 0143306 197.2167 162.3579 2.00564188126495
GPS BI-06
1 11783U 80032A 95148.52263491 -.00000049 00000-0 10000-3 0 788
2 11783 62.4631 266.6263 0217967 29.6958 331.5115 2.03456560110985
GOES 5
1 12472U 81049A 95150.64835066 -.00000282 00000-0 10000-3 0 8600
2 12472 7.5017 54.1718 0007578 20.2041 339.6545 1.00281642 9255
Cosmos 1383
1 13301U 82066A 95149.18877632 .00000004 00000-0 -12628-4 0 4083
2 13301 82.9305 56.0820 0025915 219.9112 140.0134 13.68065732644733
LandSat 4
1 13367U 82072A 95151.14125860 .00015973 00000-0 35417-2 0 6799
2 13367 98.1267 207.4159 0005848 250.2186 109.8382 14.57168149684737
DMSP B5D2-1
1 13736U 82118A 95150.00321426 .00000034 00000-0 32785-4 0 7712
2 13736 98.6299 339.4974 0009507 67.2355 292.9830 14.25735276646329
IRAS
1 13777U 83004A 95150.51419672 -.00000041 00000-0 17042-5 0 9743
2 13777 98.9631 339.1689 0013556 77.5255 282.7433 13.99223331299716
Cosmos 1447
1 13916U 83021A 95149.88931556 .00000038 00000-0 24165-4 0 5053
2 13916 82.9426 115.2813 0038411 140.5605 219.8358 13.74326219610957
TDRS 1
1 13969U 83026B 95149.93359227 -.00000343 00000-0 10000-3 0 4197
2 13969 8.3555 47.5581 0001836 99.6912 194.5671 1.00732707 17525
GOES 6
1 14050U 83041A 95150.34203245 -.00000012 00000-0 10000-3 0 4082
2 14050 6.3171 57.3900 0005967 1.1018 192.5145 1.00320049102348
OSCAR 10
1 14129U 83058B 95150.26886339 -.00000278 00000-0 10000-3 0 3554
```

```
2 14129 26.4691 265.6627 6003533 280.9615 20.7451 2.05880627 61961
LandSat 5
1 14780U 84021A 95149.18587619 .00000018 00000-0 13772-4 0 2578
2 14780 98.1147 206.0872 0003065 278.9864 81.0988 14.57161846597867
UoSat 2
1 14781U 84021B 95148.98192273 .00000135 00000-0 30744-4 0 8017
2 14781 97.7826 152.4210 0010558 241.7954 118.2201 14.69346720601080
GPS BI-09
1 15039U 84059A 95146.84038071 -.00000072 00000-0 10000-3 0 3370
2 15039 64.5021 31.5092 0081652 17.2734 343.0568 1.92302288 79981
Cosmos 1574
1 15055U 84062A 95148.55959964 .00000047 00000-0 34230-4 0 7068
2 15055 82.9578 170.3444 0027388 338.9145 21.0878 13.73621941548045
GPS BI-10
1 15271U 84097A 95150.12028441 -.00000034 00000-0 10000-3 0 34
2 15271 62.1529 266.8815 0155775 353.5340 6.2814 2.00597779 77564
Cosmos 1602
1 15331U 84105A 95150.36883979 .00000200 00000-0 20730-4 0 3930
2 15331 82.5326 112.5889 0021252 131.6509 228.6519 14.84623486576021
NOAA 9
1 15427U 84123A 95150.75903254 .00000036 00000-0 43358-4 0 2711
2 15427 99.0013 209.3804 0014531 321.7537 38.2599 14.13708278539454
GPS BI-11
1 16129U 85093A 95146.15789051 -.00000079 00000-0 10000-3 0 6566
2 16129 65.1604 34.6211 0153998 86.8268 274.9745 1.89368086 14577
Mir
1 16609U 86017A 95151.07265865 .00013223 00000-0 18783-3 0 750
2 16609 51.6475 243.3473 0004586 27.4089 39.4451 15.56744736530294
SPOT 1
1 16613U 86019A 95149.43985542 .00000090 00000-0 62356-4 0 8173
2 16613 98.6531 221.2026 0000456 60.9563 299.1651 14.20059785165703
Cosmos 1766
1 16881U 86055A 95149.50498047 .00000170 00000-0 17618-4 0 3082
2 16881 82.5200 171.2553 0019397 159.7490 200.4501 14.83627190476809
EGP
1 16908U 86061A 95149.22989012 -.00000083 00000-0 10000-3 0 27
2 16908 50.0077 100.5219 0011357 113.3350 246.8681 12.44412587 68474
NOAA 10
1 16969U 86073A 95150.60384386 .00000067 00000-0 46705-4 0 1792
2 16969 98.5118 154.0181 0014276 37.3559 322.8606 14.24937876451971
MOS-1
1 17527U 87018A 95151.15259252 -.00000035 00000-0 56862-5 0 2127
2 17527 98.9882 216.7520 0001336 73.5051 286.6249 13.94922779421451
GOES 7
1 17561U 87022A 95145.54612502 .00000073 00000-0 10000-3 0 4010
2 17561 2.2842 72.6792 0004256 351.8653 240.0487 1.00293356 13403
Kvant-1
1 17845U 87030A 95151.06076058 .00011544 00000-0 16488-3 0 2657
2 17845 51.6467 243.4059 0005224 18.2920 341.8264 15.56743029530208
DMSP B5D2-3
```

```
1 18123U 87053A 95150.53221589 .00000009 00000-0 27176-4 0 114
2 18123 98.7788 341.9667 0013273 272.4556 87.5098 14.15405544410226
RS-10/11
1 18129U 87054A 95150.18927751 .00000030 00000-0 15968-4 0 723
2 18129 82.9250 72.3731 0012420 134.6803 225.5369 13.72352740397506
Meteor 2-16
1 18312U 87068A 95149.44029146 .00000077 00000-0 55488-4 0 4007
2 18312 82.5534 297.2363 0011058 215.8995 144.1424 13.84057462392958
Meteor 2-17
1 18820U 88005A 95151.08439863 .00000016 00000-0 10583-5 0 6314
2 18820 82.5406 351.8569 0015664 288.4810 71.4648 13.84739026370504
DMSP B5D2-4
1 18822U 88006A 95150.10592799 .00000008 00000-0 22030-4 0 9860
2 18822 98.4058 355.0575 0007043 50.7178 309.4624 14.23154510379945
Glonass 34
1 19163U 88043A 95145.04069716 -.00000002 00000-0 10000-3 0 9931
2 19163 65.1223 98.9401 0006813 158.1607 201.8347 2.13102535 53946
Glonass 36
1 19165U 88043C 95143.21997546 .00000020 00000-0 10000-3 0 3923
2 19165 65.0999 98.9737 0004314 319.3731 40.5695 2.13102154 54528
METEOSAT 3
1 19215U 88051A 95144.23190526 -.00000281 00000-0 10000-3 0 1304
2 19215 2.4569 70.0023 0002608 45.3463 140.3304 1.00261426 13336
AO-13
1 19216U 88051B 95144.17657256 -.00000417 00000-0 10000-4 0 408
2 19216 57.5454 185.7916 7292381 9.6250 359.1402 2.09727146 21669
OKEAN 1
1 19274U 88056A 95150.05137577 .00000089 00000-0 82182-5 0 89
2 19274 82.5115 271.1056 0018787 313.8167 46.1412 14.82338222372464
Meteor 3-2
1 19336U 88064A 95149.21513113 .00000051 00000-0 10000-3 0 3975
2 19336 82.5398 78.8399 0017806 113.7260 246.5740 13.16973189328802
Glonass 39
1 19503U 88085C 95146.53298951 -.00000045 00000-0 10000-3 0 2856
2 19503 65.7186 337.7710 0010443 133.5309 226.5243 2.13101945 52082
NOAA 11
1 19531U 88089A 95150.60197470 .00000030 00000-0 41207-4 0 808
2 19531 99.1945 153.4829 0010786 237.4009 122.6118 14.13052341344272
TDRS 2
1 19548U 88091B 95143.63968979 -.00000130 00000-0 00000+0 0 1268
2 19548 1.6926 75.1973 0004365 53.3912 78.6825 0.99467795 11617
Glonass 40
1 19749U 89001A 95140.94023589 .00000038 00000-0 10000-3 0 4997
2 19749 65.0647 98.6399 0007708 262.3426 97.5657 2.13101360 49471
Glonass 41
1 19750U 89001B 95148.03476247 -.00000018 00000-0 10000-3 0 4135
2 19750 65.0769 98.4577 0007325 242.9048 116.9854 2.13101736 49644
GPS BII-01
1 19802U 89013A 95149.23599574 .00000018 00000-0 10000-3 0 582
2 19802 55.1935 125.9649 0026642 184.4973 175.4506 2.00578396 45997
```

```
Akebono
1 19822U 89016A 95149.53431327 .00007411 00000-0 37213-3 0 5091
2 19822 75.0816 345.8222 3781748 34.7746 345.0166 7.85864142136354
Meteor 2-18
1 19851U 89018A 95149.27614033 .00000038 00000-0 21168-4 0 3980
2 19851 82.5203 227.9732 0014322 343.0024 17.0651 13.84390034315572
MOP-1
1 19876U 89020B 95141.43056090 -.00000020 00000-0 00000+0 0 1171
2 19876 1.1698 72.5182 0001929 322.2388 355.9188 1.00412764 2750
TDRS 3
1 19883U 89021B 95149.95362847 -.00000265 00000-0 10000-3 0 798
2 19883 0.0746 73.5812 0001128 348.9903 126.8251 1.00269413195255
GPS BII-02
1 20061U 89044A 95148.58444589 -.00000085 00000-0 10000-3 0 706
2 20061 54.4486 302.2813 0143109 214.1027 144.9460 2.00563533 43727
Nadezhda 1
1 20103U 89050A 95150.76882455 .00000020 00000-0 50752-5 0 4062
2 20103 82.9610 31.4418 0038930 42.4775 317.9382 13.73853212296035
GPS BII-03
1 20185U 89064A 95145.43485504 .00000045 00000-0 10000-3 0 927
2 20185 54.9983 126.6748 0015673 292.0513 67.7678 2.00576183 42238
GMS 4
1 20217U 89070A 95150.28728175 -.00000285 00000-0 10000-3 0 1910
2 20217 1.0051 76.6344 0001445 75.3104 338.5496 1.00271153 21578
INTERCOSMOS 24
1 20261U 89080A 95149.45828026 .00000117 00000-0 31795-4 0 4138
2 20261 82.5932 156.4483 1241427 196.3789 159.3529 12.47250384257944
GPS BII-04
1 20302U 89085A 95150.45185986 -.00000011 00000-0 10000-3 0 676
2 20302 53.3904 242.2471 0011703 191.5220 168.5040 2.00555869 41130
Meteor 3-3
1 20305U 89086A 95149.69672910 .00000044 00000-0 10000-3 0 3209
2 20305 82.5503 30.4261 0007517 156.1910 203.9509 13.04428066268079
COBE
1 20322U 89089A 95149.47227643 .00000086 00000-0 82908-4 0 1241
2 20322 98.9578 165.7899 0009486 30.4829 329.6909 14.03447258282968
Kvant-2
1 20335U 89093A 95151.06076058 .00011544 00000-0 16488-3 0 2779
2 20335 51.6467 243.4059 0005224 18.2920 341.8264 15.56743029313418
GPS BII-05
1 20361U 89097A 95146.97521134 -.00000075 00000-0 10000-3 0 9348
2 20361 55.7502 68.6276 0082584 116.6369 244.3230 2.00562166 30540
SPOT 2
1 20436U 90005A 95149.21333532 -.00000044 00000-0 00000+0 0 9368
2 20436 98.7358 223.5406 0001126 54.1501 305.9790 14.20025600277206
UO-14
1 20437U 90005B 95149.18916014 .00000070 00000-0 43949-4 0 1002
2 20437 98.5613 233.8596 0010014 251.8294 108.1804 14.29887966279036
UO-15
1 20438U 90005C 95149.77857334 .00000002 00000-0 17728-4 0 8971
```

```
2 20438 98.5651 232.9835 0009309 257.3162 102.6977 14.29206994279019
PACSAT
1 20439U 90005D 95150.21125994 .00000000 00000-0 17071-4 0 8994
2 20439 98.5790 236.5152 0010547 253.1157 106.8872 14.29941477279191
DO-17
1 20440U 90005E 95150.27148988 -.00000005 00000-0 14870-4 0 8990
2 20440 98.5801 237.0280 0010576 251.3535 108.6498 14.30082558279222
WO-18
1 20441U 90005F 95150.18343342 -.00000006 00000-0 14755-4 0 9031
2 20441 98.5800 236.9155 0011209 253.7421 106.2525 14.30054036279219
LO-19
1 20442U 90005G 95149.78776443 .00000001 00000-0 17170-4 0 8990
2 20442 98.5813 236.8803 0011517 253.9047 106.0868 14.30156120279171
GPS BII-06
1 20452U 90008A 95149.36422641 .00000060 00000-0 10000-3 0 380
2 20452 54.0181 182.4384 0055819 81.4087 279.3225 2.00572724 39090
MOS-1B
1 20478U 90013A 95150.40962920 .00000091 00000-0 10000-3 0 7886
2 20478 99.0002 220.3335 0001292 80.8049 279.3257 13.94924339191052
DEBUT
1 20479U 90013B 95149.30170773 .00000026 00000-0 14102-3 0 8988
2 20479 99.0712 241.5608 0539910 275.7138 78.2661 12.83330248248534
FO-20
1 20480U 90013C 95149.30656423 -.00000015 00000-0 48796-4 0 7953
2 20480 99.0720 241.4179 0540035 276.0693 77.9149 12.83229848248526
MOS-1B R/B
1 20491U 90013D 95150.36907629 -.00000092 00000-0 -11562-3 0 1365
2 20491 99.0433 295.9936 0470829 113.3370 251.7980 13.02998121251878
LACE
1 20496U 90015A 95148.65337789 .00000827 00000-0 32624-4 0 5434
2 20496 43.1052 242.3133 0009073 70.7867 289.3971 15.34537259294570
Nadezhda 2
1 20508U 90017A 95150.58256256 .00000017 00000-0 26413-5 0 4052
2 20508 82.9537 166.1537 0045183 355.5520 4.5227 13.73493522263231
OKEAN 2
1 20510U 90018A 95150.18684371 .00000171 00000-0 20173-4 0 4085
2 20510 82.5238 222.5467 0019988 129.7208 230.5769 14.78492334282931
GPS BII-07
1 20533U 90025A 95148.27974474 -.00000085 00000-0 10000-3 0 562
2 20533 54.8198 302.9083 0048400 79.1977 281.3205 2.00562767 37849
PegSat
1 20546U 90028A 95149.41002712 .00004721 00000-0 97781-4 0 8068
2 20546 94.1123 133.6176 0068723 50.8016 309.9298 15.43307709285589
HST
1 20580U 90037B 95148.48014871 .00000346 00000-0 19143-4 0 6682
2 20580 28.4681 177.5340 0006431 98.4382 261.6934 14.90881554 80960
MACSAT 2
1 20608U 90043B 95149.56050283 .00000115 00000-0 17285-4 0 994
2 20608 89.9265 176.6565 0105484 322.1947 37.1889 14.64834781269989
Glonass 44
```

```
1 20619U 90045A 95148.81715280 -.00000051 00000-0 10000-3 0 1910
2 20619 65.2903 337.1288 0024379 206.6051 153.2649 2.13102496 39091
Glonass 45
1 20620U 90045B 95149.40520723 -.00000052 00000-0 10000-3 0 2006
2 20620 65.2958 337.1127 0008991 42.1015 317.9957 2.13102504 39147
Glonass 46
1 20621U 90045C 95150.41001619 -.00000051 00000-0 10000-3 0 7989
2 20621 65.3323 337.1225 0014365 193.3710 166.6140 2.13101702 39161
Kristall
1 20635U 90048A 95151.06076058 .00011544 00000-0 16488-3 0 693
2 20635 51.6467 243.4059 0005224 18.2920 341.8264 15.56743029530153
ROSAT
1 20638U 90049A 95150.65513064 .00000137 00000-0 27944-4 0 4638
2 20638 52.9904 225.9633 0012768 52.9946 307.2214 15.07186706274473
Meteor 2-19
1 20670U 90057A 95147.89080526 -.00000034 00000-0 -44054-4 0 8977
2 20670 82.5432 294.6780 0014394 260.3499 99.6036 13.84162241248303
CRRES
1 20712U 90065A 95149.09819169 .00000211 00000-0 46941-3 0 995
2 20712 17.9987 46.7644 7181723 89.5129 344.4848 2.35409943 34033
GPS BII-08
1 20724U 90068A 95146.10680165 .00000033 00000-0 10000-3 0 9068
2 20724 54.8319 124.2508 0116734 174.4851 185.6619 2.00559903 33668
Feng Yun1-2
1 20788U 90081A 95150.04567292 .00000171 00000-0 14168-3 0 3994
2 20788 98.8134 163.6965 0016636 120.3952 239.8856 14.01344655242293
Meteor 2-20
1 20826U 90086A 95149.70378285 .00000036 00000-0 19498-4 0 9094
2 20826 82.5255 230.2564 0013549 150.0368 210.1571 13.83608004235677
GPS BII-09
1 20830U 90088A 95149.14445380 -.00000062 00000-0 10000-3 0 9145
2 20830 55.6928 66.5194 0065826 99.9919 260.7427 2.00571044 34361
GPS BIIA-10
1 20959U 90103A 95147.05956748 .00000028 00000-0 10000-3 0 8698
2 20959 55.0693 126.1916 0098696 230.4368 128.6601 2.00554670 32913
DMSP B5D2-5
1 20978U 90105A 95150.17200612 .00000090 00000-0 48210-4 0 2137
2 20978 98.6416 218.4685 0078131 222.3605 137.1529 14.32548852234735
Glonass 47
1 21006U 90110A 95146.21276038 -.00000016 00000-0 10000-3 0 7657
2 21006 65.0465 97.8113 0058860 187.7222 172.1552 2.13102788 34745
Glonass 48
1 21007U 90110B 95148.74742249 -.00000017 00000-0 10000-3 0 8977
2 21007 65.0728 97.7903 0034223 178.4990 181.4768 2.13101183 34784
Glonass 49
1 21008U 90110C 95148.16863490 -.00000019 00000-0 00000+0 0 762
2 21008 65.0440 97.7685 0010902 278.7267 81.1139 2.13099037 34762
AO-21
1 21087U 91006A 95148.79642733 .00000094 00000-0 82657-4 0 5993
2 21087 82.9458 246.9239 0034704 198.5142 161.4753 13.74555228217064
```

```
RS-12/13
1 21089U 91007A 95148.90716794 .00000043 00000-0 29728-4 0 8029
2 21089 82.9193 115.0755 0027938 224.2517 135.6408 13.74057855216124
MOP-2
1 21140U 91015B 95147.36957615 -.00000010 00000-0 00000+0 0 73
2 21140 0.2717 88.8289 0001076 346.0742 302.6523 1.00266007 17731
Nadezhda 3
1 21152U 91019A 95150.77154135 .00000025 00000-0 10896-4 0 967
2 21152 82.9183 69.7772 0041969 331.9629 27.9265 13.73519378211118
Glonass 50
1 21216U 91025A 95148.57761781 -.00000052 00000-0 10000-3 0 4096
2 21216 65.0504 336.8005 0013323 217.2151 142.7484 2.13102509 32301
Glonass 51
1 21217U 91025B 95148.17704391 -.00000051 00000-0 10000-3 0 8214
2 21217 65.0381 336.8199 0008138 247.6819 112.2586 2.13101538 32288
Glonass 52
1 21218U 91025C 95150.16645495 -.00000052 00000-0 10000-3 0 2930
2 21218 65.0208 336.7415 0006962 351.7053 8.4690 2.13102895 32332
GRO
1 21225U 91027B 95148.34960202 .00001942 00000-0 37364-4 0 2675
2 21225 28.4590 353.0579 0004575 148.7206 211.3357 15.42643562110263
Meteor 3-4
1 21232U 91030A 95148.44288338 .00000051 00000-0 10000-3 0 8078
2 21232 82.5366 285.4922 0014554 45.7782 314.4525 13.16467343196789
NOAA 12
1 21263U 91032A 95150.46264332 .00000137 00000-0 80379-4 0 5054
2 21263 98.5861 174.9839 0012289 314.2688 45.7488 14.22523503209901
OKEAN 3
1 21397U 91039A 95147.47078214 .00000220 00000-0 28417-4 0 1074
2 21397 82.5228 138.0938 0020790 215.1648 144.8194 14.76372375214304
GPS BIIA-11
1 21552U 91047A 95147.82550349 -.00000073 00000-0 10000-6 0 8614
2 21552 55.9709 64.2730 0061327 242.9886 116.3816 2.00567028 28525
ERS-1
1 21574U 91050A 95149.74763291 -.00000017 00000-0 10000-4 0 1560
2 21574 98.5513 224.3277 0001218 66.2126 293.9185 14.32245283202414
UO-22
1 21575U 91050B 95149.69520405 .00000012 00000-0 18655-4 0 6050
2 21575 98.3965 221.4709 0007915 342.8826 17.2078 14.36976844202845
ORBCOMM-X
1 21576U 91050C 95150.19326759 .00000009 00000-0 17745-4 0 7005
2 21576 98.3945 220.3975 0004091 357.5742 2.5419 14.36383722202820
TUBSAT-A
1 21577U 91050D 95150.19061111 -.00000005 00000-0 12862-4 0 5992
2 21577 98.3949 220.9168 0006545 346.0885 14.0118 14.36484085202853
SARA
1 21578U 91050E 95149.19520504 .00000260 00000-0 98333-4 0 7998
2 21578 98.4142 225.2396 0005030 349.4674 10.6394 14.39008888202968
TDRS 4
1 21639U 91054B 95150.45418343 .00000084 00000-0 10000-3 0 8975
```

```
2 21639 0.0112 237.6556 0003438 172.8859 186.1067 1.00275192108048
Meteor 3-5
1 21655U 91056A 95149.29667886 .00000051 00000-0 10000-3 0 8056
2 21655 82.5507 232.2842 0014683 54.6931 305.5552 13.16838528182013
UARS
1 21701U 91063B 95149.56590959 -.00000110 00000-0 11467-4 0 6764
2 21701 56.9845 211.2245 0005133 106.4641 253.6945 14.96391182202788
DMSP B5D2-6
1 21798U 91082A 95150.56243354 .00000123 00000-0 88468-4 0 8587
2 21798 98.9597 162.2723 0011751 234.8573 125.1495 14.13890345180718
Glonass 53
1 21853U 92005A 95148.97019989 -.00000016 00000-0 10000-3 0 76
2 21853 64.9945 97.4037 0006797 211.6285 148.2950 2.13102274 25910
Glonass 54
1 21854U 92005B 95148.79097365 -.00000017 00000-0 00000+0 0 1393
2 21854 65.0022 97.4013 0016499 10.7903 349.2075 2.13104158 25899
Glonass 55
1 21855U 92005C 95149.32396442 -.00000014 00000-0 00000+0 0 1322
2 21855 64.9968 97.3909 0007999 219.5506 140.3583 2.13102336 25893
JERS-1
1 21867U 92007A 95150.75037037 .00000509 00000-0 47298-4 0 5987
2 21867 97.7167 227.7378 0001557 117.1528 242.9853 14.98631720180432
GPS BIIA-12
1 21890U 92009A 95140.31738489 -.00000046 00000-0 10000-3 0 6602
2 21890 53.9470 242.8767 0059220 174.8619 185.2427 2.00545146 23742
GPS BIIA-13
1 21930U 92019A 95147.99624392 -.00000079 00000-0 10000-3 0 6354
2 21930 55.7060 4.0536 0039472 173.2906 186.8038 2.00566209 22829
EUVE
1 21987U 92031A 95150.46730137 .00000585 00000-0 17535-4 0 4575
2 21987 28.4338 241.9912 0010444 173.6374 186.4355 15.19285054165250
SAMPEX
1 22012U 92038A 95149.52891009 -.00000331 00000-0 -31229-4 0 6347
2 22012 81.6693 165.3879 0118623 349.3926 10.4775 14.91398194157891
GPS BIIA-14
1 22014U 92039A 95148.53865822 .00000066 00000-0 10000-3 0 5529
2 22014 54.8537 183.9730 0079088 308.0125 51.3727 2.00572771 14679
Glonass 56
1 22056U 92047A 95151.10082325 -.00000050 00000-0 00000+0 0 445
2 22056 64.8771 336.8418 0003346 285.0739 74.9071 2.13103374 22021
Glonass 57
1 22057U 92047B 95148.11117446 -.00000052 00000-0 00000+0 0 437
2 22057 64.8883 336.9701 0007593 334.7578 25.2339 2.13102625 21936
Glonass 58
1 22058U 92047C 95144.76656131 -.00000043 00000-0 10000-3 0 192
2 22058 64.8957 337.0883 0008474 270.0373 89.8970 2.13102973 21917
TOPEX
1 22076U 92052A 95151.10188543 -.00000061 00000-0 00000+0 0 8813
2 22076 66.0329 288.3525 0007938 270.0809 89.9264 12.80930119131053
KO-23
```

```
1 22077U 92052B 95150.39729976 -.00000037 00000-0 10000-3 0 4965
2 22077 66.0832 273.0133 0008273 202.3475 157.7175 12.86291458131449
S80/T
1 22078U 92052C 95146.83090331 -.00000037 00000-0 10000-3 0 4933
2 22078 66.0846 279.3983 0008722 193.9252 166.1527 12.86575512131063
GPS BIIA-15
1 22108U 92058A 95149.49422653 -.00000015 00000-0 10000-3 0 5706
2 22108 54.1777 243.2684 0131633 157.4560 203.1635 2.00566388 19873
FREJA
1 22161U 92064A 95149.41083910 .00000092 00000-0 81408-4 0 5168
2 22161 62.9934 136.2956 0808998 345.2371 12.6220 13.21836986127567
LAGEOS II
1 22195U 92070B 95149.43501190 -.00000009 00000-0 10000-3 0 4054
2 22195 52.6514 234.8414 0138315 268.4323 90.0393 6.47293838 61369
GPS BIIA-16
1 22231U 92079A 95149.17815191 .00000062 00000-0 10000-3 0 5446
2 22231 54.6809 185.1327 0037520 283.3148 76.3549 2.00565991 18445
GPS BIIA-17
1 22275U 92089A 95148.33220556 .00000067 00000-0 10000-3 0 5565
2 22275 54.6247 182.6836 0052525 253.4012 106.1396 2.00559406 17834
TDRS 5
1 22314U 93003B 95151.04641024 -.00000278 00000-0 10000-3 0 5133
2 22314 1.8390 71.9101 0001127 344.4923 162.7280 1.00271402 8746
GPS BIIA-18
1 22446U 93007A 95150.40088740 -.00000074 00000-0 10000-3 0 5529
2 22446 54.4641 303.0639 0081285 354.7862 5.1061 2.00545836 16864
Glonass 59
1 22512U 93010A 95150.37944571 -.00000004 00000-0 10000-3 0 7048
2 22512 65.0120 97.2126 0008425 194.3016 165.6580 2.13101977 17514
Glonass 60
1 22513U 93010B 95150.31873848 -.00000005 00000-0 00000+0 0 7643
2 22513 65.0080 97.2225 0007603 208.2662 151.6626 2.13102710 17702
Glonass 61
1 22514U 93010C 95149.91392241 -.00000009 00000-0 00000+0 0 7599
2 22514 65.0266 97.2226 0010096 196.0089 348.1681 2.13103016 17699
ASTRO-D
1 22521U 93011A 95150.71464143 .00000675 00000-0 41692-4 0 4119
2 22521 31.1080 348.9631 0056912 325.2690 34.4240 15.02258048124741
UFO F1
1 22563U 93015A 95148.82303038 .00000029 00000-0 10000-3 0 4169
2 22563 26.0263 294.6320 0000155 24.0940 297.4538 0.99247499 12267
GPS BIIA-19
1 22581U 93017A 95148.54826259 -.00000080 00000-0 10000-3 0 4321
2 22581 55.2068 3.6073 0065807 11.3286 349.3160 2.00547060 15884
ARSENE
1 22654U 93031B 95148.02185836 -.00000127 00000-0 10000-3 0 3141
2 22654 2.5599 84.5595 2878582 211.6968 126.7068 1.42206240 6108
GPS BIIA-20
1 22657U 93032A 95149.67356483 -.00000078 00000-0 10000-3 0 4714
2 22657 55.2434 3.4035 0062389 216.5976 142.9912 2.00568615 11234
```

```
RADCAL
1 22698U 93041A 95148.86805207 .00000070 00000-0 24840-4 0 4036
2 22698 89.5392 291.5102 0091971 140.0704 220.7312 14.21346242 99697
GPS BIIA-21
1 22700U 93042A 95148.14541456 -.00000028 00000-0 10000-3 0 4255
2 22700 54.3209 244.0982 0035623 350.6226 9.3416 2.00563389 14002
NOAA 13
1 22739U 93050A 95150.84316357 -.00000019 00000-0 14396-4 0 8129
2 22739 98.9930 99.6654 0009182 221.7415 138.3074 14.10933738 92998
GPS BIIA-22
1 22779U 93054A 95148.23045792 -.00000086 00000-0 10000-3 0 4733
2 22779 54.6094 303.1470 0020198 244.9668 114.8063 2.00568206 12762
Meteor 2-21
1 22782U 93055A 95146.86738330 .00000032 00000-0 16060-4 0 4049
2 22782 82.5439 294.0800 0022967 347.5448 12.5161 13.83031752 87596
UFO F2
1 22787U 93056A 95151.00905671 -.00000060 00000-0 00000+0 0 4494
2 22787 4.5307 324.9744 0003933 71.5363 286.0366 1.00271061 4983
SPOT 3
1 22823U 93061A 95150.24052408 .00000055 00000-0 46651-4 0 4431
2 22823 98.7381 224.5864 0002248 73.3628 286.7796 14.20026333 86745
STELLA
1 22824U 93061B 95151.15649223 -.00000022 00000-0 89779-5 0 3927
2 22824 98.6167 227.4966 0005647 274.3766 85.6752 14.27101479 87307
AO-27
1 22825U 93061C 95150.22862743 -.00000019 00000-0 10221-4 0 3942
2 22825 98.6182 226.8920 0007950 278.5695 81.4582 14.27663084 87203
IO-26
1 22826U 93061D 95151.16501213 .00000009 00000-0 21195-4 0 3938
2 22826 98.6191 227.9094 0008394 276.4524 83.5703 14.27770866 87349
HEATHSAT
1 22827U 93061E 95150.69683077 -.00000001 00000-0 17475-4 0 4542
2 22827 98.6168 227.3868 0008454 264.2919 95.7289 14.27893455 87284
ITAMSAT
1 22828U 93061F 95151.16545590 .00000022 00000-0 26422-4 0 3715
2 22828 98.6146 227.9441 0009389 259.7482 100.2644 14.28100759 55445
PO-28
1 22829U 93061G 95151.17683449 -.00000003 00000-0 16397-4 0 3858
2 22829 98.6151 227.9873 0009130 260.3098 99.7051 14.28079613 87360
KO-25
1 22830U 93061H 95148.71525984 .00000007 00000-0 19913-4 0 4036
2 22830 98.5166 218.9858 0010654 243.2890 116.7191 14.28089670 87014
GPS BIIA-23
1 22877U 93068A 95147.78704424 -.00000074 00000-0 10000-3 0 2791
2 22877 55.4258 64.6143 0038125 310.3441 49.3003 2.00550009 11648
METEOSAT 6
1 22912U 93073B 95142.23241319 -.00000099 00000-0 00000+0 0 3109
2 22912 0.1564 267.8788 0001083 208.9276 196.3299 1.00272337 3924
HST Array
1 22920U 90037C 95150.26793904 .00003340 00000-0 24259-3 0 3296
```

```
2 22920 28.4806 128.5754 0002634 333.6879 26.3590 15.01032551 81615
Meteor 3-6
1 22969U 94003A 95151.10161867 .00000051 00000-0 10000-3 0 1717
2 22969 82.5576 170.7848 0017583 115.7108 244.5832 13.16729001 64632
TUBSAT-B
1 22970U 94003B 95150.07713745 .00000051 00000-0 10000-3 0 1622
2 22970 82.5601 171.4502 0017464 112.8979 247.3982 13.16825434 64500
GPS BIIA-24
1 23027U 94016A 95148.85971357 -.00000079 00000-0 10000-3 0 2114
2 23027 55.0796 5.4745 0062635 197.0865 162.7497 2.00554379 8976
Glonass 62
1 23043U 94021A 95150.22119077 -.00000052 00000-0 00000+0 0 2087
2 23043 64.7597 337.2876 0005413 169.7720 190.2306 2.13103246 8824
Glonass 63
1 23044U 94021B 95147.28837695 -.00000050 00000-0 00000+0 0 1844
2 23044 64.7498 337.3899 0028347 201.8173 158.0848 2.13102849 8766
Glonass 64
1 23045U 94021C 95151.21864189 -.00000050 00000-0 00000+0 0 1964
2 23045 64.7491 337.2654 0011273 37.3059 322.7862 2.13102605 8848
GOES 8
1 23051U 94022A 95150.06556805 -.00000251 00000-0 10000-3 0 3192
2 23051 0.0365 254.9603 0002917 230.8216 70.0408 1.00261094 11517
MSTI 2
1 23101U 94028A 95149.14423200 .00003215 00000-0 58213-4 0 1990
2 23101 97.1008 342.6458 0010592 318.6894 41.3517 15.50331240 59573
STRV-1A
1 23125U 94034B 95148.83770481 .00000600 00000-0 31979-3 0 1550
2 23125 7.4783 39.1158 7257122 104.0530 339.2487 2.29897088 7208
STRV-1B
1 23126U 94034C 95138.09749881 -.00001025 00000-0 -35647-3 0 1479
2 23126 7.4857 43.7238 7258543 95.0943 343.1710 2.29513204 7002
Nadezhda 4
1 23179U 94041A 95150.08523932 .00000042 00000-0 27283-4 0 1042
2 23179 82.9477 161.2807 0037883 115.1510 245.3575 13.75668174 43982
Glonass 65
1 23203U 94050A 95148.54079247 .00000040 00000-0 00000+0 0 1482
2 23203 64.7970 217.0686 0007072 155.3371 204.7771 2.13101935 6184
Glonass 66
1 23204U 94050B 95149.24416518 .00000042 00000-0 00000+0 0 1580
2 23204 64.7777 217.1054 0015250 344.5605 15.4750 2.13102540 6197
Glonass 67
1 23205U 94050C 95148.65778039 .00000040 00000-0 00000+0 0 1458
2 23205 64.7870 217.0857 0002467 278.8050 81.2512 2.13102358 6184
DMSP B5D2-7
1 23233U 94057A 95150.12253212 .00000128 00000-0 92861-4 0 3586
2 23233 98.8805 208.3756 0012076 184.0935 176.0140 14.12608810 38607
OKEAN 1-7
1 23317U 94066A 95148.78714982 .00000238 00000-0 32871-4 0 689
2 23317 82.5449 53.5448 0024376 254.4012 105.4500 14.73935365 33769
ELEKTRO
```

```
1 23327U 94069A 95149.78868365 -.00000098 00000-0 10000-3 0 728
2 23327 0.7863 263.6343 0005088 163.9581 179.1832 1.00269258 2145
RESURS 1-3
1 23342U 94074A 95148.41856481 .00000100 00000-0 24828-4 0 1184
2 23342 98.0175 208.4318 0001657 87.9455 272.2099 14.69739851 30141
Glonass 68
1 23396U 94076A 95148.50101852 -.00000019 00000-0 00000+0 0 1046
2 23396 64.9357 97.3661 0029420 194.3115 165.5675 2.13102507 4024
Glonass 69
1 23397U 94076B 95149.14570042 -.00000015 00000-0 00000+0 0 1045
2 23397 64.9255 97.3590 0015090 316.0792 43.7688 2.13102236 4036
Glonass 70
1 23398U 94076C 95147.62134595 -.00000021 00000-0 00000+0 0 1111
2 23398 64.9145 97.3922 0004375 282.4468 77.4651 2.13102076 4018
RS-15
1 23439U 94085A 95149.78783651 -.00000039 00000-0 10000-3 0 538
2 23439 64.8167 284.7430 0167759 265.5077 92.6666 11.27523592 17448
NOAA 14
1 23455U 94089A 95150.45120009 .00000033 00000-0 42826-4 0 1949
2 23455 98.9003 93.1069 0008510 246.8277 113.1996 14.11513089 21318
ODERACS II A
1 23471U 95004C 95150.25792687 .00015381 00000-0 75262-4 0 1245
2 23471 51.6540 228.8731 0014330 28.8672 331.2461 15.82404536 18338
ODERACS II B
1 23472U 95004D 95150.54831270 -.00005156 11059-4 -55298-5 0 1283
2 23472 51.6419 223.9866 0013443 39.7499 320.4581 15.89342391 18421
Glonass 71
1 23511U 95009A 95149.10697176 -.00000053 00000-0 00000+0 0 528
2 23511 64.7697 337.5991 0005627 333.8090 26.1849 2.13102534 1761
Glonass 72
1 23512U 95009B 95147.05415936 -.00000049 00000-0 00000+0 0 584
2 23512 64.7768 337.6904 0012050 197.1665 162.8159 2.13102541 1729
Glonass 73
1 23513U 95009C 95149.92814124 -.00000053 00000-0 00000+0 0 568
2 23513 64.7838 337.5651 0004907 205.7354 154.2599 2.13102681 1783
Soyuz TM-21
1 23519U 95010A 95149.90525927 .00010093 00000-0 14512-3 0 914
2 23519 51.6475 249.1866 0005605 11.0742 349.0403 15.56726447 11986
GMS 5
1 23522U 95011B 95146.47049549 -.00000122 00000-0 00000+0 0 296
2 23522 0.9528 294.6565 0001960 218.9919 58.9934 1.00271419 566
DMSP B5D2-8
1 23533U 95015A 95150.56377533 .00000045 00000-0 48045-4 0 877
2 23533 98.8320 153.1908 0008427 64.4270 295.7766 14.12686690 9463
1995017C
1 23547U 95017C 95148.57087615 .00000211 00000-0 77010-4 0 241
2 23547 69.9835 344.8274 0012378 355.7328 4.3692 14.45359495 7942
1995017D
1 23548U 95017D 95148.59165908 .00000025 00000-0 24574-4 0 279
2 23548 69.9896 344.9375 0012048 343.8799 16.1950 14.44801208 7948
```

```
OFEQ 3
1 23549U 95018A 95150.39615033 .00004008 00000-0 98712-4 0 462
2 23549 143.3737 64.2989 0257527 167.9763 192.7228 15.06547829 8284
Progress M-27
1 23555U 95020A 95143.87070030 -.00187481 00000-0 -26508-2 0 482
2 23555 51.6438 279.3713 0002254 347.3919 12.6481 15.56487132 6976
1986017JD
1 23557U 86017JD 95150.66606642 .00013770 00000-0 16386-3 0 402
2 23557 51.6486 244.5121 0007683 179.6655 180.5128 15.61411817530093
GFZ-1
1 23558U 86017JE 95148.70397361 .00001955 00000-0 30228-4 0 291
2 23558 51.6530 254.6567 0006408 208.3636 151.7007 15.59808795529796
ERS-2
1 23560U 95021A 95150.81751852 .00012356 00000-0 45894-2 0 642
2 23560 98.5507 225.3937 0001048 120.7917 239.3303 14.32261531 5694
INTELSAT 706
1 23571U 95023A 95147.50298236 -.00000289 00000-0 00000+0 0 213
2 23571 0.0649 141.2556 0022451 51.0656 177.2755 1.00133044 134
1995023B
1 23572U 95023B 95139.71494738 -.00000058 00000-0 10000-4 0 22
2 23572 11.6922 126.7536 7079800 202.8169 173.2631 2.25632924 111
Spektr
1 23579U 95024A 95151.19378951 .00007257 00000-0 74689-4 0 293
2 23579 51.6469 242.8221 0022575 107.7427 252.6035 15.65826675 1745
1995024B
1 23580U 95024B 95151.24551216 .00599835 11767-4 34632-3 0 329
2 23580 51.6679 240.0678 0042623 116.3342 244.2173 16.15889756 1783
1995025A
1 23581U 95025A 95150.50000000 -.00000169 00000-0 00000+0 0 82
2 23581 0.2800 257.5400 0748568 95.2660 23.1690 0.89751342 123
1995025B
1 23582U 95025B 95150.23859106 .00085184 -62186-6 41310-3 0 118
2 23582 27.0698 146.2073 7605789 183.4161 163.8506 1.93469568 148
1995020C
1 23583U 95020C 95151.25278557 .00000221 00000-0 10000-4 0 80
2 23583 51.6840 242.4469 0019126 345.4662 14.3811 15.56841640530395
1995026A
1 23584U 95026A 95150.84190974 -.00000758 00000-0 55596-2 0 158
2 23584 62.9053 133.1230 7366642 318.1746 4.5474 2.00620021 137
1995026B
1 23585U 95026B 95150.92515799 .00214770 73891-5 45741-3 0 148
2 23585 62.8137 111.8203 0261129 119.5896 243.2900 15.59324546 956
1995026C
1 23586U 95026C 95151.16843132 .00747123 74555-5 68038-3 0 203
2 23586 62.8666 110.7409 0278112 121.4908 241.9404 15.65919851 990
1995020D
1 23588U 95 20 D 95145.41138197 .00029097 00000-0 40599-3 0 11
2 23588 51.6634 271.6972 0012464 333.9415 25.4155 15.56559889529483
--
Dr TS Kelso Adjunct Professor of Space Operations
```

tkelso@afit.af.mil Air Force Institute of Technology

1186. Re: TAPR DSP93 + WISP + PK900

Newsgroup: rec.radio.amateur.space
Date: 1995-06-01 00:00:00 UTC
From: gjones@tcet.unt.edu
Message-ID: <3qjh4j$5ei@hermes.acs.unt.edu>
Source record: 24892

Probably your best bet is going to be on the dsp-93 listserv.

All the technical support fot eh dsp-93 is there, plus Roy Welch (who supports a lot of WISP related stuff) is active in the development group.

send e-mail to

listserv@tapr.org

in the message body say:

subscribe dsp-93 First_Name Last_Name

That should work.

Cheers - Greg, WD5IVD

Bob Smith (rsmith@internetmci.com) wrote:
: TAPR DSP93 + WISP + PK900

: Anyone use the above combination? Any thoughts you could share
: would be most appreciated. Thanks
:
: [0]~~~~~~[0]
: | Bob Smith N3FTU |
: | rsmith@internetMCI.COM Atlanta, GA |
: [0]~~~~~~[0]

1187. Re: Icom GPS or Others??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-01 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3qksvb$7b0@news.internetmci.com>
Source record: 24893

In my opinion the one to get is the GARMIM 45 at the low end.
West Marine in Seattle and others sell it for $299. It is the
latest generation whiuch beats the ICOM in several areas.

Check out the news group:sci.geo.satellite-nav

They have the answer!

In article <D9GLn1.C0F@murdoch.acc.Virginia.EDU>,
sem2r@galen.med.Virginia.EDU says...
>
>How does Icom's GPS receiver (GP-22) compare to some of the
>others on the market? The price is now down to about $430.00.
>What functions does it lack when compared to the higher priced
>models? Same sensitivity?? Calculate 3-D coordinates? Give
>grid squares, etc??
>
>Thanks for the help!! Please E-mail direct to:
>sem2r@galen.med.virginia.edu

--
[o]~~~~~~[o]
| Bob Smith N3FTU |
/ \ rsmith@internetMCI.COM Atlanta, GA / \
[o]---[o]

1188. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-02 00:00:00 UTC
From: Stephan Greene <sgreene@access.digex.net>
Message-ID: <3qnf0d$9pd@news3.digex.net>
Source record: 24894

blanton@ni.net (J. L. Blanton) wrote:
>In article <19950522.011849.93@cromer.demon.co.uk>,
>g7uph@cromer.demon.co.uk wrote:
>
>> Has anyone built a system that will 'lock on' to a satellite by feedback
>> after it has been pointed at it, rather than relying on prediction alone?

>The scheme of conical scanning you describe was widely used in radar
>systems in the 1940s and 1950s (and was called conical scanning). You can
>find detailed descriptions of it in old radar books. It should work well
>if the satellite emits a continuous (constant power) beacon signal.
>

I've observed significant changes in signal amplitude due to atmospheric
fading and changes in the satellite's attitude relative to the ground
station for all the satellite's I've listened to, *especially* the
LEO satellites where automatic tracking is most helpful.

My control theory books are all at home, so this is from memory....
If the antenna can be slewed fast enough relative to the fading, you
could probably come up with a smoothing algorithm that would converge
on the target satellite. If the fading is faster than the antenna
motion, I'm not sure tracking by amplitude would work.

>The other scheme mentioned is phase-comparison monopulse. This is a
>tracking technique used in radar from the 1960s to the present, and
>detailed technical descriptions can be found in radar textbooks. Since it
>relies on phase information it is relatively immune to amplitude
>variations on the signal being tracked.

The first AO-10 ground stations used single-polarization yagis mounted
on either end of the cross boom. The antennas were canted 90 degrees
to each other and phased to produce circular polarization. The Satellite
Experimenter's Handbook describes this arrangement, and also points out
problems encountered when the antenna system pointed slightly away from
the satellite - essentially, demonstrating the phase difference of
arrival effects.

>This technique usually requires
>the antenna to be divided into subapertures whose signals are processed
>through separate receiver channels. This gets to be expensive, so is >less suitable for
amateur projects.

There have been a number of PDOA/TDOA tracking boxes developed by the
hidden transmitter hunting (fox hunt/t-hunt) community. You could
probably connect one to an antenna array where the two antenna feedlines

join and see if it works. As these units are designed for FM signals, they may not work at all on the CW/SSB transponders, but should work great on FM downlinks - MIR, SAREX, AO-27, and the 9600 bps packet satellites.

A control system can take advantage of the known behavior of the satellite. Once a "lock" is achieved, you could predict the behavior of the satellite for the remainder of the pass probably well enough to resume open-loop control with periodic closed-loop updates rather than continue 100% closed-loop control.

73
Steve Greene KA1LM
sgreene@access.digex.net / ka1lm@amsat.org

1189. Re: What sat can reach with 144/440 FM radio?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-02 00:00:00 UTC
From: Stephan Greene <sgreene@access.digex.net>
Message-ID: <3qnflf$9pd@news3.digex.net>
Source record: 24895

durham@lobby.ti.com (ken) wrote:
>In article <74387@ve2noq.ampr.org>, ve2yag@ve2noq.ampr.ORG says:
>>
>I have heard AO-27 are open weekend for cross-repeater 144->440
>>but I never heard it. Can you help me?
>>
>Sorry to bring bad news, but unless AO-27 changes management the schedule
>of operation is erratic at best. It was turned on for the weekends (daylight hours) before
>the present management took over, but now is on at random.
>

Another possibility is that your rig can't hear the satellite. When it's on, it is usually running ~1/2 watt. My Standard dual-bander can barely hear it around the best part of a good pass, and that is with the squeclh off and I know what to listen for and where and when to listen.

Adding a low noise UHF GaAsFET preamp works wonders and makes the satellite copyable and usable for much of a pass, even mobile in motion. Alternatively or in addition, a small (4-6 element) yagi can be hand-held and pointed in the general direction of the satellite. Wave it around for best signal reception (azimuth, elevation, *and* polarization).

Downlink center freq is 436.8 MHz, plus/minus doppler.

>There are no other FM birds up and unless there are some plans in the
>works, there will be none in the next few years. P3D does not have any
>provision for FM (although with some careful planning it would have been
>possible.) Other planned satellites are all digital store and forward or
>special interest experimental (semi-commercial.)

Mir and SAREX can be worked with the 2M portion of the radio. If the radio is 9600-baud ready or modifiable, it may be usable on the 9600 baud satellites. My Standard dualbander is 9600 baud ready. It receives the UO-22, KO-23, and KO-25 birds well (filter skirts seem wide enough so 5kHz tuning steps are not fatal) when used with a preamp and omni antenna. I had limited success with the stock radio on uplinks, and suspect either distortions in the TX side (see the recent QST reviews and QEX articles on subject) or misadjusted radio/TNC TX gain levels.

73
Steve Greene KA1LM
ka1lm@amsat.org

1190. Re: Help: WIN95,WISP,KCTT

Newsgroup: rec.radio.amateur.space
Date: 1995-06-02 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <3qmelf$ma3@newsbf02.news.aol.com>
Source record: 24896

Hi,

You have uncovered a problem with the KCT/T Driver for Windows. I never intended it to work with Win95 (as It didn't really exist when I wrote the driver!) so it will need to be fixed to work correctly with Win95. If you want, you can install the driver with Win31 then copy the related files over to Win95. Another solution is to hand edit the KCTDRV.INI file.

David A. Hoatson, KC6WYG
dhoatson@aol.com

1191. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-02 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <3qo8d4$35j@newsbf02.news.aol.com>
Source record: 24897

Why couldn't you just measure the doppler error from the discrimiator (an easy measurement on most satellite rigs) and feed that back into the tracking pc. It could then compare that to it's esimate and update it's prediction (much like a GPS does)?

This seems the easiest method to me...

David A. Hoatson, KC6WYG
dhoatson@aol.com

1192. Re: LAT LONG GRID SQ Software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-02 00:00:00 UTC
From: MRYP19C@prodigy.com
Message-ID: <3qnf1a$1roi@usenetw1.news.prodigy.com>
Source record: 24898

>Does anyone know of grid square to lat/long conversion software?
>
>KI5X George...

Hi George,

If you get a response, let me know. I'd be interested in this as well.

73, de Chuck - N3LAI

- Chuck Spafford mryp19c@prodigy.com
Sebastian Computer Services
Mortgage Consultants
(301) 645-3635

1193. Using /EX

Newsgroup: rec.radio.amateur.space
Date: 1995-06-03 00:00:00 UTC
From: g8tzj@ve4umr.ampr.ORG
Message-ID: <15256@ve4umr.ampr.org>
Source record: 24899

PLEASE be VERY careful when using these Internet mailing lists for AX25 packet messages.

Why ? Well I get the Digest version of this mailing list and it is forwarded to me from the Internet / TCPIP gateway to my AX25 BBS. If one of the digest messages contains the /EX characters (or even CTRL-Z) on a blank line then I LOOSE ALL the remaining items in the digest !

Digest #147 is a VERY good example of this where the first message is the SPACENEWS packet bulletin sent by John Magliacane which ended with /EX which any AX25 BBS interprets as END OF MESSAGE. I therefore lost all the remaining 6 messages in this digest file. I also lost a previous digest in the same way but is was a different sender that was responsible.

I will now have to try and FTP this file as the topic list shows a reply to a message that I replied to. This is not easy for someone like me who only has limited E-mail access to the Internet. Fingers crossed that the FTP-MAIL server will get it.

If you must send packet mail via Internet then please EITHER omit the /EX or preccede it with a space E.G.

/EX

as this will not affect the transfer to the packet network.

Andrew G8TZJ@GB7LAN.#16.GBR.EU packet
g8tzj@lurpac.lancs.ac.uk E-mail

1194. Re: TAPR DSP93 + WISP + PK900

Newsgroup: rec.radio.amateur.space
Date: 1995-06-03 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3qpl4h$qes@news.internetmci.com>
Source record: 24900

I'm on that list Greg but ther's not alot of traffic. I will try
it though - you are right it is te better place to go!

--
[o]~~~~~~[o]
| Bob Smith N3FTU |
/ \ rsmith@internetMCI.COM Atlanta, GA / \
[o]---[o]

1195. Re: Traksat?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-03 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3qppfg$3q5@news4.primenet.com>
Source record: 24901

In <3qgi4h$r8@acmez.gatech.edu>, eew4aql@prism.gatech.edu (GT Amateur Radio Club) writes:
>David Johnson <djohnson@acpub.duke.edu> writes:
>
>>Hello enthusiasts-of-the-sats:
>
>>First, thanks to all who replied to my earlier, basic query from
>>a newbie. I have started to follow some of the good advice on
>>getting started. I have obtained Traksat, and am trying to figure
>>out how to use it with my own keps input file (like the ARRL
>>bulletin with the keps). Is anyone adept at this who can provide
>>directions for a simpleton? I hope to get on the 10m/15m bird
>>soon. Thanks, and best wishes to all the bird-watchers and
>>bird-talkers!
>
>I use TrakSat 2.80 on a pokey 286, and I have found it to be a little quirky.
>One thing I have found is that if I download two-line keps from e-mail, I
>have to use a DOS editing program (the EDIT for DOS 6 will work with version
>3.3, and is good... hint, hint!) and remove the e-mail headers. A better
>solution is to ftp to archive.afit.af.mil in the /pub/space directory and
>get the *.tle files. (ie, amateur.tle, mir.tle, etc.) They are updated
>frequently.

(signatures trimmed to conserve bandwidth a little)

Traksat will also choke on the "end of file" marker. It wants "just the facts."
Also, a co-processor is very helpful, this program is more math intensive than
other tracking programs.
Traksat 3.1 has some better features, but no support for XTs. Avoid ver 3.0.
I love the maps and the ability to customize the look.
I wish it came in OS/2 flavor.
Finally, I haven't registered yet, shame on me.

Jim n7tcf@primenet.com

1196. Re: Lat/Long to Grid Square Software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-03 00:00:00 UTC
From: hamilton@BIX.com
Message-ID: <hamilton.802189938@BIX.com>
Source record: 24902

sem2r@galen.med.Virginia.EDU (Stacey E. Mills) writes:

>I know there's software to convert lat/long to maidenhead grid
>squares down to the 2 letter suffix, but I don't know where I
>saw it.

Following is a public domain BASIC program I used to convert my
own coordinates to a grid square. I found it on the Chestnut Ham
Radio CDROM, version 3.2. I run it on my Windows NT system using
QBASIC which comes with NT but you should be able to use it with
just about any BASIC you have handy.

Regards,
Doug Hamilton KD1UJ hamilton@bix.com Ph 508-440-8307 FAX 508-440-8308
Hamilton Laboratories, 21 Shadow Oak Drive, Sudbury, MA 01776-3165, USA

```
----- UNIGRID.BAS -----
10 REM WORLDWIDE QTH LOCATOR, CONTEST SCORING AND MAP PROGRAM BY N6NB.
20 REM *A PUBLIC DOMAIN PROGRAM FOR USE ON APPLE, COMMODORE, IBM, TRS-80
30 REM AND OTHER MICROCOMPUTERS WITH BASIC AND AT LEAST 32K OF RAM.
40 REM *THIS PROGRAM CONVERTS LAT-LONG TO 4 AND 6-DIGIT LOCATORS, CALCULATES
50 REM BEAM HEADINGS AND DISTANCE BETWEEN LOCATORS, TALLIES LOCATOR-BASED
60 REM CONTEST SCORES, AND PROVIDES MAP-TO-LOCATOR TRANSLATIONS.
70 REM *THANKS TO WA1JXN, W4RUU, KC6A AND SM5AGM FOR THEIR SUGGESTIONS.
80 REM *NOTE: ENTER MINUS SIGN ('-') FOR EAST LONGITUDE OR SOUTH LATITUDE.
90 REM --IF 0 DEGREES EAST OR SOUTH, USE MINUS SIGN ('-') WITH MINUTES.
100 REM (EXAMPLES: -31 DEGR, 10.1 MINS OR 0 DEGR, -10.1 MINS).
110 PI=3.14159:RA=57.29583:DEF FNA(X)=INT(X*100+.5)/100:PT=0:NR=5:C1=0
120 M(1)=50:M(2)=100:M(3)=150:M(4)=250:F(1)=1:F(2)=2:F(3)=3:F(4)=4:F(5)=5
130 U(1)=82:U(2)=82:U(3)=57:U(4)=57:U(5)=88:U(6)=88
140 L(1)=65:L(2)=65:L(3)=48:L(4)=48:L(5)=65:L(6)=65
150 SX(1)=.06336:SX(2)=.12672:SX(3)=.25344:SX(4)=1.01376:SX(5)=2.64
160 SY(1)=13.71494:SY(2)=6.857469:SY(3)=3.428734:SY(4)=.857184:SY(5)=.329159
170 S$(1)="1:1,000,000 SCALE":S$(2)="1:500,000 SCALE":ML$=" MI"
180 S$(3)="1:250,000 SCALE":S$(4)="1:62,500 SCALE":S$(5)="1:24,000 SCALE"
190 PRINT:PRINT:PRINT:REM PUT YOUR CLEAR-SCREEN COMMAND HERE
200 PRINT:PRINT:PRINT " QTH LOCATOR PROGRAM STARTUP MENU"
210 PRINT:PRINT "1 - CONVERT LOCATORS TO COORDINATES"
220 PRINT "2 - CONVERT COORDINATES TO LOCATORS"
230 PRINT "3 - OBTAIN LOCATOR OF A POINT ON MAP"
240 PRINT "4 - PINPOINT A KNOWN LOCATOR ON MAP"
250 PRINT "5 - COMPUTE DX AND CONTEST SCORES"
260 PRINT "6 - CHANGE CONTEST SCORING SYSTEM"
270 PRINT "7 - EXIT"
280 PRINT:INPUT "ENTER 1,2,3,4,5,6 OR 7";CN
```

```
290 ON CN GOTO 330,480,1710,2060,680,1160,1590
300 PRINT "INVALID CHOICE.":GOTO 200
310 REM LOCATOR-TO-COORDINATE CONVERSION ROUTINE; 4 AND 6-DIGIT LOCATORS OK.
320 REM IF 4 DIGITS, APPROXIMATE CENTER OF AREA IS ASSUMED.
330 PRINT:PRINT "ENTER LOCATOR TO CONVERT:":GOSUB 340:GOTO 200
340 INPUT G1$
350 IF LEN(G1$)=4 THEN G1$=G1$+"MM"
360 IF LEN(G1$)<>6 THEN 1370
370 FOR K=1 TO 6:A(K)=ASC(MID$(G1$,K,1))
380 IF A(K)>U(K) OR A(K)<L(K) THEN 1370
390 NEXT K
400 LO=180-(A(1)-65)*20-(A(3)-48)*2-(A(5)-64.5)/12
410 LA=-90+(A(2)-65)*10+A(4)-48+(A(6)-64.5)/24
420 XO$="W LONG":LX=ABS(LO):IF LO<0 THEN XO$="E LONG"
430 XA$="N LAT":LY=ABS(LA):IF LA<0 THEN XA$="S LAT"
440 OM=(LX-INT(LX))*60:AM=(LY-INT(LY))*60
450 PRINT G1$;" = ";INT(LX);"DEG ";FNA(OM);"MIN ";XO$
460 PRINT TAB(10)INT(LY);"DEG ";FNA(AM);"MIN ";XA$:RETURN
470 REM COORDINATE-TO-LOCATOR CONVERSION ROUTINE
480 GOSUB 490:GOSUB 610:GOTO 200
490 PRINT:PRINT "USE (-) FOR EAST LONG, SOUTH LAT"
500 PRINT "ENTER THE LONGITUDE (DEGREES,MINS)":INPUT LO,OM
510 L2=ABS(OM):IF LO<0 THEN OM=-L2
520 L1=ABS(LO):LO=LO+OM/60:XO$="W LONG":IF LO<0 THEN XO$="E LONG"
530 IF L1>179 THEN 1340
540 IF L2>59.99 THEN 1340
550 PRINT "ENTER THE LATITUDE (DEGREES,MINS)":INPUT LA,AM
560 L4=ABS(AM):IF LA<0 THEN AM=-L4
570 L3=ABS(LA):LA=LA+AM/60:XA$="N LAT":IF LA<0 THEN XA$="S LAT"
580 IF L3>89 THEN 1340
590 IF L4>59.99 THEN 1340
600 QA=LA:QO=LO:RETURN
610 QP=(180-QO)/20:C=INT(QP):B$=CHR$(C+65):R=(QP-C)*10:C=INT(R):D$=CHR$(C+48)
620 M=(R-C)*24:C=INT(M):F$=CHR$(C+65):QB=(QA+90)/10:C=INT(QB):C$=CHR$(C+65)
630 R=(QB-C)*10:C=INT(R):E$=CHR$(C+48):M=(R-C)*24:C=INT(M):G$=CHR$(C+65)
640 A$=B$+C$+D$+E$+F$+G$
650 PRINT:PRINT "AT ";INT(L1);"/";FNA(L2);XO$;" - ";INT(L3);"/";FNA(L4);XA$
660 PRINT "THE GRIDLOCATOR IS ";A$:RETURN
670 REM CONTEST SCORING ROUTINE--COMPUTES DX, BEAM HEADINGS AND POINT TOTALS.
680 PRINT:PRINT "ENTER YOUR OWN QTH LOCATOR:":GOSUB 340
690 HO=LO/RA:HA=LA/RA:H$=G1$:XX=0
700 PRINT:INPUT "LOCATOR OR COMMAND ('?' FOR MENU)";G1$
710 IF G1$="QRT" THEN PRINT:GOTO 1100
720 IF G1$="X" THEN 1380
730 IF G1$="?" THEN 1400
740 IF G1$="+" THEN 1480
750 IF G1$="-" THEN 1540
760 IF G1$="C" THEN GOSUB 490:GOSUB 610:PRINT:GOTO 700
770 IF G1$="M" THEN GOSUB 1630:PRINT:GOTO 700
780 IF LEN(G1$)>3 THEN GOSUB 350:GOSUB 800:GOTO 1090
```

```
790 PRINT "INVALID ENTRY. PLEASE TRY AGAIN.":GOTO 700
800 LO=LO/RA:LA=LA/RA:ZL=LA
810 L=HO-LO:IF L<>0 THEN 840
820 IF HA>ZL THEN AZ=180:GOTO 940
830 IF HA<=ZL THEN AZ=0:GOTO 940
840 IF L>PI THEN L=L-2*PI
850 IF L<-PI THEN L=L+2*PI
860 IF SIN(LA)=0 THEN AA=PI/2:GOTO 880
870 AA=COS(L)*(COS(LA)/SIN(LA)):AA=ATN(AA)
880 IF SIN(AA)=0 THEN AZ=0:GOTO 900
890 AZ=((COS(L)/SIN(L))*COS(HA+AA))/SIN(AA):IF AZ<>0 THEN AZ=ATN(1/AZ)
900 AZ=AZ*RA:L=L*RA
910 IF L>0 AND AZ<0 THEN AZ=AZ+180
920 IF L<0 AND AZ>0 THEN AZ=AZ+180
930 IF L<0 AND AZ<0 THEN AZ=AZ+360
940 AZ=INT(AZ+.5):DX=(SIN(HA)*SIN(LA))+(COS(HA)*COS(LA)*COS(HO-LO))
950 IF DX>1 THEN DX=1
960 IF DX<=-1 THEN DX=180:GOTO 1030
970 DX=SQR(1-(DX*DX))/DX
980 IF HO<>LO THEN 1010
990 IF HA=>ZL THEN DX=HA-LA:GOTO 1020
1000 IF HA<ZL THEN DX=LA-HA:GOTO 1020
1010 DX=ATN(DX)
1020 DX=DX*RA:IF DX<0 AND DX>-90 THEN DX=DX+180
1030 DX=DX*69.0468:KM=DX/.6215:DX=FNA(DX):KM=FNA(KM):PX=F(1)
1040 PRINT "DX FROM CENTER OF ";H$;" TO ";G1$;":"
1050 PRINT TAB(6)DX;" MI";" AND ";KM;" KM":IF ML$=" MI" THEN KM=DX
1060 PRINT TAB(6)AZ;" DEGREES AZIMUTH"
1070 FOR J=1 TO NR-1:IF KM=>M(J) THEN PX=F(J+1)
1080 NEXT J:RETURN
1090 PRINT TAB(6)PX;" PT(S) FOR THIS QSO":PT=PT+PX:D9=D9+KM:QS=QS+1:XX=1
1100 PRINT:PRINT TAB(6)"----------------------"
1110 PRINT TAB(6)PT;" TOTAL PTS"
1120 PRINT TAB(6)D9;" ";ML$;" TOTAL DX"
1130 PRINT TAB(6)QS;" QSOS ENTERED":IF G1$="QRT" THEN 1590
1140 GOTO 700
1150 REM ROUTINE TO MODIFY SCORING SYSTEM.
1160 PRINT:PRINT "UNLESS YOU CHANGE THE VALUES HERE,"
1170 PRINT "THIS SCORING SYSTEM WILL APPLY:":PRINT
1180 PRINT F(1);" PT(S) PER QSO IF DX < ";M(1);ML$:IF NR<=2 THEN 1220
1190 FOR J=2 TO NR-1
1200 PRINT F(J);" PTS IF DX = ";M(J-1);" TO ";M(J);ML$
1210 NEXT J
1220 PRINT F(NR);" PTS IF DX => ";M(NR-1);ML$:PRINT
1230 INPUT "ARE THESE VALUES CORRECT (Y/N)";OK$
1240 IF OK$="Y" THEN 200
1250 PRINT:INPUT "USE MILES (MI) OR KILOMETERS (KM)";ML$:ML$=" "+ML$
1260 PRINT:INPUT "ENTER THE LOWEST PT VALUE";F(1):NR=2
1270 PRINT "ENTER MAXIMUM DX FOR ";F(1);" PT(S)";:INPUT M(1)
1280 PRINT:INPUT "ENTER THE NEXT POINT VALUE";F(NR)
```

```
1290 PRINT "ENTER MAXIMUM DX FOR "F(NR);" PTS"
1300 INPUT "(IF NO HIGHER LIMIT EXISTS, ENTER 0)";M(NR)
1310 IF M(NR)=0 THEN 1150
1320 NR=NR+1:GOTO 1280
1330 REM OPERATOR MESSAGES AND EDITING FUNCTIONS
1340 PRINT "ENTRY INCORRECT. MAXIMUM COORDINATES:"
1350 PRINT "89 DEG LATITUDE, 179 DEG LONGITUDE,"
1360 PRINT "AND 59.99 MINUTES":GOTO 490
1370 PRINT "INVALID ENTRY FORMAT. PLEASE TRY AGAIN.":GOTO 340
1380 IF XX=0 THEN PRINT "CAN'T DELETE":GOTO 700
1390 XX=0:QS=QS-1:PT=PT-PX:D9=D9-KM:PRINT "--LAST ENTRY DELETED--":GOTO 1100
1400 PRINT:PRINT:PRINT TAB(12)"DATA ENTRY MENU":PRINT
1410 PRINT "YOU MAY ENTER A STATION'S LOCATOR, OR--"
1420 PRINT:PRINT "'X' TO DELETE THE LAST ENTRY"
1430 PRINT "'+' TO ADD PRIOR QSOS TO TOTALS"
1440 PRINT "'-' TO DELETE ANY PREVIOUS QSO"
1450 PRINT "'C' TO CONVERT COORDINATES TO LOCATOR"
1460 PRINT "'M' TO PERFORM MAP OPERATIONS"
1470 PRINT "'QRT' TO END SESSION":PRINT:GOTO 700
1480 PRINT:PRINT:PRINT "THIS OPTION ALLOWS YOU TO ADD QSOS,"
1490 PRINT "DX, AND CONTEST POINTS FROM"
1500 PRINT "A PREVIOUS SESSION TO YOUR TOTALS.":PRINT
1510 PRINT "HOW MANY QSOS TO ADD?":INPUT Q1:QS=QS+Q1
1520 PRINT "HOW MANY TOTAL MILES (OR KM) TO ADD?":INPUT D1:D9=D9+D1
1530 PRINT "HOW MANY POINTS TO ADD?":INPUT P1:PT=PT+P1:GOTO 1100
1540 PRINT:PRINT:PRINT "THIS OPTION ALLOWS YOU TO DELETE"
1550 PRINT "ANY PREVIOUS QSO FROM THE TOTALS"
1560 PRINT "BY ENTERING ITS LOCATOR.":PRINT
1570 INPUT "LOCATOR TO DELETE";G1$:GOSUB 350:GOSUB 800
1580 QS=QS-1:PT=PT-PX:D9=D9-KM:XX=0:GOTO 1100
1590 PRINT:PRINT "NOTE: YOU HAVE EXITED THE PROGRAM."
1600 PRINT "BE SURE TO WRITE DOWN YOUR DATA"
1610 PRINT "BEFORE TURNING OFF YOUR COMPUTER!":END
1620 REM MAP CONVERSION ROUTINES
1630 PRINT:PRINT "MAP OPERATIONS. CHOOSE EITHER--"
1640 PRINT "1 - OBTAIN LOCATOR OF A POINT ON MAP"
1650 PRINT "2 - PINPOINT A KNOWN LOCATOR ON MAP"
1660 PRINT "ENTER 1 OR 2";:INPUT M9
1670 IF M9=1 THEN GOSUB 1720:GOTO 700
1680 IF M9=2 THEN GOSUB 2070:GOTO 700
1690 PRINT "INVALID CHOICE--TRY AGAIN":GOTO 1630
1700 REM ROUTINES TO OBTAIN QTH LOCATOR OF A POINT ON A MAP
1710 GOSUB 1720:GOTO 200
1720 GOSUB 2200:PRINT:PRINT "MEASURE THE VERTICAL AND HORIZONTAL"
1730 PRINT "DISTANCE FROM THE REFERENCE POINT"
1740 PRINT "TO THE POINT FOR WHICH YOU NEED"
1750 PRINT "A QTH LOCATOR.":PRINT
1760 PRINT "NOTE: USE MINUS ('-') TO INDICATE A"
1770 PRINT "DISTANCE SOUTH OR EAST OF REFERENCE PT.":PRINT
1780 INPUT "# INCHES VERTICALLY FROM REF PT.";V
```

```
1790 INPUT "# INCHES HORIZONTALLY FROM REF. PT.";H
1800 IF ABS(M3+(V*S2/50))<90 THEN 1820
1810 PRINT "ERROR: ENTRY >90 DEGR LAT":GOTO 1780
1820 C2=4:IF H=>0 AND V<0 THEN C2=1
1830 IF V=>0 AND H=>0 THEN C2=2
1840 IF V=>0 AND H<0 THEN C2=3
1850 V3=ABS(V)*S2:H3=ABS(H)*S2
1860 IF V3=0 THEN A3=90:GOTO 1880
1870 A3=(ATN(H3/V3))*RA
1880 R3=(H3^2+V3^2)^.5
1890 IF C2=1 THEN T3=A3+180
1900 IF C2=2 THEN T3=360-A3
1910 IF C2=3 THEN T3=A3
1920 IF C2=4 THEN T3=180-A3
1930 NA=(R3*(COS(T3/RA))/60)+M3:XA$="N LAT":IF NA<0 THEN XA$="S LAT"
1940 IF T3=90 THEN 1990
1950 IF T3=270 THEN 1990
1960 X=LOG(TAN((45+(M3/2))/RA)):X1=LOG(TAN((45+(NA/2))/RA))
1970 NO=M4+RA*(TAN(T3/RA))*(X-X1)
1980 GOTO 2000
1990 NO=M4-(R3*SIN(T3/RA))/(60*COS(M3/RA))
2000 IF NO=>180 THEN NO=NO-360
2010 IF NO=<-180 THEN NO=360+NO
2020 XO$="W LONG":IF NO<0 THEN XO$="E LONG"
2030 QA=NA:NA=ABS(NA):L3=INT(NA):L4=(NA-INT(NA))*60
2040 QO=NO:NO=ABS(NO):L1=INT(NO):L2=(NO-INT(NO))*60:GOTO 610
2050 REM ROUTINES TO PINPOINT A KNOWN QTH LOCATOR ON A MAP
2060 GOSUB 2070:GOTO 200
2070 GOSUB 2200:PRINT:PRINT "ENTER THE GRIDLOCATOR THAT YOU"
2080 PRINT "WISH TO PINPOINT ON YOUR MAP":GOSUB 340
2090 NA=LA:NO=LO:A4=ABS((M3+NA)/2):D4=ABS(M3-NA):D5=ABS(M4-NO)
2100 D6=69.0541-.351726*COS((2*A4)/RA)
2110 D7=69.23001*COS(A4/RA)-.05875*COS((3*A4)/RA)
2120 V4=D6*D4*S3:G4=D7*D5*S3
2130 X7$=" NORTH":IF LA<M3 THEN X7$=" SOUTH"
2140 X8$=" WEST":IF LO<M4 THEN X8$=" EAST"
2150 PRINT:PRINT "THE CENTER OF ";G1$;" IS"
2160 PRINT FNA(V4);" INCHES ";X7$
2170 PRINT "FROM THE REFERENCE POINT AND"
2180 PRINT FNA(G4);" INCHES ";X8$
2190 PRINT "FROM THE REFERENCE POINT":RETURN
2200 IF C1=0 THEN 2270
2210 PRINT:PRINT "CURRENT MAP PARAMETERS:"
2220 PRINT:PRINT "REFERENCE POINT IS"
2230 PRINT INT(L5);"/";FNA(L6);X1$;" - ";INT(L7);"/";FNA(L8);X2$
2240 IF S1=6 THEN PRINT "MAP SCALE: ";MI;" MILES/INCH":GOTO 2260
2250 PRINT "MAP USES ";S$(S1)
2260 INPUT "WANT TO CHANGE MAP PARAMETERS (Y/N)";CM$:IF CM$<>"Y" THEN RETURN
2270 PRINT:PRINT "PLEASE DESCRIBE YOUR MAP AND SELECT"
2280 PRINT "A REFERENCE POINT FOR MEASUREMENTS."
```

```
2290 PRINT "-----------------------------------"
2300 PRINT "| : |"
2310 PRINT "| X----------: |"
2320 PRINT "| : : |"
2330 PRINT "| : : |"
2340 PRINT "|.................R.................|"
2350 PRINT "| : |"
2360 PRINT "| : |"
2370 PRINT "| : |"
2380 PRINT "| : |"
2390 PRINT "-----------------------------------"
2400 PRINT "(R IS YOUR REFERENCE POINT ON THE MAP,"
2410 PRINT "AND X IS AN UNKNOWN POINT OR LOCATOR).":C1=1:PRINT
2420 PRINT "FOR YOUR REFERENCE POINT ON THE MAP:"
2430 GOSUB 490:M3=LA:M4=LO:L5=L1:L6=L2:L7=L3:L8=L4:X1$=XO$:X2$=XA$
2440 PRINT:PRINT "NOW SPECIFY THE MAP'S SCALE:"
2450 PRINT:PRINT TAB(7)"1. ";S$(1):PRINT TAB(7)"2. ";S$(2)
2460 PRINT TAB(7)"3. ";S$(3):PRINT TAB(7)"4. ";S$(4)
2470 PRINT TAB(7)"5. ";S$(5):PRINT TAB(7)"6. ANY # MILES/INCH"
2480 PRINT:INPUT "ENTER 1,2,3,4,5 OR 6";S1:IF S1=6 THEN 2510
2490 IF S1>6 THEN PRINT "INVALID SCALE--TRY AGAIN.":GOTO 2440
2500 S2=SY(S1):S3=SX(S1):GOTO 2210
2510 PRINT:INPUT "ENTER MAP SCALE IN MILES/INCH";MI
2520 S2=MI/1.15078:S3=1/MI:GOTO 2210
```

1197. ARLK022 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-06-03 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk022.1995@ampr.org>
Source record: 24903
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK022
ARLK022 Keplerian data

ZCZC SK47
QST de W1AW
Keplerian Bulletin 22 ARLK022
From ARRL Headquarters
Newington, CT June 3, 1995
To all radio amateurs

SB KEP ARL ARLK022
ARLK022 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95150.26886339 -.00000278 00000-0 10000-3 0 3554
2 14129 26.4691 265.6627 6003533 280.9615 20.7451 2.05880627 61961
RS-10/11
1 18129U 87054A 95150.18927751 .00000030 00000-0 15968-4 0 723
2 18129 82.9250 72.3731 0012420 134.6803 225.5369 13.72352740397506
UO-11
1 14781U 84021B 95148.98192273 .00000135 00000-0 30744-4 0 8017
2 14781 97.7826 152.4210 0010558 241.7954 118.2201 14.69346720601080
RS-12/13
1 21089U 91007A 95148.90716794 .00000043 00000-0 29728-4 0 8029
2 21089 82.9193 115.0755 0027938 224.2517 135.6408 13.74057855216124
AO-13
1 19216U 88051B 95145.13020627 -.00000189 00000 0 99999-5 0 412
2 19216 57.5449 185.6151 7292698 9.6968 359.1460 2.09726975 21685
UO-14
1 20437U 90005B 95149.18916014 .00000070 00000-0 43949-4 0 1002
2 20437 98.5613 233.8596 0010014 251.8294 108.1804 14.29887966279036
RS-15
1 23439U 94085A 95145.44183405 -.00000039 00000-0 10000-3 0 527
2 23439 64.8176 291.7733 0167727 266.2927 91.8801 11.27523581 16954
AO-16
1 20439U 90005D 95150.21125994 .00000000 00000-0 17071-4 0 8994
2 20439 98.5790 236.5152 0010547 253.1157 106.8872 14.29941477279191
```

```
DO-17
1 20440U 90005E 95146.21346116 .00000028 00000-0 27608-4 0 8988
2 20440 98.5800 233.0279 0010711 264.8923 95.1031 14.30082493278642
WO-18
1 20441U 90005F 95150.18343342 -.00000006 00000-0 14755-4 0 9031
2 20441 98.5800 236.9155 0011209 253.7421 106.2525 14.30054036279219
LO-19
1 20442U 90005G 95145.24020790 .00000033 00000-0 29581-4 0 8987
2 20442 98.5813 232.3968 0011593 268.1110 91.8738 14.30155797278521
FO-20
1 20480U 90013C 95149.30656423 -.00000015 00000-0 48796-4 0 7953
2 20480 99.0720 241.4179 0540035 276.0693 77.9149 12.83229848248526
AO-21
1 21087U 91006A 95152.21765737 .00000094 00000-0 82657-4 0 6008
2 21087 82.9448 244.3906 0034821 189.1541 170.8977 13.74555503217535
UO-22
1 21575U 91050B 95149.69520405 .00000012 00000-0 18655-4 0 6050
2 21575 98.3965 221.4709 0007915 342.8826 17.2078 14.36976844202845
KO-23
1 22077U 92052B 95150.39729976 -.00000037 00000-0 10000-3 0 4965
2 22077 66.0832 273.0133 0008273 202.3475 157.7175 12.86291458131449
KO-25
1 22828U 93061F 95146.75148810 .00000016 00000-0 24203-4 0 3705
2 22828 98.6152 223.5921 0009377 273.7884 86.2220 14.28100183 54810
IO-26
1 22826U 93061D 95146.75002639 .00000025 00000-0 27924-4 0 3928
2 22826 98.6195 223.5560 0008438 289.9666 70.0599 14.27770666 86710
AO-27
1 22825U 93061C 95145.74322518 .00000022 00000-0 26882-4 0 3936
2 22825 98.6185 222.4697 0008130 292.8797 67.1520 14.27662988 86565
PO-28
1 22829U 93061G 95146.48254561 .00000025 00000-0 27813-4 0 3842
2 22829 98.6153 223.3572 0009408 275.8881 84.1224 14.28079379 86691
Mir
1 16609U 86017A 95152.15205708 .00006829 00000-0 10000-3 0 770
2 16609 51.6486 237.9467 0004980 24.3061 335.8779 15.56848014530461

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Thursday,
June 6, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1198. Two-Line Orbital Element Sets (TLE615)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-03 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.802212958@dolphin>
Source record: 24904

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #615 -
Alouette 1
1 00424U 62049A 95152.91575517 .00000020 00000-0 13027-4 0 1107
2 00424 80.4619 299.9392 0022217 296.0669 63.8189 13.67842046630213
ATS 1
1 02608U 66110A 95139.33355885 -.00000037 00000-0 10000-3 0 9330
2 02608 14.6359 356.9828 0010499 59.5751 300.4913 1.00320186 20904
ATS 3
1 03029U 67111A 95153.22780066 -.00000112 00000-0 10000-3 0 3650
2 03029 14.8145 3.8087 0007324 273.0249 309.9966 1.00272694100945
Cosmos 398
1 04966U 71016A 95152.85202887 .00235152 90924-5 25879-3 0 8767
2 04966 51.4079 297.8999 0606563 37.4528 326.7144 14.89468508822902
Starlette
1 07646U 75010A 95150.34160125 -.00000168 00000-0 -18080-4 0 8894
2 07646 49.8300 223.4370 0205448 42.8491 318.8209 13.82188378 25873
LAGEOS
1 08820U 76039A 95149.48563818 -.00000005 00000-0 10000-3 0 1109
2 08820 109.8451 254.1978 0044063 211.1951 148.5975 6.38664488189269
ETS-2
1 09852U 77014A 95139.35070524 .00000108 00000-0 10000-3 0 282
2 09852 12.7010 37.4732 0002616 51.9166 308.0407 1.00007076 13698
GOES 2
1 10061U 77048A 95151.55677422 .00000056 00000-0 10000-3 0 5321
2 10061 11.7824 41.5689 0003689 161.0827 70.2806 1.00261895 10609
IUE
1 10637U 78012A 95148.71501199 -.00000267 00000-0 10000-3 0 1380
2 10637 35.1740 89.3085 1328908 46.0230 312.8769 1.00284019 16062
GPS BI-01
1 10684U 78020A 95148.57022551 -.00000058 00000-0 10000-3 0 3600
2 10684 64.8175 35.2818 0060544 162.7597 197.5228 1.98069189111777
```

```
GPS BI-02
1 10893U 78047A 95147.94821613 -.00000061 00000-0 10000-3 0 1632
2 10893 63.3412 273.3818 0222967 14.7738 345.8452 2.01627567125029
GOES 3
1 10953U 78062A 95152.47891152 .00000096 00000-0 10000-3 0 4949
2 10953 10.7606 44.3277 0002048 120.0350 88.2807 1.00309594 15226
SeaSat 1
1 10967U 78064A 95151.84737684 -.00000089 00000-0 15185-4 0 4038
2 10967 107.9938 103.6784 0002521 297.0225 63.0667 14.38036263886486
GPS BI-03
1 11054U 78093A 95142.77187810 -.00000063 00000-0 10000-3 0 3299
2 11054 63.0513 271.7199 0044960 177.1919 182.8318 1.93505233121089
Nimbus 7
1 11080U 78098A 95149.66654622 -.00000077 00000-0 -31731-4 0 5044
2 11080 99.0024 24.4604 0008329 284.8411 75.1821 13.83710083837990
GPS BI-04
1 11141U 78112A 95129.96514157 -.00000050 00000-0 10000-3 0 9755
2 11141 64.8215 37.5926 0048656 26.5678 333.7191 1.92894877 10082
GPS BI-05
1 11690U 80011A 95151.93450515 -.00000043 00000-0 10000-3 0 9194
2 11690 65.1880 36.7965 0143448 197.5646 162.0245 2.00564300126532
GPS BI-06
1 11783U 80032A 95148.52263491 -.00000049 00000-0 10000-3 0 788
2 11783 62.4631 266.6263 0217967 29.6958 331.5115 2.03456560110985
GOES 5
1 12472U 81049A 95150.64835066 -.00000282 00000-0 10000-3 0 8600
2 12472 7.5017 54.1718 0007578 20.2041 339.6545 1.00281642 9255
Cosmos 1383
1 13301U 82066A 95149.18877632 .00000004 00000-0 -12628-4 0 4083
2 13301 82.9305 56.0820 0025915 219.9112 140.0134 13.68065732644733
LandSat 4
1 13367U 82072A 95152.78928364 .00001213 00000-0 27874-3 0 6814
2 13367 98.1263 209.0250 0006151 240.3021 119.7560 14.57155022684979
DMSP B5D2-1
1 13736U 82118A 95152.52965986 .00000037 00000-0 33790-4 0 7738
2 13736 98.6297 341.9836 0009529 61.1032 299.1100 14.25735774646682
IRAS
1 13777U 83004A 95152.51640166 .00000016 00000-0 40980-4 0 9768
2 13777 98.9635 341.1283 0013639 72.2266 288.0394 13.99224152299996
Cosmos 1447
1 13916U 83021A 95149.88931556 .00000038 00000-0 24165-4 0 5053
2 13916 82.9426 115.2813 0038411 140.5605 219.8358 13.74326219610957
TDRS 1
1 13969U 83026B 95153.22564591 -.00000314 00000-0 10000-3 0 4206
2 13969 8.3600 47.5298 0001738 103.2340 304.8882 1.00730999 17564
GOES 6
1 14050U 83041A 95152.24966683 -.00000012 00000-0 10000-3 0 4096
2 14050 6.3206 57.3726 0005840 2.2448 160.3517 1.00320462102369
OSCAR 10
1 14129U 83058B 95150.26886339 -.00000278 00000-0 10000-3 0 3554
```

```
2 14129 26.4691 265.6627 6003533 280.9615 20.7451 2.05880627 61961
LandSat 5
1 14780U 84021A 95152.68790665 .00000022 00000-0 14654-4 0 2580
2 14780 98.1140 209.4977 0003056 266.4692 93.6156 14.57162383598374
UoSat 2
1 14781U 84021B 95152.99974445 .00000136 00000-0 30758-4 0 8029
2 14781 97.7825 156.2498 0010769 226.9664 133.0644 14.69347953601676
GPS BI-09
1 15039U 84059A 95146.84038071 -.00000072 00000-0 10000-3 0 3370
2 15039 64.5021 31.5092 0081652 17.2734 343.0568 1.92302288 79981
Cosmos 1574
1 15055U 84062A 95152.56585618 .00000060 00000-0 47729-4 0 7078
2 15055 82.9575 167.3898 0027149 327.6672 32.2817 13.73622411548596
GPS BI-10
1 15271U 84097A 95152.11431030 -.00000020 00000-0 10000-3 0 43
2 15271 62.1395 266.8367 0155274 353.6165 6.1949 2.00598148 77601
Cosmos 1602
1 15331U 84105A 95150.36883979 .00000200 00000-0 20730-4 0 3930
2 15331 82.5326 112.5889 0021252 131.6509 228.6519 14.84623486576021
NOAA 9
1 15427U 84123A 95152.81151195 .00000044 00000-0 47347-4 0 2743
2 15427 99.0013 211.4459 0014544 315.8939 44.1073 14.13708682539742
GPS BI-11
1 16129U 85093A 95146.15789051 -.00000079 00000-0 10000-3 0 6566
2 16129 65.1604 34.6211 0153998 86.8268 274.9745 1.89368086 14577
Mir
1 16609U 86017A 95153.24327392 .00035736 00000-0 49208-3 0 798
2 16609 51.6440 232.4815 0004737 45.5834 314.5545 15.56883953530636
SPOT 1
1 16613U 86019A 95152.75144999 .00000090 00000-0 62356-4 0 8186
2 16613 98.6539 224.4441 0001618 96.0457 264.0955 14.20060027166171
Cosmos 1766
1 16881U 86055A 95149.50498047 .00000170 00000-0 17618-4 0 3082
2 16881 82.5200 171.2553 0019397 159.7490 200.4501 14.83627190476809
EGP
1 16908U 86061A 95149.22989012 -.00000083 00000-0 10000-3 0 27
2 16908 50.0077 100.5219 0011357 113.3350 246.8681 12.44412587 68474
NOAA 10
1 16969U 86073A 95152.92105045 .00000061 00000-0 44283-4 0 1829
2 16969 98.5119 156.2653 0014178 31.1532 329.0491 14.24938294452308
MOS-1
1 17527U 87018A 95151.15259252 -.00000035 00000-0 56862-5 0 2127
2 17527 98.9882 216.7520 0001336 73.5051 286.6249 13.94922779421451
GOES 7
1 17561U 87022A 95151.36079627 .00000086 00000-0 10000-3 0 4094
2 17561 2.2928 72.5785 0002754 318.4430 212.2800 1.00259060 13462
Kvant-1
1 17845U 87030A 95152.85812515 .00016750 00000-0 23502-3 0 2672
2 17845 51.6459 234.4076 0005358 32.9999 327.0668 15.56856086530487
DMSP B5D2-3
```

```
1 18123U 87053A 95152.86500871 .00000037 00000-0 41286-4 0 148
2 18123 98.7788 344.2629 0013199 265.1750 94.7925 14.15406090410554
RS-10/11
1 18129U 87054A 95150.18927751 .00000030 00000-0 15968-4 0 723
2 18129 82.9250 72.3731 0012420 134.6803 225.5369 13.72352740397506
Meteor 2-16
1 18312U 87068A 95149.44029146 .00000077 00000-0 55488-4 0 4007
2 18312 82.5534 297.2363 0011058 215.8995 144.1424 13.84057462392958
Meteor 2-17
1 18820U 88005A 95152.60178361 .00000030 00000-0 13347-4 0 6323
2 18820 82.5403 350.6489 0015648 283.9853 75.9559 13.84739185370717
DMSP B5D2-4
1 18822U 88006A 95152.56665433 .00000018 00000-0 26441-4 0 9881
2 18822 98.4058 357.4073 0007014 44.5630 315.6111 14.23154888380294
Glonass 34
1 19163U 88043A 95151.61033665 .00000010 00000-0 10000-3 0 9944
2 19163 65.1243 98.7204 0006873 158.6475 201.3680 2.13102575 54086
Glonass 36
1 19165U 88043C 95152.13593770 .00000016 00000-0 10000-3 0 3931
2 19165 65.1022 98.6805 0004822 322.5334 37.4110 2.13102092 54717
METEOSAT 3
1 19215U 88051A 95144.23190526 -.00000281 00000-0 10000-3 0 1304
2 19215 2.4569 70.0023 0002608 45.3463 140.3304 1.00261426 13336
AO-13
1 19216U 88051B 95144.17657256 -.00000417 00000-0 10000-4 0 408
2 19216 57.5454 185.7916 7292381 9.6250 359.1402 2.09727146 21669
OKEAN 1
1 19274U 88056A 95150.05137577 .00000089 00000-0 82182-5 0 89
2 19274 82.5115 271.1056 0018787 313.8167 46.1412 14.82338222372464
Meteor 3-2
1 19336U 88064A 95153.24164012 .00000051 00000-0 10000-3 0 3984
2 19336 82.5384 75.9906 0018055 103.9305 256.3814 13.16972863329335
Glonass 39
1 19503U 88085C 95146.53298951 -.00000045 00000-0 10000-3 0 2856
2 19503 65.7186 337.7710 0010443 133.5309 226.5243 2.13101945 52082
NOAA 11
1 19531U 88089A 95152.72621280 -.00000031 00000-0 83597-5 0 827
2 19531 99.1950 155.6648 0010844 230.8340 129.1868 14.13051923344573
TDRS 2
1 19548U 88091B 95143.63968979 -.00000130 00000-0 00000+0 0 1268
2 19548 1.6926 75.1973 0004365 53.3912 78.6825 0.99467795 11617
Glonass 40
1 19749U 89001A 95152.20249488 .00000016 00000-0 10000-3 0 5017
2 19749 65.0685 98.2584 0007702 262.2531 97.6360 2.13101357 49710
Glonass 41
1 19750U 89001B 95148.03476247 -.00000018 00000-0 10000-3 0 4135
2 19750 65.0769 98.4577 0007325 242.9048 116.9854 2.13101736 49644
GPS BII-01
1 19802U 89013A 95149.23599574 .00000018 00000-0 10000-3 0 582
2 19802 55.1935 125.9649 0026642 184.4973 175.4506 2.00578396 45997
```

```
Akebono
1 19822U 89016A 95152.58854987 .00010404 00000-0 51763-3 0 5116
2 19822 75.0795 344.0673 3781928 32.4882 346.0978 7.85923373136597
Meteor 2-18
1 19851U 89018A 95149.27614033 .00000038 00000-0 21168-4 0 3980
2 19851 82.5203 227.9732 0014322 343.0024 17.0651 13.84390034315572
MOP-1
1 19876U 89020B 95141.43056090 -.00000020 00000-0 00000+0 0 1171
2 19876 1.1698 72.5182 0001929 322.2388 355.9188 1.00412764 2750
TDRS 3
1 19883U 89021B 95149.95362847 -.00000265 00000-0 10000-3 0 798
2 19883 0.0746 73.5812 0001128 348.9903 126.8251 1.00269413195255
GPS BII-02
1 20061U 89044A 95148.58444589 -.00000085 00000-0 10000-3 0 706
2 20061 54.4486 302.2813 0143109 214.1027 144.9460 2.00563533 43727
Nadezhda 1
1 20103U 89050A 95152.88085908 .00000013 00000-0 -21459-5 0 4093
2 20103 82.9613 29.8852 0038921 36.9871 323.3956 13.73853097296327
GPS BII-03
1 20185U 89064A 95152.41452591 .00000037 00000-0 10000-3 0 957
2 20185 54.9900 126.4248 0016665 295.8759 63.9300 2.00576540 42377
GMS 4
1 20217U 89070A 95152.68754051 -.00000283 00000-0 10000-3 0 1938
2 20217 1.0052 76.7031 0001330 70.1108 130.1388 1.00270521 21599
INTERCOSMOS 24
1 20261U 89080A 95149.45828026 .00000117 00000-0 31795-4 0 4138
2 20261 82.5932 156.4483 1241427 196.3789 159.3529 12.47250384257944
GPS BII-04
1 20302U 89085A 95150.45185986 -.00000011 00000-0 10000-3 0 676
2 20302 53.3904 242.2471 0011703 191.5220 168.5040 2.00555869 41130
Meteor 3-3
1 20305U 89086A 95152.76482544 .00000044 00000-0 10000-3 0 3225
2 20305 82.5408 28.2980 0006266 161.0617 199.0678 13.04426643268470
COBE
1 20322U 89089A 95152.53783718 .00000256 00000-0 19166-3 0 1257
2 20322 98.9594 168.8110 0009381 23.1888 336.9723 14.03450400283390
Kvant-2
1 20335U 89093A 95152.85812515 .00016750 00000-0 23502-3 0 2794
2 20335 51.6459 234.4076 0005358 32.9999 327.0668 15.56856086313697
GPS BII-05
1 20361U 89097A 95150.00000000 -.00000052 00000-0 00000+0 0 9352
2 20361 55.7534 68.5621 0077996 121.0627 263.9785 2.00560424 30600
SPOT 2
1 20436U 90005A 95152.38407383 -.00000044 00000-0 00000+0 0 9377
2 20436 98.7365 226.6722 0000754 43.6589 316.4688 14.20025841277653
UO-14
1 20437U 90005B 95153.24774186 .00000042 00000-0 33382-4 0 1016
2 20437 98.5622 237.8524 0010063 241.8075 118.2097 14.29888432279610
UO-15
1 20438U 90005C 95149.77857334 .00000002 00000-0 17728-4 0 8971
```

```
2 20438 98.5651 232.9835 0009309 257.3162 102.6977 14.29206994279019
PACSAT
1 20439U 90005D 95150.21125994 .00000000 00000-0 17071-4 0 8994
2 20439 98.5790 236.5152 0010547 253.1157 106.8872 14.29941477279191
DO-17
1 20440U 90005E 95150.27148988 -.00000005 00000-0 14870-4 0 8990
2 20440 98.5801 237.0280 0010576 251.3535 108.6498 14.30082558279222
WO-18
1 20441U 90005F 95150.18343342 -.00000006 00000-0 14755-4 0 9031
2 20441 98.5800 236.9155 0011209 253.7421 106.2525 14.30054036279219
LO-19
1 20442U 90005G 95149.78776443 .00000001 00000-0 17170-4 0 8990
2 20442 98.5813 236.8803 0011517 253.9047 106.0868 14.30156120279171
GPS BII-06
1 20452U 90008A 95151.85694359 .00000051 00000-0 10000-3 0 395
2 20452 54.0180 182.3400 0055789 81.6612 279.0399 2.00572897 39145
MOS-1B
1 20478U 90013A 95150.40962920 .00000091 00000-0 10000-3 0 7886
2 20478 99.0002 220.3335 0001292 80.8049 279.3257 13.94924339191052
DEBUT
1 20479U 90013B 95149.30170773 .00000026 00000-0 14102-3 0 8988
2 20479 99.0712 241.5608 0539910 275.7138 78.2661 12.83330248248534
FO-20
1 20480U 90013C 95149.30656423 -.00000015 00000-0 48796-4 0 7953
2 20480 99.0720 241.4179 0540035 276.0693 77.9149 12.83229848248526
MOS-1B R/B
1 20491U 90013D 95152.90300734 -.00000313 00000-0 -53190-3 0 1371
2 20491 99.0434 298.1216 0470616 107.3938 257.9122 13.02995081252208
LACE
1 20496U 90015A 95152.81910483 .00000902 00000-0 34789-4 0 5444
2 20496 43.1051 218.5698 0008780 100.3872 259.7986 15.34547616295217
Nadezhda 2
1 20508U 90017A 95152.91368675 .00000067 00000-0 55685-4 0 4079
2 20508 82.9547 164.4354 0044957 349.1496 10.8698 13.73494231263554
OKEAN 2
1 20510U 90018A 95150.18684371 .00000171 00000-0 20173-4 0 4085
2 20510 82.5238 222.5467 0019988 129.7208 230.5769 14.78492334282931
GPS BII-07
1 20533U 90025A 95148.27974474 -.00000085 00000-0 10000-3 0 562
2 20533 54.8198 302.9083 0048400 79.1977 281.3205 2.00562767 37849
PegSat
1 20546U 90028A 95149.41002712 .00004721 00000-0 97781-4 0 8068
2 20546 94.1123 133.6176 0068723 50.8016 309.9298 15.43307709285589
HST
1 20580U 90037B 95152.22899886 .00000386 00000-0 23096-4 0 6693
2 20580 28.4684 153.4443 0006143 137.1613 222.9418 14.90883512 81524
MACSAT 2
1 20608U 90043B 95149.56050283 .00000115 00000-0 17285-4 0 994
2 20608 89.9265 176.6565 0105484 322.1947 37.1889 14.64834781269989
Glonass 44
```

```
1 20619U 90045A 95148.81715280 -.00000051 00000-0 10000-3 0 1910
2 20619 65.2903 337.1288 0024379 206.6051 153.2649 2.13102496 39091
Glonass 45
1 20620U 90045B 95149.40520723 -.00000052 00000-0 10000-3 0 2006
2 20620 65.2958 337.1127 0008991 42.1015 317.9957 2.13102504 39147
Glonass 46
1 20621U 90045C 95150.41001619 -.00000051 00000-0 10000-3 0 7989
2 20621 65.3323 337.1225 0014365 193.3710 166.6140 2.13101702 39161
Kristall
1 20635U 90048A 95152.85812515 .00016750 00000-0 23502-3 0 719
2 20635 51.6459 234.4076 0005358 32.9999 327.0668 15.56856086530433
ROSAT
1 20638U 90049A 95150.65513064 .00000137 00000-0 27944-4 0 4638
2 20638 52.9904 225.9633 0012768 52.9946 307.2214 15.07186706274473
Meteor 2-19
1 20670U 90057A 95152.37257516 -.00000021 00000-0 -31670-4 0 8988
2 20670 82.5431 291.1167 0014348 246.8004 113.1645 13.84162059248926
CRRES
1 20712U 90065A 95152.07086509 .00000172 00000-0 37985-3 0 1008
2 20712 18.0017 45.5679 7181798 91.7354 343.7368 2.35411348 34100
GPS BII-08
1 20724U 90068A 95152.08978863 .00000030 00000-0 10000-3 0 9075
2 20724 54.8368 124.0120 0116754 174.8417 185.2699 2.00559981 33787
Feng Yun1-2
1 20788U 90081A 95152.90164940 .00000214 00000-0 16959-3 0 4016
2 20788 98.8143 166.4547 0016628 113.1909 247.1006 14.01346450242691
Meteor 2-20
1 20826U 90086A 95149.70378285 .00000036 00000-0 19498-4 0 9094
2 20826 82.5255 230.2564 0013549 150.0368 210.1571 13.83608004235677
GPS BII-09
1 20830U 90088A 95152.13585163 -.00000038 00000-0 10000-3 0 9156
2 20830 55.6953 66.4035 0066132 99.9922 260.7694 2.00571197 34429
GPS BIIA-10
1 20959U 90103A 95153.04277078 .00000043 00000-0 10000-3 0 8705
2 20959 55.0662 125.9505 0098708 230.4862 128.6022 2.00554622 33031
DMSP B5D2-5
1 20978U 90105A 95152.40707867 .00000088 00000-0 47204-4 0 2161
2 20978 98.6418 220.6969 0078177 215.7807 143.8119 14.32549417235050
Glonass 47
1 21006U 90110A 95152.31313870 .00000016 00000-0 10000-3 0 7661
2 21006 65.0479 97.6044 0058636 188.0390 171.8594 2.13102818 34872
Glonass 48
1 21007U 90110B 95152.97080143 .00000022 00000-0 10000-3 0 8981
2 21007 65.0740 97.6478 0034298 178.6258 181.3662 2.13101186 34870
Glonass 49
1 21008U 90110C 95151.45351645 .00000007 00000-0 00000+0 0 779
2 21008 65.0441 97.6572 0010681 277.4191 82.4335 2.13099044 34831
AO-21
1 21087U 91006A 95152.21765737 .00000094 00000-0 82657-4 0 6008
2 21087 82.9448 244.3906 0034821 189.1541 170.8977 13.74555503217535
```

```
RS-12/13
1 21089U 91007A 95152.91217497 .00000025 00000-0 10398-4 0 8035
2 21089 82.9203 112.1057 0028083 212.8534 147.0880 13.74057773216673
MOP-2
1 21140U 91015B 95152.95191043 -.00000004 00000-0 00000+0 0 94
2 21140 0.2839 84.3510 0002105 33.1042 115.1940 1.00269178 17782
Nadezhda 3
1 21152U 91019A 95152.88408556 .00000021 00000-0 62262-5 0 983
2 21152 82.9194 68.2131 0041937 326.0478 33.7989 13.73519380211408
Glonass 50
1 21216U 91025A 95148.57761781 -.00000052 00000-0 10000-3 0 4096
2 21216 65.0504 336.8005 0013323 217.2151 142.7484 2.13102509 32301
Glonass 51
1 21217U 91025B 95152.40039607 -.00000044 00000-0 10000-3 0 8229
2 21217 65.0367 336.6729 0008152 246.2171 113.7107 2.13101524 32371
Glonass 52
1 21218U 91025C 95150.16645495 -.00000052 00000-0 10000-3 0 2930
2 21218 65.0208 336.7415 0006962 351.7053 8.4690 2.13102895 32332
GRO
1 21225U 91027B 95151.32541672 .00001613 00000-0 30046-4 0 2689
2 21225 28.4639 332.3444 0004378 192.1403 167.9161 15.42650612110725
Meteor 3-4
1 21232U 91030A 95152.85092885 .00000051 00000-0 10000-3 0 8089
2 21232 82.5387 282.3769 0014394 36.0192 324.1900 13.16467792197365
NOAA 12
1 21263U 91032A 95152.71343960 .00000144 00000-0 83943-4 0 5080
2 21263 98.5857 177.1772 0012252 307.6167 52.3898 14.22524430210221
OKEAN 3
1 21397U 91039A 95152.35060259 .00000208 00000-0 26623-4 0 1081
2 21397 82.5235 133.5771 0021128 197.8672 162.1797 14.76374145215025
GPS BIIA-11
1 21552U 91047A 95152.31267951 -.00000039 00000-0 10000-6 0 8621
2 21552 55.9768 64.0937 0061755 243.5592 115.8254 2.00566971 28619
ERS-1
1 21574U 91050A 95152.75162766 .00000013 00000-0 20894-4 0 1573
2 21574 98.5516 227.2900 0001133 82.9779 277.1533 14.32246416202844
UO-22
1 21575U 91050B 95149.69520405 .00000012 00000-0 18655-4 0 6050
2 21575 98.3965 221.4709 0007915 342.8826 17.2078 14.36976844202845
ORBCOMM-X
1 21576U 91050C 95150.19326759 .00000009 00000-0 17745-4 0 7005
2 21576 98.3945 220.3975 0004091 357.5742 2.5419 14.36383722202820
TUBSAT-A
1 21577U 91050D 95150.19061111 -.00000005 00000-0 12862-4 0 5992
2 21577 98.3949 220.9168 0006545 346.0885 14.0118 14.36484085202853
SARA
1 21578U 91050E 95149.19520504 .00000260 00000-0 98333-4 0 7998
2 21578 98.4142 225.2396 0005030 349.4674 10.6394 14.39008888202968
TDRS 4
1 21639U 91054B 95152.52433432 .00000086 00000-0 10000-3 0 8984
```

```
2 21639 0.0074 238.3080 0003383 174.5314 211.1295 1.00275931108064
Meteor 3-5
1 21655U 91056A 95149.29667886 .00000051 00000-0 10000-3 0 8056
2 21655 82.5507 232.2842 0014683 54.6931 305.5552 13.16838528182013
UARS
1 21701U 91063B 95149.56590959 -.00000110 00000-0 11467-4 0 6764
2 21701 56.9845 211.2245 0005133 106.4641 253.6945 14.96391182202788
DMSP B5D2-6
1 21798U 91082A 95152.89771973 .00000101 00000-0 76987-4 0 8600
2 21798 98.9601 164.6127 0011797 227.7019 132.3145 14.13890858181042
Glonass 53
1 21853U 92005A 95151.78577272 .00000010 00000-0 10000-3 0 87
2 21853 64.9992 97.3041 0006784 203.5729 156.3609 2.13102248 25973
Glonass 54
1 21854U 92005B 95152.07578509 .00000013 00000-0 00000+0 0 1400
2 21854 65.0003 97.2914 0016416 11.0617 348.9505 2.13104036 25968
Glonass 55
1 21855U 92005C 95149.32396442 -.00000014 00000-0 00000+0 0 1322
2 21855 64.9968 97.3909 0007999 219.5506 140.3583 2.13102336 25893
JERS-1
1 21867U 92007A 95150.75037037 .00000509 00000-0 47298-4 0 5987
2 21867 97.7167 227.7378 0001557 117.1528 242.9853 14.98631720180432
GPS BIIA-12
1 21890U 92009A 95140.31738489 -.00000046 00000-0 10000-3 0 6602
2 21890 53.9470 242.8767 0059220 174.8619 185.2427 2.00545146 23742
GPS BIIA-13
1 21930U 92019A 95147.99624392 -.00000079 00000-0 10000-3 0 6354
2 21930 55.7060 4.0536 0039472 173.2906 186.8038 2.00566209 22829
EUVE
1 21987U 92031A 95150.46730137 .00000585 00000-0 17535-4 0 4575
2 21987 28.4338 241.9912 0010444 173.6374 186.4355 15.19285054165250
SAMPEX
1 22012U 92038A 95149.52891009 -.00000331 00000-0 -31229-4 0 6347
2 22012 81.6693 165.3879 0118623 349.3926 10.4775 14.91398194157891
GPS BIIA-14
1 22014U 92039A 95153.02560465 .00000054 00000-0 10000-3 0 5543
2 22014 54.8520 183.7934 0075982 308.7633 50.6182 2.00572477 14765
Glonass 56
1 22056U 92047A 95151.10082325 -.00000050 00000-0 00000+0 0 445
2 22056 64.8771 336.8418 0003346 285.0739 74.9071 2.13103374 22021
Glonass 57
1 22057U 92047B 95151.86522832 -.00000047 00000-0 00000+0 0 447
2 22057 64.8827 336.8394 0007607 335.8876 24.0923 2.13102828 22011
Glonass 58
1 22058U 92047C 95144.76656131 -.00000043 00000-0 10000-3 0 192
2 22058 64.8957 337.0883 0008474 270.0373 89.8970 2.13102973 21917
TOPEX
1 22076U 92052A 95151.10188543 -.00000061 00000-0 00000+0 0 8813
2 22076 66.0329 288.3525 0007938 270.0809 89.9264 12.80930119131053
KO-23
```

```
1 22077U 92052B 95150.39729976 -.00000037 00000-0 10000-3 0 4965
2 22077 66.0832 273.0133 0008273 202.3475 157.7175 12.86291458131449
S80/T
1 22078U 92052C 95151.41718160 -.00000037 00000-0 10000-3 0 4941
2 22078 66.0841 269.7902 0008497 192.2658 167.8151 12.86575641131652
GPS BIIA-15
1 22108U 92058A 95151.48907780 -.00000008 00000-0 00000+0 0 5726
2 22108 54.1819 243.1805 0122015 143.5723 217.0972 2.00566601 19916
FREJA
1 22161U 92064A 95149.41083910 .00000092 00000-0 81408-4 0 5168
2 22161 62.9934 136.2956 0808998 345.2371 12.6220 13.21836986127567
LAGEOS II
1 22195U 92070B 95149.43501190 -.00000009 00000-0 10000-3 0 4054
2 22195 52.6514 234.8414 0138315 268.4323 90.0393 6.47293838 61369
GPS BIIA-16
1 22231U 92079A 95152.16951973 .00000051 00000-0 10000-3 0 5479
2 22231 54.6639 184.9797 0034977 283.6547 76.0261 2.00567275 18505
GPS BIIA-17
1 22275U 92089A 95152.32083104 .00000053 00000-0 10000-3 0 5582
2 22275 54.6281 182.5217 0053884 253.1357 106.3472 2.00559216 17917
TDRS 5
1 22314U 93003B 95151.04641024 -.00000278 00000-0 10000-3 0 5133
2 22314 1.8390 71.9101 0001127 344.4923 162.7280 1.00271402 8746
GPS BIIA-18
1 22446U 93007A 95150.40088740 -.00000074 00000-0 10000-3 0 5529
2 22446 54.4641 303.0639 0081285 354.7862 5.1061 2.00545836 16864
Glonass 59
1 22512U 93010A 95150.37944571 -.00000004 00000-0 10000-3 0 7048
2 22512 65.0120 97.2126 0008425 194.3016 165.6580 2.13101977 17514
Glonass 60
1 22513U 93010B 95150.31873848 -.00000005 00000-0 00000+0 0 7643
2 22513 65.0080 97.2225 0007603 208.2662 151.6626 2.13102710 17702
Glonass 61
1 22514U 93010C 95152.95859022 .00000021 00000-0 00000+0 0 7607
2 22514 65.0260 97.1177 0010324 196.0234 163.9257 2.13103012 17769
ASTRO-D
1 22521U 93011A 95150.71464143 .00000675 00000-0 41692-4 0 4119
2 22521 31.1080 348.9631 0056912 325.2690 34.4240 15.02258048124741
UFO F1
1 22563U 93015A 95152.00302365 .00000069 00000-0 10000-3 0 4171
2 22563 26.0209 294.5802 0000146 33.3183 344.4690 0.99247886 12300
GPS BIIA-19
1 22581U 93017A 95148.54826259 -.00000080 00000-0 10000-3 0 4321
2 22581 55.2068 3.6073 0065807 11.3286 349.3160 2.00547060 15884
ARSENE
1 22654U 93031B 95148.02185836 -.00000127 00000-0 10000-3 0 3141
2 22654 2.5599 84.5595 2878582 211.6968 126.7068 1.42206240 6108
GPS BIIA-20
1 22657U 93032A 95149.67356483 -.00000078 00000-0 10000-3 0 4714
2 22657 55.2434 3.4035 0062389 216.5976 142.9912 2.00568615 11234
```

```
RADCAL
1 22698U 93041A 95152.88092274 .00000041 00000-0 11894-4 0 4049
2 22698 89.5393 291.3010 0092556 127.1092 233.8600 14.21346283100266
GPS BIIA-21
1 22700U 93042A 95152.13407163 -.00000009 00000-0 10000-3 0 4276
2 22700 54.3082 243.9425 0040317 327.5524 32.2694 2.00562741 14083
NOAA 13
1 22739U 93050A 95152.33236424 .00000028 00000-0 40611-4 0 8130
2 22739 98.9931 101.1564 0009214 216.6022 143.4521 14.10934322 93200
GPS BIIA-22
1 22779U 93054A 95152.21900026 -.00000061 00000-0 10000-3 0 4740
2 22779 54.5965 302.9868 0019716 245.1965 114.5810 2.00568359 12848
Meteor 2-21
1 22782U 93055A 95151.42514392 .00000044 00000-0 26576-4 0 4054
2 22782 82.5444 290.4668 0022581 334.8456 25.1590 13.83032258 88223
UFO F2
1 22787U 93056A 95152.03705440 -.00000059 00000-0 00000+0 0 4500
2 22787 4.5421 325.0054 0004032 58.3466 310.2819 1.00270963 5001
SPOT 3
1 22823U 93061A 95150.24052408 .00000055 00000-0 46651-4 0 4431
2 22823 98.7381 224.5864 0002248 73.3628 286.7796 14.20026333 86745
STELLA
1 22824U 93061B 95151.15649223 -.00000022 00000-0 89779-5 0 3927
2 22824 98.6167 227.4966 0005647 274.3766 85.6752 14.27101479 87307
AO-27
1 22825U 93061C 95150.22862743 -.00000019 00000-0 10221-4 0 3942
2 22825 98.6182 226.8920 0007950 278.5695 81.4582 14.27663084 87203
IO-26
1 22826U 93061D 95151.16501213 .00000009 00000-0 21195-4 0 3938
2 22826 98.6191 227.9094 0008394 276.4524 83.5703 14.27770866 87349
HEATHSAT
1 22827U 93061E 95150.69683077 -.00000001 00000-0 17475-4 0 4542
2 22827 98.6168 227.3868 0008454 264.2919 95.7289 14.27893455 87284
ITAMSAT
1 22828U 93061F 95151.16545590 .00000022 00000-0 26422-4 0 3715
2 22828 98.6146 227.9441 0009389 259.7482 100.2644 14.28100759 55445
PO-28
1 22829U 93061G 95151.17683449 -.00000003 00000-0 16397-4 0 3858
2 22829 98.6151 227.9873 0009130 260.3098 99.7051 14.28079613 87360
KO-25
1 22830U 93061H 95153.19933486 -.00000007 00000-0 14565-4 0 4044
2 22830 98.5121 223.3536 0010729 228.1962 131.8301 14.28089862 87657
GPS BIIA-23
1 22877U 93068A 95151.77602631 -.00000043 00000-0 10000-3 0 2800
2 22877 55.4270 64.4563 0038147 309.8405 49.8230 2.00549537 11723
METEOSAT 6
1 22912U 93073B 95152.89824773 -.00000080 00000-0 00000+0 0 3114
2 22912 0.1361 268.3329 0001258 207.0714 87.9720 1.00272603 4030
HST Array
1 22920U 90037C 95150.26793904 .00003340 00000-0 24259-3 0 3296
```

```
2 22920 28.4806 128.5754 0002634 333.6879 26.3590 15.01032551 81615
Meteor 3-6
1 22969U 94003A 95151.10161867 .00000051 00000-0 10000-3 0 1717
2 22969 82.5576 170.7848 0017583 115.7108 244.5832 13.16729001 64632
TUBSAT-B
1 22970U 94003B 95150.07713745 .00000051 00000-0 10000-3 0 1622
2 22970 82.5601 171.4502 0017464 112.8979 247.3982 13.16825434 64500
GPS BIIA-24
1 23027U 94016A 95151.85132503 -.00000075 00000-0 10000-3 0 2127
2 23027 55.0776 5.3530 0062518 196.8268 163.0098 2.00554523 9039
Glonass 62
1 23043U 94021A 95150.22119077 -.00000052 00000-0 00000+0 0 2087
2 23043 64.7597 337.2876 0005413 169.7720 190.2306 2.13103246 8824
Glonass 63
1 23044U 94021B 95151.04243162 -.00000050 00000-0 00000+0 0 1854
2 23044 64.7495 337.2574 0028392 201.6604 158.2352 2.13103104 8845
Glonass 64
1 23045U 94021C 95151.21864189 -.00000050 00000-0 00000+0 0 1964
2 23045 64.7491 337.2654 0011273 37.3059 322.7862 2.13102605 8848
GOES 8
1 23051U 94022A 95151.39952781 -.00000250 00000-0 10000-3 0 3203
2 23051 0.0075 268.2003 0003013 209.5877 199.5183 1.00260605 11526
MSTI 2
1 23101U 94028A 95152.50054173 .00003961 00000-0 71304-4 0 2000
2 23101 97.0996 345.9528 0010306 304.2751 55.7599 15.50357592 60094
STRV-1A
1 23125U 94034B 95152.31581597 -.00000333 00000-0 -40404-5 0 1567
2 23125 7.4763 37.6952 7256878 106.8813 337.7862 2.29895273 7284
STRV-1B
1 23126U 94034C 95151.59917924 .00002972 00000-0 12589-2 0 1484
2 23126 7.5006 38.3711 7262982 105.7577 339.5609 2.29542972 7313
Nadezhda 4
1 23179U 94041A 95150.08523932 .00000042 00000-0 27283-4 0 1042
2 23179 82.9477 161.2807 0037883 115.1510 245.3575 13.75668174 43982
Glonass 65
1 23203U 94050A 95152.29486923 .00000037 00000-0 00000+0 0 1499
2 23203 64.7979 216.9425 0007177 158.3229 201.7937 2.13102192 6269
Glonass 66
1 23204U 94050B 95151.12120020 .00000041 00000-0 00000+0 0 1590
2 23204 64.7909 217.0185 0015029 342.8272 17.2106 2.13102451 6234
Glonass 67
1 23205U 94050C 95151.94260490 .00000038 00000-0 00000+0 0 1469
2 23205 64.7896 216.9810 0002470 285.9817 74.0779 2.13102349 6256
DMSP B5D2-7
1 23233U 94057A 95152.60160058 .00000128 00000-0 92723-4 0 3606
2 23233 98.8782 210.8318 0012287 176.9504 183.1735 14.12609639 38956
OKEAN 1-7
1 23317U 94066A 95153.13193461 .00000148 00000-0 19120-4 0 690
2 23317 82.5455 49.5500 0024310 239.4279 120.4535 14.73935899 34405
ELEKTRO
```

```
1 23327U 94069A 95149.78868365 -.00000098 00000-0 10000-3 0 728
2 23327 0.7863 263.6343 0005088 163.9581 179.1832 1.00269258 2145
RESURS 1-3
1 23342U 94074A 95151.55025098 .00000083 00000-0 22094-4 0 1199
2 23342 98.0176 211.5078 0001768 84.8525 275.2884 14.69740442 30601
Glonass 68
1 23396U 94076A 95152.25512143 .00000015 00000-0 00000+0 0 1058
2 23396 64.9371 97.2400 0029032 193.6218 166.2775 2.13102583 4107
Glonass 69
1 23397U 94076B 95152.43052759 .00000016 00000-0 00000+0 0 1052
2 23397 64.9230 97.2536 0014334 313.8774 45.9962 2.13103019 4100
Glonass 70
1 23398U 94076C 95151.37544776 .00000006 00000-0 00000+0 0 1127
2 23398 64.9167 97.2658 0003976 283.9055 76.0264 2.13102225 4090
RS-15
1 23439U 94085A 95149.78783651 -.00000039 00000-0 10000-3 0 538
2 23439 64.8167 284.7430 0167759 265.5077 92.6666 11.27523592 17448
NOAA 14
1 23455U 94089A 95152.43598906 .00000097 00000-0 77643-4 0 1961
2 23455 98.9000 95.0750 0008489 240.4603 119.5720 14.11514271 21590
ODERACS II A
1 23471U 95004C 95153.16283048 .00023899 00000-0 11422-3 0 1266
2 23471 51.6502 213.7664 0013685 42.2101 318.1344 15.82545349 18795
ODERACS II B
1 23472U 95004D 95150.54831270 -.00005156 11059-4 -55298-5 0 1283
2 23472 51.6419 223.9866 0013443 39.7499 320.4581 15.89342391 18421
Glonass 71
1 23511U 95009A 95150.98399473 -.00000051 00000-0 00000+0 0 534
2 23511 64.7687 337.5348 0005229 331.5547 28.4332 2.13102739 1800
Glonass 72
1 23512U 95009B 95151.74674367 -.00000048 00000-0 00000+0 0 590
2 23512 64.7749 337.5276 0012094 195.8145 164.1590 2.13102639 1828
Glonass 73
1 23513U 95009C 95149.92814124 -.00000053 00000-0 00000+0 0 568
2 23513 64.7838 337.5651 0004907 205.7354 154.2599 2.13102681 1783
Soyuz TM-21
1 23519U 95010A 95152.85812515 .00016750 00000-0 23502-3 0 931
2 23519 51.6459 234.4076 0005358 32.9999 327.0668 15.56856086 12443
SFU
1 23521U 95011A 95151.38641329 .00001633 00000-0 49210-4 0 608
2 23521 28.4563 188.7112 0020131 37.7499 322.4497 15.28320919 11369
GMS 5
1 23522U 95011B 95146.47049549 -.00000122 00000-0 00000+0 0 296
2 23522 0.9528 294.6565 0001960 218.9919 58.9934 1.00271419 566
DMSP B5D2-8
1 23533U 95015A 95152.90105104 .00000067 00000-0 59956-4 0 899
2 23533 98.8321 155.4951 0008420 59.2523 300.9486 14.12687418 9796
1995017C
1 23547U 95017C 95152.58480264 .00000157 00000-0 61815-4 0 250
2 23547 69.9825 335.5158 0012394 350.0258 10.0617 14.45360691 8523
```

```
1995017D
1 23548U 95017D 95152.88406472 .00000033 00000-0 26819-4 0 284
2 23548 69.9882 334.9905 0012013 337.5406 22.5198 14.44801986 8565
OFEQ 3
1 23549U 95018A 95153.24574007 .00005570 00000-0 14640-3 0 477
2 23549 143.3736 81.4224 0257115 191.7018 167.7854 15.06575367 8710
Progress M-27
1 23555U 95020A 95143.87070030 -.00187481 00000-0 -26508-2 0 482
2 23555 51.6438 279.3713 0002254 347.3919 12.6481 15.56487132 6976
1986017JD
1 23557U 86017JD 95153.22603530 .00017664 00000-0 20753-3 0 432
2 23557 51.6522 231.6154 0008127 191.4846 168.6329 15.61512499530497
GFZ-1
1 23558U 86017JE 95148.70397361 .00001955 00000-0 30228-4 0 291
2 23558 51.6530 254.6567 0006408 208.3636 151.7007 15.59808795529796
ERS-2
1 23560U 95021A 95152.35445083 .00000270 00000-0 11628-3 0 673
2 23560 98.5507 226.9098 0001256 90.6695 269.4631 14.32247135 5915
INTELSAT 706
1 23571U 95023A 95152.22834939 -.00000286 00000-0 00000+0 0 222
2 23571 0.0616 141.4448 0012807 49.2390 84.6644 1.00285405 179
1995023B
1 23572U 95023B 95139.71494738 -.00000058 00000-0 10000-4 0 22
2 23572 11.6922 126.7536 7079800 202.8169 173.2631 2.25632924 111
Spektr
1 23579U 95024A 95152.85315461 .00011495 00000-0 16358-3 0 314
2 23579 51.6459 234.4331 0005353 32.9328 299.2471 15.56848279 2002
1995024B
1 23580U 95024B 95153.22254661 .00811169 11836-4 38116-3 0 395
2 23580 51.6651 229.2509 0037615 126.0194 234.4350 16.18952030 2107
1995025A
1 23581U 95025A 95151.54154588 -.00000143 00000-0 10000-4 0 110
2 23581 0.2945 258.1254 0749555 94.6834 359.7700 0.89762447 27
1995025B
1 23582U 95025B 95150.23859106 .00085184 -62186-6 41310-3 0 118
2 23582 27.0698 146.2073 7605789 183.4161 163.8506 1.93469568 148
1995020C
1 23583U 95020C 95152.66489429 .00016638 00000-0 23269-3 0 111
2 23583 51.6495 235.3637 0002804 46.1426 314.1127 15.56956699530614
1995026A
1 23584U 95026A 95150.84190974 -.00000758 00000-0 55596-2 0 158
2 23584 62.9053 133.1230 7366642 318.1746 4.5474 2.00620021 137
1995026B
1 23585U 95026B 95152.33549297 .00293847 73993-5 61141-3 0 175
2 23585 62.8182 106.5961 0258063 119.4769 243.2647 15.60249062 1173
1995026C
1 23586U 95026C 95153.20885378 .00995735 75266-5 77773-3 0 275
2 23586 62.8448 103.0750 0266192 122.2926 240.4324 15.70163421 1318
1995020D
1 23588U 95 20 D 95145.41138197 .00029097 00000-0 40599-3 0 11
```

```
2 23588 51.6634 271.6972 0012464 333.9415 25.4155 15.56559889529483
1995027A
1 23589U 95027A 95152.50000000 -.00000242 00000-0 00000+0 0 42
2 23589 26.9660 295.4890 6628190 171.8160 224.5630 3.12139223 32
1995027B
1 23590U 95027B 95152.50000000 .00148065 00000-0 53860-1 0 21
2 23590 26.9220 294.4880 6621970 172.6490 226.6520 3.12872015 09
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1199. Will 7 1/2' crossboom work for Mode B & S?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-03 00:00:00 UTC
From: gsnellgr@scsn.net
Message-ID: <3qqpmc$3g2@news.scsn.net>
Source record: 24905

I asked a simular question before, but this time I will be more specific. I want to put an M2 2MCP14, an M2 436CP30, and a Bob Myers Mode S parabolic antenna on a 7 1/2 foot crossboom. Will it work ok? If so, what should the spacing be between the various antennas? Your input would be most appreciated.

Thanks,

Greg, KN4NO

1200. Re: Will 7 1/2' crossboom work for Mode B & S?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-03 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0306951911330001@lia-a4.ip.realtime.net>
Source record: 24906

In article <3qqpmc$3g2@news.scsn.net>, gsnellgr@scsn.net (Greg Snellgrove) wrote:

> I asked a simular question before, but this time I will be more specific.
> I want to put an M2 2MCP14, an M2 436CP30, and a Bob Myers Mode S
> parabolic antenna on a 7 1/2 foot crossboom. Will it work ok? If so, what
> should the spacing be between the various antennas? Your input would be
> most appreciated.
>
> Thanks,
>
> Greg, KN4NO

I have ALMOST this configuration - except using the M2 10' boom. I have the two CP antennas at the ends of the boom, and the Mode S as close to the center as possible (so it clears the rotator) on the 436 Mhz side to be as many wavelengths away from the others as possible. It works!

Ron W5RKN

1201. RE: UNIX SatTrack help needed

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <3qt8gq$h0l@agate.berkeley.edu>
Source record: 24814

In article 4467 of rec.radio.amateur.space gkennedy@helix.net
(Geoff L. Kennedy) wrote:

> Is there a version available that does NOT use X-Windows ? I just
>need a tabular text file output for pass predictions (preferably with
>orbit nos.).

Yes, there is. The very same version of SatTrack (V3.1) can be compiled for usage without X Window color graphics. All you need to do is to NOT include the flag '-DXWINDOW' in the compiler options and comment out the X11 libraries in the linker options (all in the SatTrack Makefile). You can then still run either the numerical live displays or the predictions.

As an example for the predictions (for 40 cities in the US), and yes, with orbit numbers, check the other web page:

http://ssl.berkeley.edu/isi_www/satpasses.html

The orbit numbers for the shuttle are somewhat tricky because it seems that NASA and NORAD use a different counting scheme. The NORAD numbers increment when the spacecraft passes through the perigee, whereas the NASA orbit numbers increment when the spacecraft crosses the equator on the ascending node. That is why you have to specify either NASA or NORAD, depending upon where the two-line element sets came from.

Manfred Bester
manfred@ssl.berkeley.edu

1202. Re: UNIX SatTrack help needed

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: gkennedy@helix.net
Message-ID: <dxo0vMvqxK0A083yn@helix.net>
Source record: 24815

In article <3qt8gq$h0l@agate.berkeley.edu>,
manfred@ssl.berkeley.edu (Manfred Bester) wrote:

> In article 4467 of rec.radio.amateur.space gkennedy@helix.net
> (Geoff L. Kennedy) wrote:
>
> > Is there a version available that does NOT use X-Windows ? I just
>
> Yes, there is. The very same version of SatTrack (V3.1) can be compiled for
> usage without X Window color graphics. All you need to do is to NOT include
> the flag '-DXWINDOW' in the compiler options and comment out the X11
> libraries in the linker options (all in the SatTrack Makefile). You can
> then still run either the numerical live displays or the predictions.

Many thanks....I'll give it a try ! I forgot (or didn't know) that
source code was included...a natural invitation for me to "play" !!! :-)

> The orbit numbers for the shuttle are somewhat tricky because it seems that

Not really interested in the Shuttle.....I'm more into the NOAA polar
orbiters. I file the raw APT data files with the orbit number, and
generate a caption on the final GIFs with that and the time/date
information included. Right now I am using a DOS program, which means I
have to enter the number manually as the prediction table I get doesn't
include it.

I'll keep that bit about the TLEs in mind, though, when there's a
high-inclination mission. Normally I get the TLEs from Dr. T.S. Kelso,
and they're in NORAD format.

Thanks again for the comeback.

****
* Geoff L. Kennedy ** Located on the WEsT Coast of *
* "Kennedy's Space Centre" 8-) ** Beautiful British Columbia ! *
* E-mail: gkennedy@helix.net ** Coquitlam, BC, Canada *
****

1203. Woodpecker + Shuttle tank = ?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: pbutlalj@ia.net
Message-ID: <3qrm32$a4@allanon.ia.net>
Source record: 24907

I believe that Friday in the paper here in Iowa there was
a mention that one of the shuttles that is waiting to go into orbit may
be delayed for quite some time.

It seems that there are some woodpeckers down there that have
decided the shuttle external tank is a good place to look for dinner.
There are supposedly several holes that have been made in the insulation
of the tank. One of the holes, if memory serves me right, is about 6
inches in diameter.

There is investigation going on at this time to determine the
best way to repair the holes in the insulation. But there was also
mention that the flight could be delayed for weeks if not months in order
to do the repairs.
--
Allan Butler KA0IES
ajbutler@ia.net

1204. RE: UNIX SatTrak help needed

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <3qslff$8d6@agate.berkeley.edu>
Source record: 24908

In article 4454 of rec.radio.amateur.space David Roseman wrote:

>Hello up there....
>
>i got sattrak.tar.z from some FTP site <oakland or amsat>, and i'm trying
>to get it to work on pc ver. of Linux......
>
>also, any ftp sites for actual PC LINUX/Xwindoze sat. traking progs?
>
>thanks
>DavID

You most likely ftp'ed an old version of SatTrack. The most recent version is V3.1, and that runs well on Linux systems (and also on Sun, DEC, IBM and HP UNIX workstations), and sure has X11 color graphics. Check the web page at

http://ssl.berkeley.edu/isi_www/sattrack.html

for more information. You also can get the V3.1 distribution file from this web page.

Best regards,

Manfred Bester
Author of SatTrack
manfred@ssl.berkeley.edu

1205. WO-18...any software?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: ha5ts@ha5ts.ampr.ORG
Message-ID: <2871@ha5ts.ampr.org>
Source record: 24909

Hello to all!
Where and how can I find the image decoding/processing software
for Webersat ? What is the correct name of the software?
(for PC)
Thanks and 73 de Ivan HA5TS ha5ts@ha5ts.ampr.org

1206. Re: Traksat?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: Darryl Bennett <darrylb@delphi.com>
Message-ID: <5q0+tkC.darrylb@delphi.com>
Source record: 24910

GT Amateur Radio Club <eew4aql@prism.gatech.edu> writes:

>I use TrakSat 2.80 on a pokey 286, and I have found it to be a little quirky.

"Quirky" is an appropriate description of Traksat 2.80. It works well within certain parameters. The later versions are downright strange. I don't even keep copies on them anymore. They lock up unexplicably, and it is hard to get the problems to repeat.

1207. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: blanton@ni.net
Message-ID: <blanton-0406950955070001@xband.ni.net>
Source record: 24911

In article <3qo8d4$35j@newsbf02.news.aol.com>, dhoatson@aol.com (DHoatson) wrote:

> Why couldn't you just measure the doppler error from the discrimiator (an
> easy measurement on most satellite rigs) and feed that back into the
> tracking pc. It could then compare that to it's esimate and update it's
> prediction (much like a GPS does)?

I'm not quite sure what is meant by "doppler error". Error relative to what?

In any case, the observed doppler shift is independent of the antenna beam position, so measuring the doppler shift won't provide any angular error information with which to steer the beam.

73,
Lee, WA8YBT/6

1208. SAREX flight order change and delay Re: Woodpecker + Shuttle tank = ?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3qssdq$qpg@paperboy.ids.net>
Source record: 24912

In article <3qrm32$a4@allanon.ia.net> Allan Butler, pbutlalj@ia.net writes:
> I believe that Friday in the paper here in Iowa there was
>a mention that one of the shuttles that is waiting to go into orbit may
>be delayed for quite some time.

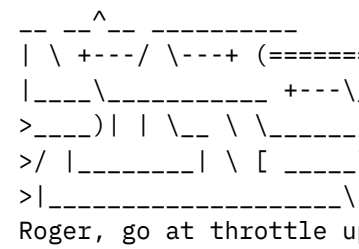
The decision has been made to rollback Discovery (STS-70) to the Vehicle Assembly Building where it's easier to get access to the woodpecker holes and perform the repairs. While this will result in a couple of months delay to the STS-70 mission overall it isn't that big an impact, and actually helps many experiements - especially SAREX.

The next shuttle up is now Atlantis on STS-71 which will be the first docking with the Russian Mir Space Station. SAREX is onboard in the -M configuration (Mir radio for voice only). Please note that the new frequencies will be used for random voice contacts (check the official SAREX bulletins or this month's "Satellite Times" for the list).

NASA Shuttle mangers have not decided yet which order the next shuttles will fly, but it's a pretty good bet that Endeavour will fly on the STS-69 mission in July as planned (no SAREX *sigh*) and STS-70 will follow in August with SAREX.

The advantage to the delay is, with all of the changes to the flight order and the high priority for the STS-71 mission, that STS-70 can now fly a full eight day mission as originally planned - resulting in more time for SAREX, esepcially random QSOs!

So yeah, this is the first time that woodpeckers have resulted in a shuttle mission getting delayed, but in the big picture it isn't such a big deal.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1209. Re: UNIX SatTrak help needed

Newsgroup: rec.radio.amateur.space
Date: 1995-06-04 00:00:00 UTC
From: gkennedy@helix.net
Message-ID: <fMh0vMvqx2bP083yn@helix.net>
Source record: 24913

In article <3qslff$8d6@agate.berkeley.edu>,
manfred@ssl.berkeley.edu (Manfred Bester) wrote:

> You most likely ftp'ed an old version of SatTrack. The most recent version is
> V3.1, and that runs well on Linux systems (and also on Sun, DEC, IBM and HP
> UNIX workstations), and sure has X11 color graphics. Check the web page at
>
> http://ssl.berkeley.edu/isi_www/sattrack.html
>
> for more information. You also can get the V3.1 distribution file from this
> web page.
>
> Best regards,
>
> Manfred Bester
> Author of SatTrack
> manfred@ssl.berkeley.edu

Is there a version available that does NOT use X-Windows ? I just
need a tabular text file output for pass predictions (preferably with
orbit nos.).

****
* Geoff L. Kennedy ** Located on the WEsT Coast of *
* "Kennedy's Space Centre" 8-) ** Beautiful British Columbia ! *
* E-mail: gkennedy@helix.net ** Coquitlam, BC, Canada *
****

1210. Sat Page added to 425 WWW

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: I121171@amsat.org
Message-ID: <3quv05$r00@sgi.iunet.it>
Source record: 24816

SATELLITES Page added to our 425 DX WWW site

http://promet12.cineca.it/htdx/index.html

Please comments on graphics, thanks

1211. Re: WO-18...any software?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: rargyle@cc.weber.edu
Message-ID: <5JUN199512153714@cc.weber.edu>
Source record: 24817

In article <2871@ha5ts.ampr.org>, ha5ts@ha5ts.ampr.ORG writes...
>Hello to all!
>Where and how can I find the image decoding/processing software
>for Webersat ? What is the correct name of the software?
>(for PC)
>Thanks and 73 de Ivan HA5TS ha5ts@ha5ts.ampr.org

WeberWare 1.3 is availible on 1.44M diskette through Amsat-NA for
$35 for members, $55 non-members; membership is $45 outside North America.
Amsat-NA
P.O.Box 27
Washington DC 20044
U.S.A.
+301-589-6062

Amsat-UK and Amsat-DL also sell WeberWare on 1.44M diskette.

For media formats other than 1.44M diskette, contact:
Center for AeroSpace Technology (CAST)
Weber State University
Ogden, Utah 84408-1805
U.S.A.
+801-626-7272

Upgrades from previous versions are $5 through CAST. (Include serial number.)

There is no software for Webersat that I know of other than for PC.

Bob Argyle kb7kcl rargyle@cc.weber.edu

1212. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: g7uph@cromer.demon.co.uk
Message-ID: <19950605.051433.41@cromer.demon.co.uk>
Source record: 24818

Satellite Tracking by Feedback

Since I started this thread I have been thinking - taking account of the various (public and private) responses to my original half-baked idea of tracking satellites by feedback without the use of ancilliary antennas. I thought I had invented conical scanning - ah well that's how it goes.

What about this: I have seen a Victorian gyroscopic toy where a flywheel, gimbal-mounted about 6 inches above a base-board, has a non-rotating stylus rod like a knitting needle attached to the gimbal frame, co-axial with the flywheel axis. This projects downward to the baseboard, on which there is a raised irregular shape such as a complicated jigsaw puzzle piece or a maze. The stylus can swing to touch the side of this shape. When the flywheel is spinning the stylus uncannily follows the edge of the shape as if it were intelligent. I think it relies the fact that when a gyroscope is nudged one way it moves off 'willingly' at right-angles. In this way, the stylus remains in contact with the profile of the shape and traces its way around the periphery - be it concave or convex.

It seems to me that this principle could be used to: make a conical scanning tracking dish; overcome some of the objections based on fading; and at the same time remove the need for any rotators.

My proposal is this. First the basic idea, followed by some thoughts on the practical side:

The feed-horn would be on the axis of spin but would not spin. The dish itself would double as the gyroscope flywheel and be of such a shape that it aimed the signal at a constant angle off-axis (really we are talking about reception here of course). This would produce a conical scan. The signal strength around the conical scan is memorised and used by a computer program to determine the direction the dish must be tilted next. If the dish spin speed is fast enough there would not be much time for fading to occur. Up to 8 revs/sec seems quite realistic (see below)

Now some thoughts on the practicalities: First the dish/flywheel. As described above the dish would have to wobble. Indeed to produce conical scanning it must wobble in a radio sense - but as a flywheel it must run true. Balance weights could be added to give it a symmetrical moment of inertia. But it would still waft a lot of air around.

I don't know if the following idea is sound so I would welcome comments:

First imagine a convential 30 inch dish embedded skew fashion in a cylindrical flywheel of expanded polystyrene. This would still need balancing weights. Is styrofoam transparent to typical dish freqencies? - if so the balancing problem can be reduced by using instead of the

embedded conventional dish a layer of metal foil pasted to one half of a styrofoam block (cast on a readymade dish) before pouring the other half on to it. The dish no longer needs to be strong in its own right because its shape is maintained by the styrofoam sandwich. So far so good if styrofoam is radio-transparent (I have seen photographs of dishes on mountains said to be unaffected by a covering of snow - but don't know the frequencies)

So we now have a styrofoam flywheel say about 9 inches deep and 30 inches diameter. This might need its outer 9 inch high edge skinning with a heavy-ish insulator - say fibre-glass, to increase its swing weight.
This flywheel can be screwed to a face-plate attached to the shaft of an electric motor, balanced up, and mounted in suitable gimbal frames.

Speeds: 500 rpm is approximately the speed of a motor-car wheel travelling at 40 mph, so that does not seem to be an unreasonable speed.
500 rpm is approx one rev in 125 msecs. Does significant signal strength fading occur in that time interval? I suspect not (but I am a newby) - if not - slower revs might be adequate.

The attractive feature of this scheme (if there is no fundamental flaw in the idea) is that gentle 'nudges' (applied by solenoids) in appropriate directions should cause the flywheel/dish (+ horn) to swing 'willingly' in the desired direction. The feedback system would be designed to maintain constant signal strength throughout the rotation, but for much of the time there would be a flywheel-speed fluctuation in signal strength which may not be acceptable.

A spherical or parabolic dish shape would probably be good enough, although not the theoretically correct shape for use with an off-centre feed horn.

I should add that my original idea was not to track satellites in the sense of determining their actual orbits, nor to find a method of tracking satellites that would not rival top-of-the-range antenna arrays accurately aimed by prediction, but to find something cheap that would perform better than stationary egg-beaters, turn-styles, whips, etc on the other hand.
Ie, something to fill the gap between the two extremes. So I am assuming a situation where the signal is pretty good, and where my system would be good enough if it could just 'slop it around' within 20 degrees or so of the true direction

At my time of life I am not aiming to develop a this as commercial product. So (in what, as a newby, I understand is the spirit of the hobby) I hearby declare that I claim no proprietory rights in this idea, and donate it as a sort of gift (for what it is worth, and be made to work) to the amateur radio fraternity. Equally I disown any liability for spinning flywheels bounding across rooftops, etc! On the other hand if anyone should want to call it the 'G7UPH gyro dish' I have no objection. But I would not deserve it because, apart from some simple experiments with bicycle wheels, I have not yet built one, let alone made it work!

73s Louis - G7UPH

1213. Re: SAREX flight order change and delay Re: Woodpecker + Shuttle tank = ?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3qu332$6j1@acmex.gatech.edu>
Source record: 24819

One thing that Phil didn't mention was that with the delay, the Mir docking mission will be the 100th Manned US spaceflight. So it wasn't all bad. :-)

-Mike

```
*******************************************************************************
* MIKE "GATOR" WHALEY KD4UGI kd4ugi@ravenloft.stucen.gatech.edu *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
*******************************************************************************

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971
```

1214. Re: Traksat?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: eew4aql@prism.gatech.edu
Message-ID: <3qu2sr$612@acmex.gatech.edu>
Source record: 24820

Darryl Bennett <darrylb@delphi.com> writes:

>GT Amateur Radio Club <eew4aql@prism.gatech.edu> writes:
>
>>I use TrakSat 2.80 on a pokey 286, and I have found it to be a little quirky.
>
>"Quirky" is an appropriate description of Traksat 2.80. It works well within
>certain parameters. The later versions are downright strange. I don't even
>keep copies on them anymore. They lock up unexplicably, and it is hard to
>get the problems to repeat.

Yeah. I got to play with InstantTrak a little this weekend, I am certain I'll
buy that if I ever get a *real* computer to run it on!! :-)

-Mike

****
* MIKE "GATOR" WHALEY KD4UGI kd4ugi@ravenloft.stucen.gatech.edu *
* P.O. Box 510717, Melbourne Beach, FL 32951-0717 (407) 253-0706 *
* "Ipecac- isn't that a Genesis album?" --- Joel, MST3K *
****

--
Georgia Tech Amateur Radio Club
eew4aql@prism.gatech.edu
(404) 894-2971

1215. AO-13 Mode S

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: bcieslak@mkelan5.remnet.ab.com
Message-ID: <bcieslak.143.000AAB33@mkelan5.remnet.ab.com>
Source record: 24821

I was trying to test a mode S converter I build up from Down East Micro wave. Since I dont have any microwave test equipment I thought I woud just try to hear the 2400.664 Mhz beacon of AO13. But alas Ididn't...Before I start digging into the converter can anyone tell me if I should ahve heard the beacon on Sunday Morning 16:00 - 1800 Z. Iv'e heard that satellite attitude can be issue...

Does anyone hav e experience with the downeast microwave converters?

Brian

1216. ARLS007 SAREX STS-70 postponed

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls007.1995@ampr.org>
Source record: 24822
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS007
ARLS007 SAREX STS-70 postponed

ZCZC AS86
QST de W1AW
Space Bulletin 007 ARLS007
From ARRL Headquarters
Newington, CT June 5, 1995
To all radio amateurs

SB SPACE ARL ARLS007
ARLS007 SAREX STS-70 postponed

Space Shuttle Mission STS-70, which is scheduled to carry the Shuttle Amateur Radio EXperiment, has been postponed. Mission managers have decided to repair damage done by woodpeckers in the foam insulation of the external fuel tank. The foam prevents ice from building up on the tank. The repairs will be done at the shuttle Vehicle Assembly Building, requiring the Space Shuttle Discovery to be removed from the launch pad during the week. The mission may be rescheduled for sometime in August.

Mission STS-71, which will also carry the Shuttle Amateur Radio EXperiment, is still scheduled for no earlier than June 22. Following a Flight Readiness Review last Friday, mission managers decided not to select an official launch date due to ongoing work aboard the Russian Mir Space Station that needs to be completed prior to the Space Shuttle Atlantis' rendezvous and docking. The launch team at the Kennedy Space Center will continue vehicle processing work so that Atlantis will be ready for launch anytime on or after June 22. An official launch date is expected to be announced in about one week.

Thanks to SAREX Working Group member Matthew Bordelon, KC5BTL, at NASA Johnson Space Center and the Kennedy Space Center Public Affairs Office for the preceding information. For more information about SAREX, contact the American Radio Relay League's Educational Activities Department.
NNNN
/EX

1217. Re: Traksat?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: zardoz@ornews.intel.com
Message-ID: <3qvke8$e00@ornews.intel.com>
Source record: 24823

In article <3qppfg$3q5@news4.primenet.com>, <n7tcf@primenet.com> wrote:

>Traksat 3.1 has some better features, but no support for XTs. Avoid ver 3.0.
>I love the maps and the ability to customize the look.
>I wish it came in OS/2 flavor.
>Finally, I haven't registered yet, shame on me.

Well I did, by buying two versions of Winsat. I should have known better
from the looks of Traksat 3.0 but I gave him two chances anyway. Nowadays
I use Traksat 2.80 and figure its the last good one. I even talked with
him on the phone about the major problems and interface changes. He kinda
said, "Well, you can't please everybody!".
Is Traksat 3.1 worth looking at?

--
zardoz@ornews.intel.com WA7LDV Argue for your limitations and
I speak only for myself they are yours...

1218. Satellite tracking

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: blkaddr@primenet.com
Message-ID: <blkaddr-0506951519090001@ip211.msp.primenet.com>
Source record: 24824

I would appreciate any help on demodulating satellite signals. I'm particularly interested in receiving ir images. Unfortunately, I don't know where to look for the information on receiving the signal and translating using a PC or Mac. Any ideas would be enthusiastically received.

Blackadder
blkaddr@primenet.com

1219. RE: UNIX SatTrak help needed

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3r07u5$rtt@ns3-1.CC.Lehigh.EDU>
Source record: 24825

>You most likely ftp'ed an old version of SatTrack. The most recent version is
>V3.1, and that runs well on Linux systems (and also on Sun, DEC, IBM and HP
>UNIX workstations), and sure has X11 color graphics. Check the web page at
>
> http://ssl.berkeley.edu/isi_www/sattrack.html
>
>for more information. You also can get the V3.1 distribution file from this
>web page.

thanks, i'll check it out

DAvid
|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1220. Re: Satellite tracking

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3r085t$t14@ns3-1.CC.Lehigh.EDU>
Source record: 24826

>I would appreciate any help on demodulating satellite signals. I'm
>particularly interested in receiving ir images. Unfortunately, I don't
>know where to look for the information on receiving the signal and
>translating using a PC or Mac. Any ideas would be enthusiastically
>received.

might i ask of which sats? it sounds like you are interested in WeSats...
look around on HAMRADIO ftp sites for "JVFAX??.zip" and "HAMCOMM??.zip"
the jvfax is a sstv/fax program i use <although i haven't got a quality pic
outta it yet from NOAA sats> and hamcomm has the stematic <sp?> for the
interface from ur radio to computer

have fun! ;-)

Avid
|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1221. * SpaceNews 05-Jun-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-06-05 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3qv564$edc@pilot.njin.net>
Source record: 24827
Cross-posted to: rec.radio.amateur.space,rec.radio.info

SB NEWS @ AMSAT $SPC0605
* SpaceNews 05-Jun-95 *

BID: $SPC0605

=========
SpaceNews
=========

MONDAY JUNE 5, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* AO-10 WORKING WELL *
======================
Dave, G1OZO reports that AO-10 is working well. He made 45 contacts between 04-May-95 and 30-May-95 that included the USA, Ukraine, Finland, Canada, Italy, U.K., Holland, Spain, Czechoslovakia, Belgium, Poland, Germany, Austria, and Saudi Arabia using just 25-watts of uplink power. Dave has been active on satellites since 04-May-95. It sure sounds like he is having quite a good time in his new activity.

* HS2JFW ON AO-13 *
===================
James Tudehope, KL7QR, of Valdez, Alaska worked Joe, HS2JFW, from Bangkok, Thailand at 21:20 UTC on 20-May-95 on AO-13 on a downlink frequency of 145.868.250 MHz. Joe was on CW and James could copy him at 529. KL7QR often works Carl, VE8CF, from Inuvik, North West Territories. Carl is located on the north slope of the North West Territories. James has worked Inuvik on AO-10, AO-13 and FO-20. He always enjoys listening to Carl complain about the weather up there. Usually James will have QSOs with people down south who always tell him how beautiful their weather is. James finds it nice to work Carl in Inuvik who seems to always have weather worse than he does in Alaska. :-)

* TRACK SATELLITES ON THE WWW *
================================
A new web page will allow users to determine when certain selected spacecraft will be in range for visual observations or for radio communications.

Data are presently provided in tabular form for 36 major cities in the United States and for four different satellites: the current or upcoming Space Shuttle Mission, the Russian Space Station Mir, HST and UARS. The predictions are calculated every night for 6 days in advance, and

even more often during shuttle flights.

The URL is:

http://ssl.berkeley.edu/isi_www/satpasses.html

Suggestions are most certainly welcome.

Enjoy,
Manfred Bester --- W6/DL5KR
manfred@ssl.berkeley.edu

* SpaceNews BBS DOWN *
======================
Mario, KD6ILO, reports that his SpaceNews packet radio BBS is down due to a fire in his apartment on 16-May-95 that was the result of arson. He lost all his equipment to fire and water damage. The fire is still under investigation, and Mario will inform us when he is able to serve the Pacific Northwest with SpaceNews and other Amateur Satellite news and information.

* STS-70 PRE-LAUNCH KEPS *
==========================
STS-70
1 99970U 95160.80510237 .00017899 00000-0 55675-4 0 123
2 99970 28.4680 279.2253 0016417 154.9557 205.1895 15.89705110 219

Satellite: STS-70
Catalog number: 99970
Epoch time: 95160.80510237 = (09-Jun-95 19:19:20.84 UTC)
Element set: 012
Inclination: 28.4680 deg
RA of node: 279.2253 deg Space Shuttle Flight STS-70
Eccentricity: .0016417 Prelaunch element set JSC-012
Arg of perigee: 154.9557 deg Launch: 08-Jun-95 13:26:00 UTC
Mean anomaly: 205.1895 deg
Mean motion: 15.89705110 rev/day Gil Carman
Decay rate: 1.7899e-04 rev/day sq NASA Johnson Space Center
Epoch rev: 21

[Info via Gary Morris, KK6YB]

* FEEDBACK/INPUT WELCOMED *
===========================
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology

Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

1222. ?? about operational amature birds

Newsgroup: rec.radio.amateur.space
Date: 1995-06-06 00:00:00 UTC
From: lord@mind.net
Message-ID: <lord.58.000A2CB8@mind.net>
Source record: 24828

Where can I find a list of operational amature radio birds.

A few years ago i uplinked to one, it was 144 up and 440 down. Is this bird still alive ?

Is it possible to uplink to a bird and send a email message to it that will be downloaded to the net later ?

Thanks for any info

Fred

KB7 GRB

1223. Please read.

Newsgroup: rec.radio.amateur.space
Date: 1995-06-06 00:00:00 UTC
From: rod@disca.utfsm.cl
Message-ID: <3r2p49$n93@manutara.inf.utfsm.cl>
Source record: 24829

I'm going to buy a new HT but one of my questions is this:
Can I *really* work sats. with just 5 Watts or less??
Do I need a VHF/UHF dual band equipment or is a VHF/TX- UHF/RX
good enough to do that???
Thanks in advance for your help.
73 & DX from Chile

Rod.

--

Rodrigo E. Rodriguez R. : E-mail: rod@itata.disca.utfsm.cl
CE 6 NUG : rrodrigu@loa.disca.utfsm.cl
Network Consultant : rod@llico.disca.utfsm.cl
Electronic Eng. ST :
Federico Santa Maria : AMPRnet: ce6nug@ce6fyt.radio.cl
Tech. University : Phone : +56 (32) 97-2106 // (32) 97-2106
==========
+--HI, I'm a signature virus :-) Copy me into your sign to join in. ---+

1224. Nova and the KC Tracker

Newsgroup: rec.radio.amateur.space
Date: 1995-06-06 00:00:00 UTC
From: gachaney@iquest.net
Message-ID: <gachaney.6.0013B54F@iquest.net>
Source record: 24830

I have not been able to get my Kansas City Tracker Tuner set up to operate properly with the Nova 1.0 software. The tracker part works fine but I get nothing from the tuner part. I know fom the KC test program that the tuner is communicating properly with my Yaesu 736.

I would like to see what bat file you use to run the KC TSR's ... Or maybe there is something else I am overlooking. The tuning worked fine with an external serial adapter using the direct mode in Nova, but no luck so far with the TSR mode..

Any sugesstions would be appreciated.

73
Greg Chaney
N9MOX

1225. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-06 00:00:00 UTC
From: icesb@iroe.fi.cnr.it
Message-ID: <icesb.80.2FD4042A@iroe.fi.cnr.it>
Source record: 24831

In article <blanton-0406950955070001@xband.ni.net> blanton@ni.net (J. L. Blanton) writes:
>From: blanton@ni.net (J. L. Blanton)
>Subject: Re: Satellite Tracking by Feedback
>Date: Sun, 04 Jun 1995 09:55:07 -0800

>In article <3qo8d4$35j@newsbf02.news.aol.com>, dhoatson@aol.com (DHoatson)
>wrote:

>> Why couldn't you just measure the doppler error from the discrimiator (an
>> easy measurement on most satellite rigs) and feed that back into the
>> tracking pc. It could then compare that to it's esimate and update it's
>> prediction (much like a GPS does)?

>I'm not quite sure what is meant by "doppler error". Error relative to what?

>In any case, the observed doppler shift is independent of the antenna beam
>position, so measuring the doppler shift won't provide any angular error
>information with which to steer the beam.

>73,
>Lee, WA8YBT/6

I don't remember where, but I heard that is possible to calculate complete
element set by recording doppler shift during 3 consecutive pass.
If someone know something about this metod please post on this newsgroup

73 de Lapo IK5NAX

Lapo Pieri IK5NAX internet: icesb@iroe.fi.cnr.it
@IROE-CNR (Italy) lpieri@nyx.cs.du.edu
Phone: +39 55 4235276 (IROE) packet: ik5nax@IW5CZJ.ITOS.IT.EU
+39 55 410209 (home) [TCP/IP] 44.134.208.174

1226. Re: AO-13 Mode S

Newsgroup: rec.radio.amateur.space
Date: 1995-06-07 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3r3q93$peg@news.onramp.net>
Source record: 24832

What is your Lon/Lat ??
I have not finished my S- mode but was going to use
os-13 or os-17

Bob KC5EJK Dallas

1227. KVR1000

Newsgroup: rec.radio.amateur.space
Date: 1995-06-07 00:00:00 UTC
From: blkaddr@primenet.com
Message-ID: <blkaddr-0706951028120001@ip197.msp.primenet.com>
Source record: 24833

Anyone have the keplerian elements on this bird or know where I can find it? Thanks for the help!

B.C. Burking
blkaddr@primenet.com

1228. Ham-space digest v95 #151

Newsgroup: rec.radio.amateur.space
Date: 1995-06-07 00:00:00 UTC
From: edward.wagner@torii.COM
Message-ID: <9506062140.0UGB400@torii.com>
Source record: 24834

Can someone send me a copy of Instant Trak? I do satelite traking and need this program. PLease attach it to Edward.wagner@Torii.com Email address.

Edward Wagner
Internet Address: Edward.wagner@Torii.com
Location: Edmond, Ok
Hobbies: Ham radio, Doom II, Internet
Call Sign: KC5MWY
06/06/959:14PM
---
* CMPQwk #1.42-R2 * UNREGISTERED EVALUATION COPY

1229. Re: InstantTrack

Newsgroup: rec.radio.amateur.space
Date: 1995-06-07 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0706951406080001@lia-b4.ip.realtime.net>
Source record: 24835

In article <9506062140.0UGB400@torii.com>, edward.wagner@torii.COM wrote:

>
>
> Can someone send me a copy of Instant Trak? I do satelite traking and
> need this program. PLease attach it to Edward.wagner@Torii.com Email
> address.
>
> Edward Wagner
> Internet Address: Edward.wagner@Torii.com
> Location: Edmond, Ok
> Hobbies: Ham radio, Doom II, Internet
> Call Sign: KC5MWY
> 06/06/959:14PM
> ---
> * CMPQwk #1.42-R2 * UNREGISTERED EVALUATION COPY

InstantTrack is a copyrighted program available from AMSAT.

Ron W5RKN

1230. BA1404

Newsgroup: rec.radio.amateur.space
Date: 1995-06-07 00:00:00 UTC
From: jwl@interaccess.com
Message-ID: <3r58ev$32s@nntp.interaccess.com>
Source record: 24836

I have 1000 BA1404 stereo transmitter chips.
if your interested contact me at jwl@interaccess.com.

p.s. I have data sheets,inductors,and the crystals

1231. Re: Ham-space digest v95 #151

Newsgroup: rec.radio.amateur.space
Date: 1995-06-07 00:00:00 UTC
From: Bill@halcyon.com
Message-ID: <NEWTNews.802572800.29133.bill@halcyon.com.halcyon.com>
Source record: 24837

In article <9506062140.0UGB400@torii.com>, <edward.wagner@torii.COM> writes:

>
> Can someone send me a copy of Instant Trak? I do satelite traking and
> need this program. PLease attach it to Edward.wagner@Torii.com Email
> address.
>
> Edward Wagner
> Internet Address: Edward.wagner@Torii.com
> Location: Edmond, Ok
> Hobbies: Ham radio, Doom II, Internet
> Call Sign: KC5MWY
> 06/06/959:14PM
> ---
> * CMPQwk #1.42-R2 * UNREGISTERED EVALUATION COPY
>

Did you ever think of paying for your software? It really makes you feel
good.

Bill

reply to bill@halcyon.com

1232. tsest

Newsgroup: rec.radio.amateur.space
Date: 1995-06-08 00:00:00 UTC
From: braymond@news.poweramp.net
Message-ID: <3r5t43$jvt@pogo.poweramp.net>
Source record: 24838

```
--
**********************************************************
| Bob and Trish Raymond | BRAYMOND@NS.POWERAMP.NET |
| Amateur Radio KG7WC | Spokane, Washington |
**********************************************************
```

1233. Re: Ham-space digest v95 #151

Newsgroup: rec.radio.amateur.space
Date: 1995-06-08 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3r717n$h6a@superb.csc.ti.com>
Source record: 24839

In article <9506062140.0UGB400@torii.com>, edward.wagner@torii.COM says:

>Can someone send me a copy of Instant Trak? I do satelite traking and
>need this program.

Edward, AMSAT is supported by membership dues and sales of tracking software.
Our support of this is neccessary to the launching of all the Amateur satellites.

If you are doing tracking of the Amateur satellites, supporting the organization
that builds them and pays for the launching, will help to keep some of them
in space for you to track

Ken K5MBV AMSAT member # 28079

1234. RE: about operational amateur birds

Newsgroup: rec.radio.amateur.space
Date: 1995-06-08 00:00:00 UTC
From: Jim.Hansen@stpete.honeywell.COM
Message-ID: <2FD756CD@vax-flcgr.stpete.honeywell.com>
Source record: 24840

>Where can I find a list of operational amateur radio birds.
>
try AMSAT, there home page is
http://www.amsat.org/amsat/AmsatHome.html

or you can ftp:

ftp.cs.buffalo.edu

look for the file "faq_satellite" in /pub/ham-radio directory.

>A few years ago i uplinked to one, it was 144 up and 440 down. Is this bird

>still alive ?

It depends on which one you are referring to. There are currently working
birds with this configuration. You will need a good set of antennas!

>
>Is it possible to unlink to a bird and send a email message to it that will
>be
>downloaded to the net later ?

There are a number of digital store and forward LOE birds. I'm not sure
what you mean when you say "email". You can not knowingly email threw it
from internet, if that is the question.
>
>Thanks for any info
>
>Fred
>
>KB7 GRB
>
>------------------------------

your welcome

Jim Hansen
WDODIA
jim.hansen@stpete.honeywell.com

1235. NOAA decoder programme

Newsgroup: rec.radio.amateur.space
Date: 1995-06-08 00:00:00 UTC
From: arcadia@ormus.zynet.co.uk
Message-ID: <3r7fld$e9n@sol.zynet.net>
Source record: 24841

Can anyone let me know where I can find a good programme to download
for decoding the NOAA weather satellite signals?
Thanks.

1236. radioastronomy shortwave receiver?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-08 00:00:00 UTC
From: beardsj@cnsvax.uwec.edu
Message-ID: <1995Jun8.144340.1@cnsvax.uwec.edu>
Source record: 24842

Does anyone know where I can get schematics to build an inexpensive shortwave receiver for radioastronomy? I would like to be able to pick up somewhere in the 26 Mhz band. Thanks in advance. You can e-mail it to: BEARDSJ@cnsvax.uwec.edu

1237. VISIBLE MIR PASSES COMING UP

Newsgroup: rec.radio.amateur.space
Date: 1995-06-08 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <3r7nhp$4fh@agate.berkeley.edu>
Source record: 24843

There will be an excellent series of opportunities for the entire
United States for observing the Russian Space Station Mir within the
next six days. Predictions for 40 US cities are presented in the
SatPasses web page at:

http://ssl.berkeley.edu/isi_www/satpasses.html

Predictions for European cities are presented at:

http://www.ipp-garching.mpg.de/~bdp/vsohp/satpred.html

Enjoy,

Manfred Bester
manfred@ssl.berkeley.edu

1238. Rockwell GPS Development kit

Newsgroup: rec.radio.amateur.space
Date: 1995-06-08 00:00:00 UTC
From: jowe@pi.se
Message-ID: <3r7kfu$d0a@news.pi.se>
Source record: 24844

I have "found" a little box titled;
NavCoreV GPS Development kit Rockwell International

It has an antenna and a RS232 interface.
I think it is some sort of GPS reciver ;-) , I have tested to connect
it to my computers RS232 interface and i am reciving some sort of data...
Once a second i get about 100 byte of "non understandable" yunk.

Does anybody know anything about this "thing"?
What baudrate it operates on, how I can get anything out of the data,
and so on.

Johan

1239. Re: AO-13 Mode S

Newsgroup: rec.radio.amateur.space
Date: 1995-06-09 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3r8l0p$t0s@maureen.teleport.com>
Source record: 24845

In article <bcieslak.143.000AAB33@mkelan5.remnet.ab.com>,
bcieslak@mkelan5.remnet.ab.com said...
>
>I was trying to test a mode S converter I build up from Down East Micro wave.
>Since I dont have any microwave test equipment I thought I woud just try to
>hear the 2400.664 Mhz beacon of AO13. But alas Ididn't...Before I start
>digging into the converter can anyone tell me if I should ahve heard the
>beacon on Sunday Morning 16:00 - 1800 Z. Iv'e heard that satellite attitude
>can be issue...

The schedule is the big issue. The beacon is on for a short while from MA 110 to MA 112, then later for a longer period from MA 135 to MA 140. During these times, pointing angles should be pretty good for as long as the bird is visible.

The first thing I check when I turn on my converter is the noise level on the reciever. With my FT-736R, I get about S 2-1/2 of noise with no other signal. The greater noise than usual is due to the conversion gain (mostly) and the 5 db of noise from the converter.

When you get more meter reading from connecting the unit, just tune around for the beacon. I seem to remember that it is actually a bit higher in frequency, more like 2400.680 or so, before Doppler shift.

There are also some 2400 signal sources available that can help you tune up and get your antenna set up just right. These are a good idea, as you can use them to test the pre-amp effectiveness as well.

Have fun on Mode-S! I do it when I get the chance, and I don't even bother with noisy Mode B anymore.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1240. Re: Will 7 1/2' crossboom work for Mode B & S?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-09 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3r8lr3$t0s@maureen.teleport.com>
Source record: 24846

In article <3qqpmc$3g2@news.scsn.net>, gsnellgr@scsn.net said...
>
>I asked a simular question before, but this time I will be more specific.
>I want to put an M2 2MCP14, an M2 436CP30, and a Bob Myers Mode S
>parabolic antenna on a 7 1/2 foot crossboom. Will it work ok? If so, what
>should the spacing be between the various antennas? Your input would be
>most appreciated.

The longer the wavelenght, the more area is needed around an antenna. This means that the 145 mHz antenna needs the most room, while the little dish needs the least.

The kink in all of this is that the 145 mHz antenna is also the heaviest, and therefore weight and balance says that it should be the closest to the rotor to keep thins in balance.

Ouch! The dish will help to keep things in balance a little, though. Put it on the same side as the 435 mHz antenna, next to the rotor, and that will help to keep things in balance better. Assemble everything on the ground first, and keep moving the boom around through the rotor until a balance point is found.

Also be sure to get the antennas balanced properly for each one on the boom by moving the clamping point fore and aft along the antennas boom. Don't forget to have a representative piece of coax for each antenna, as this will effect the balance as well.

Once balanced, your rotors will last a LOT longer! Then, you can experiment with spacing along the crossboom to get the best spacing you can for antenna performance while keeping the setup balanced.

It seems like a lot of work, and it can be, but it is worth it to not have to go up again to replace an expensive rotor.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1241. FT736R 6m module and cw narrow filter wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-06-09 00:00:00 UTC
From: Conrad Farlow <conrad@g0ruz.demon.co.uk>
Message-ID: <182617021wnr@g0ruz.demon.co.uk>
Source record: 24847

I am looking for a narrow cw filter and a 50 Mhz module for my
FT736r.Please email me.
73 de Conrad G0RUZ
email conrad@g0ruz.demon.co.uk
Packet radio G0RUZ @ GB7WRG.#19.GBR.EU

1242. Re: Rockwell GPS Development kit

Newsgroup: rec.radio.amateur.space
Date: 1995-06-09 00:00:00 UTC
From: Veit Zimmermann <zimzim@marie.physik.tu-berlin.de>
Message-ID: <3r9hnk$qe9@brachio.zrz.TU-Berlin.DE>
Source record: 24848

Hi there

I think I worked with this "thing" not to long ago. It is probaly
a Rockwell NavCore MicroTracker. It has its own protocol and
embeddes some bits and bytes in it with some none standard floating
point numbers. Both are described in a manual, which is about 200
pages long.
For you this means either you die unknowing the secrets of this
"non understandable" junk or you get the documentation from Rockwell
(or sombody else near you).

Keep smiling
--
>--<
Veit Zimmermann
Charlottenburger Ufer 10 zimzim@marie.physik.tu-berlin.de
10587 Berlin veit@cs.tu-berlin.de
FON ++49.30.3413308 veit@adasko.fb12.tu-berlin.de
(MOD ++49.30.3413308) cks-002@fb3-s7.math.tu-berlin.de
(FAX ++49.30.3413308)
>--<

1243. Orbit 360 az-el rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-06-09 00:00:00 UTC
From: Wayne_Estes@csg.mot.com
Message-ID: <9506091539.ZM12968@SALCIUS2>
Source record: 24849

Does anybody know the name of a company that sells "Orbit 360" light-duty
rotors with a custom-made mounting plate that adapts them for az-el use?

I have one that I bought used, and a friend would also like to get one.
I don't know where mine came from when it was new.
The mounting plate looks commercially made - not homebrew.

73 de Wayne Estes WD5FFH wayne@csg.mot.com

1244. Re: NOAA decoder programme

Newsgroup: rec.radio.amateur.space
Date: 1995-06-09 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3ratff$oe7@ns3-1.CC.Lehigh.EDU>
Source record: 24850

In article <3r7fld$e9n@sol.zynet.net>, arcadia@ormus.zynet.co.uk (Ursus) writes:
>Can anyone let me know where I can find a good programme to download
>for decoding the NOAA weather satellite signals?
>Thanks.

me too please!!!!!

DAvid

|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1245. AO-10 ALAT/ALON

Newsgroup: rec.radio.amateur.space
Date: 1995-06-09 00:00:00 UTC
From: George.Henry@f668.n115.z1.fidonet.org
Message-ID: <755_9506101426@chigate.fidonet.org>
Source record: 24851

Does anyone have the current ALAT and ALON values for AO-10? Am hoping to work thru it on Field Day......

de KA3HSW

1246. Re: Satellite tracking

Newsgroup: rec.radio.amateur.space
Date: 1995-06-09 00:00:00 UTC
From: klaus.botschan@tdd.snafu.de
Message-ID: <95061104000436@tdd.snafu.de>
Source record: 24852

quoting c002@lehigh.edu (David Roseman) in a message to
blkaddr@primenet.com (Blackadder)

C>might i ask of which sats? it sounds like you are interested in WeSats...
C>look around on HAMRADIO ftp sites for "JVFAX??.zip" and "HAMCOMM??.zip"
C>the jvfax is a sstv/fax program i use <although i haven't got a quality pic
C>outta it yet from NOAA sats> and hamcomm has the stematic <sp?> for the
C>interface from ur radio to computer

Hi David,
the program "JVFAX7.0" is a good suggestion as its freeware and works
fine. But you`ll never get a NOAA (or any other Wesat-) picture with
the simple Hamcom-modem, as the modulation is AM.
For wefax and sstv on shortwave you can work with an Hamcom-modem as
this is FM, although the pictures are poor quality. I recommend a
better interface, you`ll see significant improvement.

ciao, Klaus (klabot@tdd.snafu.de)

 OLXWin 1.00 Backup not found: (A)bort (R)etry (P)anic

1247. Re: radioastronomy shortwave receiver?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-10 00:00:00 UTC
From: blanton@ni.net
Message-ID: <blanton-1006950651570001@xband.ni.net>
Source record: 24853

In article <1995Jun8.144340.1@cnsvax.uwec.edu>, beardsj@cnsvax.uwec.edu wrote:

> Does anyone know where I can get schematics to build an inexpensive shortwave
> receiver for radioastronomy? I would like to be able to pick up somewhere in
> the 26 Mhz band. Thanks in advance. You can e-mail it to:
> BEARDSJ@cnsvax.uwec.edu

Try the Society of Amateur Radio Astronomers on the Web at:

http://irsociety.com/0c:/sara.htm|/

73,

Lee, WA8YBT/6

1248. Sources for Elevation Rotators?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-10 00:00:00 UTC
From: blanton@ni.net
Message-ID: <blanton-1006950710550001@xband.ni.net>
Source record: 24854

I've been searching the amateur catalogs for elevation rotators but so far I've only found the two from Yaesu: G-500A (El only) for $309 and G-5400B (Az/El) for $589. These prices seem a little steep and I thought that there would be more choices than that. Does anyone know of any other manufacturers or sellers of elevation rotators, especially lighter-duty/lower-cost units?

Thanks,
Lee, WA8YBT/6

1249. Ham-space digest v95 #155

Newsgroup: rec.radio.amateur.space
Date: 1995-06-10 00:00:00 UTC
From: edward.wagner@torii.COM
Message-ID: <9506101017.0EGFX00@torii.com>
Source record: 24855

Can someone tell me where is can get schmatics to build a noaa reciver.

1250. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-10 00:00:00 UTC
From: afoxvfox@iafrica.com
Message-ID: <afoxvfox.1.001205E1@iafrica.com>
Source record: 24856

In article <icesb.80.2FD4042A@iroe.fi.cnr.it> icesb@iroe.fi.cnr.it (Lapo Pieri) writes:
>From: icesb@iroe.fi.cnr.it (Lapo Pieri)
>Subject: Re: Satellite Tracking by Feedback
>Date: Tue, 6 Jun 1995 07:30:50 GMT

>In article <blanton-0406950955070001@xband.ni.net> blanton@ni.net (J. L. Blanton) writes:
>>From: blanton@ni.net (J. L. Blanton)
>>Subject: Re: Satellite Tracking by Feedback
>>Date: Sun, 04 Jun 1995 09:55:07 -0800

>>In article <3qo8d4$35j@newsbf02.news.aol.com>, dhoatson@aol.com (DHoatson)
>>wrote:

>>> Why couldn't you just measure the doppler error from the discrimiator (an
>>> easy measurement on most satellite rigs) and feed that back into the
>>> tracking pc. It could then compare that to it's esimate and update it's
>>> prediction (much like a GPS does)?

>>I'm not quite sure what is meant by "doppler error". Error relative to what?

>>In any case, the observed doppler shift is independent of the antenna beam
>>position, so measuring the doppler shift won't provide any angular error
>>information with which to steer the beam.

>>73,
>>Lee, WA8YBT/6

>I don't remember where, but I heard that is possible to calculate complete
>element set by recording doppler shift during 3 consecutive pass.
>If someone know something about this metod please post on this newsgroup

>73 de Lapo IK5NAX
> ---
> Lapo Pieri IK5NAX internet: icesb@iroe.fi.cnr.it
> @IROE-CNR (Italy) lpieri@nyx.cs.du.edu
> Phone: +39 55 4235276 (IROE) packet: ik5nax@IW5CZJ.ITOS.IT.EU
> +39 55 410209 (home) [TCP/IP] 44.134.208.174
> ---

1251. ARLK023 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-06-10 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk023.1995@ampr.org>
Source record: 24857
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK023
ARLK023 Keplerian data

ZCZC SK48
QST de W1AW
Keplerian Bulletin 23 ARLK023
From ARRL Headquarters
Newington, CT June 10, 1995
To all radio amateurs

SB KEP ARL ARLK023
ARLK023 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95150.26886339 -.00000278 00000-0 10000-3 0 3554
2 14129 26.4691 265.6627 6003533 280.9615 20.7451 2.05880627 61961
RS-10/11
1 18129U 87054A 95150.18927751 .00000030 00000-0 15968-4 0 723
2 18129 82.9250 72.3731 0012420 134.6803 225.5369 13.72352740397506
UO-11
1 14781U 84021B 95152.99974445 .00000136 00000-0 30758-4 0 8029
2 14781 97.7825 156.2498 0010769 226.9664 133.0644 14.69347953601676
RS-12/13
1 21089U 91007A 95152.91217497 .00000025 00000-0 10398-4 0 8035
2 21089 82.9203 112.1057 0028083 212.8534 147.0880 13.74057773216673
AO-13
1 19216U 88051B 95145.13020627 -.00000189 00000 0 99999-5 0 412
2 19216 57.5449 185.6151 7292698 9.6968 359.1460 2.09726975 21685
UO-14
1 20437U 90005B 95153.24774186 .00000042 00000-0 33382-4 0 1016
2 20437 98.5622 237.8524 0010063 241.8075 118.2097 14.29888432279610
RS-15
1 23439U 94085A 95149.78783651 -.00000039 00000-0 10000-3 0 538
2 23439 64.8167 284.7430 0167759 265.5077 92.6666 11.27523592 17448
AO-16
1 20439U 90005D 95150.21125994 .00000000 00000-0 17071-4 0 8994
2 20439 98.5790 236.5152 0010547 253.1157 106.8872 14.29941477279191
```

```
DO-17
1 20440U 90005E 95150.27148988 -.00000005 00000-0 14870-4 0 8990
2 20440 98.5801 237.0280 0010576 251.3535 108.6498 14.30082558279222
WO-18
1 20441U 90005F 95150.18343342 -.00000006 00000-0 14755-4 0 9031
2 20441 98.5800 236.9155 0011209 253.7421 106.2525 14.30054036279219
LO-19
1 20442U 90005G 95149.78776443 .00000001 00000-0 17170-4 0 8990
2 20442 98.5813 236.8803 0011517 253.9047 106.0868 14.30156120279171
FO-20
1 20480U 90013C 95153.75064332 .00000033 00000-0 15563-3 0 7964
2 20480 99.0718 245.0350 0539924 265.9867 87.9367 12.83230396249095
AO-21
1 21087U 91006A 95152.21765737 .00000094 00000-0 82657-4 0 6008
2 21087 82.9448 244.3906 0034821 189.1541 170.8977 13.74555503217535
UO-22
1 21575U 91050B 95149.69520405 .00000012 00000-0 18655-4 0 6050
2 21575 98.3965 221.4709 0007915 342.8826 17.2078 14.36976844202845
KO-23
1 22077U 92052B 95150.39729976 -.00000037 00000-0 10000-3 0 4965
2 22077 66.0832 273.0133 0008273 202.3475 157.7175 12.86291458131449
KO-25
1 22828U 93061F 95151.16545590 .00000022 00000-0 26422-4 0 3715
2 22828 98.6146 227.9441 0009389 259.7482 100.2644 14.28100759 55445
IO-26
1 22826U 93061D 95151.16501213 .00000009 00000-0 21195-4 0 3938
2 22826 98.6191 227.9094 0008394 276.4524 83.5703 14.27770866 87349
AO-27
1 22825U 93061C 95150.22862743 -.00000019 00000-0 10221-4 0 3942
2 22825 98.6182 226.8920 0007950 278.5695 81.4582 14.27663084 87203
PO-28
1 22829U 93061G 95151.17683449 -.00000003 00000-0 16397-4 0 3858
2 22829 98.6151 227.9873 0009130 260.3098 99.7051 14.28079613 87360
Mir
1 16609U 86017A 95153.56421741 .00032507 00000-0 44819-3 0 804
2 16609 51.6466 230.8738 0005037 32.6471 327.4772 15.56895538530680

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
June 13, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1252. Re: Rockwell GPS Development kit

Newsgroup: rec.radio.amateur.space
Date: 1995-06-10 00:00:00 UTC
From: richeych@iastate.edu
Message-ID: <3rd585$q7s@news.iastate.edu>
Source record: 24858

What you have is a Global Positioning System modual. It sounds very simalar to one that a friend has. That unrecognizable junk that you are recieveing is in fact GPS data. The problem with the Rockwell units is they use proprietary software that has a nonstandard data format. The GPS unit can be set to standardized positioning formats that programs like APRS can understand. It is although a bit tricky even with the manuals that go with the unit. This is about all I can tell you without actually having documentation in front of me. I hope it helps.

Carlton Richey
KB0 Q Q
O
_/ (KB0QOQ)

--

1253. Re: Sources for Elevation Rotators?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-10 00:00:00 UTC
From: caver@acca.nmsu.edu
Message-ID: <3rd0v0$iim@bubba.NMSU.Edu>
Source record: 24859

J. L. Blanton (blanton@ni.net) wrote:
: I've been searching the amateur catalogs for elevation rotators but so far
: I've only found the two from Yaesu: G-500A (El only) for $309 and G-5400B
: (Az/El) for $589. These prices seem a little steep and I thought that
: there would be more choices than that. Does anyone know of any other
: manufacturers or sellers of elevation rotators, especially
: lighter-duty/lower-cost units?

: Thanks,
: Lee, WA8YBT/

Look for rotators from Alliance, the U-100 or the U-110. Amateur Electronic Supply used to have them and they are pretty common at hamfests. They used to cost about $70 new. I've been using one for 6 years or so, with a KLM40CX and a Cushcraft 20 el crossed yagi for AO-10 & 13 and they work great.

You have to make sure your antenna load is balanced, and they don't lend themselves to computer control, but the price is right.

73's

Tom Kindel...NW5B...caver@acca.nmsu.edu
6

1254. Stacking Sat. Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-06-11 00:00:00 UTC
From: dunaway@magicnet.net
Message-ID: <3rdg8l$43q@comet.magicnet.net>
Source record: 24860

I have a question about the pro/con of stacking sat. antennas.
I have heard people talk about stacking 2m and 70cm antennas 2 ways,
as i'll attempt to diagram below

```
70cm 2m
| |
+------------rotor-------------+
| |
70cm 2m
```

OR

```
2m------------70cm----rotor----70cm----------2m
```

Is there any pro/con over these 2ways?

What is the proper spacing of the 2m/70cm antennas for both means?

Thanks for any feedback

Stewart - KE4SCY (dunaway@magicnet.net)

1255. Re: Sources for Elevation Rotators?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-11 00:00:00 UTC
From: Jeff Davis <jdavis@one.net>
Message-ID: <3renpd$d2v@mail.one.net>
Source record: 24861

blanton@ni.net (J. L. Blanton) wrote:
>I've been searching the amateur catalogs for elevation rotators but so far
>I've only found the two from Yaesu: G-500A (El only) for $309 and G-5400B
>(Az/El) for $589. These prices seem a little steep and I thought that
>there would be more choices than that. Does anyone know of any other
>manufacturers or sellers of elevation rotators, especially
>lighter-duty/lower-cost units?
>
>Thanks,
>Lee, WA8YBT/6

Lee,

Many sat-ops use a rotor from Alliance. This is a standard TV antenna type rotor with the unique feature that the mast can slip thru the rotor. Many hams have taken to mounting them horizontally in this manner for elevation control. The rotor costs about $ 100 new. It must be protected from water when mounted like this so you should ask around but it has been a very popular low-cost method for elevation control. Most of the satellite publications (how to get started, etc.) mention this rotor by part number and detail how to protect it.

Good luck, 73
N9AVG

1256. Re: Sources for Elevation Rotators?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-11 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3reqbd$c3d@news.primenet.com>
Source record: 24862

In <3renpd$d2v@mail.one.net>, Jeff Davis <jdavis@one.net> writes:
>blanton@ni.net (J. L. Blanton) wrote:
>>I've been searching the amateur catalogs for elevation rotators but so far
>>I've only found the two from Yaesu: G-500A (El only) for $309 and G-5400B
>>(Az/El) for $589. These prices seem a little steep and I thought that
>>there would be more choices than that. Does anyone know of any other
>>manufacturers or sellers of elevation rotators, especially
>>lighter-duty/lower-cost units?
>>
>>Thanks,
>>Lee, WA8YBT/6
>
>
>Lee,
>
>Many sat-ops use a rotor from Alliance. This is a standard TV antenna
>type rotor with the unique feature that the mast can slip thru the rotor.
>Many hams have taken to mounting them horizontally in this manner for
>elevation control. The rotor costs about $ 100 new. It must be protected
>from water when mounted like this so you should ask around but it has
>been a very popular low-cost method for elevation control. Most of the
>satellite publications (how to get started, etc.) mention this rotor by
>part number and detail how to protect it.
>
>Good luck, 73
>N9AVG

I have found the Alliance style rotor here is Phoenix for $70 at a certain large
home discount store.
Jim N7TCF

1257. Arsene

Newsgroup: rec.radio.amateur.space
Date: 1995-06-11 00:00:00 UTC
From: glenndb@ix.netcom.com
Message-ID: <3rfnf7$lk7@ixnews2.ix.netcom.com>
Source record: 24863

What is the current status of Arsene? Is it up down?
What Freq's does it use?
Thanks Glenn N4VQJ

1258. FS: S-Mode Gear & 430 Amp

Newsgroup: rec.radio.amateur.space
Date: 1995-06-12 00:00:00 UTC
From: gsnellgr@scsn.net
Message-ID: <3rg80o$6h9@news.scsn.net>
Source record: 24764

I know this is not the swap area, but have some items for sale which may be of interest to satelite operators so I am listing them here.

First I have a SSB 2000/01 mast mounted downconverter. This is the one with 30+ dB of conversion gain. This unit works excellant with the new Myers Mode S antenna I also have for sale. Both are less than 1 month old and neither has been in the weather. I want $375.00 for the downconverter (current price is $459.00) and $50.00 for the antenna. These prices are shipped in the 48 states. I will take $400.00 for both.

I also have a Mirage D-3010 for sale. It is also less than 1 month old and in new condition. I will take $250.00 for it shipped.

You can reach me at (803) 356-0769 or via e-mail. I will except a money order or cashiers check or I can ship COD if you are willing to pay the COD charges.

Thanks and 73,

Greg Snellgrove, KN4NO

1259. ST-1 Sat Tracker, parallel & serial port?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-12 00:00:00 UTC
From: n9rze@firefly.prairienet.org
Message-ID: <n9rze-1206950251150001@ruger-5.slip.uiuc.edu>
Source record: 24765

I was reading the literature about the ST-1 that AEA sent me and it talks about using the parallel and serial port's to talk to the computer. On the parallel port do you need a bi-directional port? Or does it just go one way, out? Like for printers. I can't imagine that you would need the parallel port because there is so much information to pass. Thanks in advance.

-Marcus Damberger / N9RZE Amateur Radio

1260. Re: Rockwell GPS Development kit

Newsgroup: rec.radio.amateur.space
Date: 1995-06-12 00:00:00 UTC
From: Peter Briggs <pb@navdra.com>
Message-ID: <802950404snz@navdra.com>
Source record: 24766

In article <3r7kfu$d0a@news.pi.se> jowe@pi.se "Johan Wernberg" writes:

> I have "found" a little box titled;
> NavCoreV GPS Development kit Rockwell International
>
> It has an antenna and a RS232 interface.
> I think it is some sort of GPS reciver ;-) , I have tested to connect
> it to my computers RS232 interface and i am reciving some sort of data...
> Once a second i get about 100 byte of "non understandable" yunk.
>
> Does anybody know anything about this "thing"?
> What baudrate it operates on, how I can get anything out of the data,
> and so on.

If you re-post this question to sci.geo.satellite-nav you'll probably find
someone there who can give you all the data you need.

Cheers ... Peter.

* The views expressed above are personal and are not endorsed by the DRA. */
/*===*\
|* Navigation Systems Research, Q131 Building, || MIME, UU, XX or BinHex *|
|* DRA, Farnborough, Hants, England. GU14 6TD. || Encoding Acceptable *|
===/

1261. Re: radioastronomy shortwave receiver?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-12 00:00:00 UTC
From: bcieslak@mkelan5.remnet.ab.com
Message-ID: <bcieslak.155.0008857D@mkelan5.remnet.ab.com>
Source record: 24767

In article <blanton-1006950651570001@xband.ni.net> blanton@ni.net (J. L. Blanton) writes:
>From: blanton@ni.net (J. L. Blanton)
>Subject: Re: radioastronomy shortwave receiver?
>Date: Sat, 10 Jun 1995 06:51:57 -0800

>In article <1995Jun8.144340.1@cnsvax.uwec.edu>, beardsj@cnsvax.uwec.edu wrote:

>> Does anyone know where I can get schematics to build an inexpensive shortwave
>> receiver for radioastronomy? I would like to be able to pick up somewhere in
>> the 26 Mhz band. Thanks in advance. You can e-mail it to:
>> BEARDSJ@cnsvax.uwec.edu

If yopur looking for Jupiter on 26 Mhz just about any general coverage
shortwave receiver will work...You may want to add a preamp and a directional
antenna to point at jupiter. A Jupiter-io transmission sounds like a big wave
crashing on the beach..

There was an artile inQST a few months back I think...Tweo guys tried to
listen to the comet crash....There is a description of their equipment in the
article.

Brian - AE9K

1262. Re: Sources for Elevation Rotators?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-12 00:00:00 UTC
From: mack@ncifcrf.gov
Message-ID: <DA2BsJ.8y0@ncifcrf.gov>
Source record: 24768

In article <3renpd$d2v@mail.one.net> Jeff Davis <jdavis@one.net> writes:
>blanton@ni.net (J. L. Blanton) wrote:
>>I've been searching the amateur catalogs for elevation rotators but so far
>>I've only found the two from Yaesu: G-500A (El only) for $309 and G-5400B
>>(Az/El) for $589. These prices seem a little steep and I thought that
>>there would be more choices than that. Does anyone know of any other
>>manufacturers or sellers of elevation rotators, especially
>>lighter-duty/lower-cost units?
>>
>>Thanks,
>>Lee, WA8YBT/6
>
>
>Lee,
>
>Many sat-ops use a rotor from Alliance. This is a standard TV antenna
>type rotor with the unique feature that the mast can slip thru the rotor.
>Many hams have taken to mounting them horizontally in this manner for
>elevation control. The rotor costs about $ 100 new. It must be protected
>from water when mounted like this so you should ask around but it has
>been a very popular low-cost method for elevation control. Most of the
>satellite publications (how to get started, etc.) mention this rotor by
>part number and detail how to protect it.
>
>Good luck, 73
>N9AVG
>

I used one of these for my first 2m moonbounce. Joe NA3T mack@ncifcrf.gov

1263. Satellite Tracking Software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-12 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <3ri1rk$mbq@superb.csc.ti.com>
Source record: 24769

There have been some recent postings regarding where to obtain satellite tracking software. The best source that I know of is AMSAT at (301)589-6062. There is a FAX number also: (301)608-3410.

AMSAT membership can be obtained at the same numbers and will include discounts on the software. When I joined there was some shareware included with the membership package. A lot of information on how to use the birds comes with the membership package plus all profits go toward building and launching more satellites.

Ken K5MBV AMSAT member # 28079

1264. Re: ST-1 Sat Tracker, parallel & serial port?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-12 00:00:00 UTC
From: Bill@halcyon.com
Message-ID: <NEWTNews.803005944.28449.bill@halcyon.com.halcyon.com>
Source record: 24770

In article <n9rze-1206950251150001@ruger-5.slip.uiuc.edu>,
> I was reading the literature about the ST-1 that AEA sent me and it
> talks about using the parallel and serial port's to talk to the computer.
> On the parallel port do you need a bi-directional port? Or does it just go
> one way, out? Like for printers. I can't imagine that you would need the
> parallel port because there is so much information to pass. Thanks in
> advance.
>
>
> -Marcus Damberger / N9RZE Amateur Radio
>

The parallel port handles the communication between the computer and the ST-1.
The serial port talks to your radio to control its frequency.

Bill

1265. * SpaceNews 12-Jun-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-06-12 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <3rhhdj$dpg@pilot.njin.net>
Source record: 24771
Cross-posted to: rec.radio.amateur.space,sci.space.news,rec.radio.info

SB NEWS @ AMSAT $SPC0612
* SpaceNews 12-Jun-95 *

BID: $SPC0612

=========
SpaceNews
=========

MONDAY JUNE 12, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* MAYDAY TRAFFIC PASSED ON AO-16 *
==================================
Troy, ZL1UOP, recently passed a MAYDAY message received from Salomon Atoll, Chagos Archipelago, in the Indian Ocean. The message, dated 31-May-95 at 17:37 UTC, read as follows:

Vessel G, a small fishing vessel called mayday. Drifting close to south Salomon Atoll. Vessel G has three person on board and has lost its Mother Ship TALBOE 3. The Talbo 3 is Mauritius registered. Communication with Vessel G, Have ceased and a Hand Held Flare has been seen.

Contact With Deago Garcia is required. Please contact a Rescue center and pass this information on. Deago Garcia can contact us on 2182 KHz.

Mark Shepherd, ZL1TRE of Auckland, New Zealand, picked up the message and quickly pass it on to Search & Rescue in Wellington. Graeme, VK2ZIS, of Port Macquarie, Australia also picked up the message and passed it along to the Australian Maritime Rescue Coordination Centre. Terry, ZL2AHK, in New Zealand passed message to the Honolulu Rescue Center.

On 01-Jun-95 at 06:05 UTC, Troy, ZL1UOP posted the following message as a follow-up to his original MAYDAY traffic relay:

To : ALL
From: ZL1UOP
Time: 060551UTC
Date: 01 Jun 1995

Hello, If you have replied to the Mayday, Many thanks for helping.
We have managed to contact Deago Garcia (14 hours late). The Fishermen were rescued by the Mother ship early this morning. Today 4 boats came from the mother ship and thanked us for our Help etc....

Sorry if I have caused any inconvenience, but Communication with Deago Garcia (a major US Naval base 100 nmls away) is difficult from here.

Bye Bye.... Troy ZL1UOP@AO16,LO19 6s 73e

[Info via VK2ZIS and the AMSAT-OSCAR-16 Satellite]

* NEW STS LAUNCH DATES SET *
==========
NASA mangers have set new target launch dates for two Shuttle missions scheduled to fly this summer. Space Shuttle Discovery on Mission STS-70 is now targeted for launch on July 13 and Space Shuttle Endeavour is set to be launched on Mission STS-69 on July 30.

The new flight dates for Discovery and Endeavour have no impact to the processing work on Space Shuttle Atlantis being prepared for the STS-71 launch on the first Shuttle-Mir docking mission. The Atlantis launch remains planned for no earlier than June 22 and a firm launch date may be announced early next week.

The new target launch dates for Discovery and Endeavour were established after the launch team finished assessing the impact of last week's decision to roll Discovery off Launch Pad 39-B. The rollback was required in order to make repairs to the foam insulation on the external tank.

[Info via NASA]

* STS-71 MISSION PROFILE *
==========
The following describes the nominal mission orbit profile for STS-71. This is an historic mission in that it represents the first docking of the U.S. Space Shuttle with the Russian Mir Space Station. During this mission there will be a crew change and the crew returning to Earth on the Shuttle will be different from the original crew.

The scheduled launch time is 24-Jun-95 / 20:42:50 UTC.

The mission will have a 51.6 degree orbital inclination.

The orbits for STS-71 are provided in time-independent Earth-Fixed Greenwich (EFG -- a.k.a TDR) position and velocity state vectors. The mean Keplerian Two-Line Elements (TLEs) may be computed from these vectors using the VEC2TLE or V2KEP software (versions 9435 required). Since the vectors are time-independent, the only variable is the launch date and time for STS-71 (see scheduled time above). The launch date/time must be entered into VEC2TLE as a reference time for the vectors, which have time referenced in Mission Elapsed Time (MET). Launch time may be changed/updated as necessary using VEC2TLE.

The VEC2TLE and V2KEP software is available from AMSAT-NA. VEC2TLE is available from several places including a few Internet ftp sites, private BBSs, and on CompuServe.

Below are the reference times and events associated with the STS-71 state vectors. All events in this mission profile represent significant orbit

changes caused by a thruster firing. Therefore, each vector should be used only up to the time of the next vector.

Vector # Time (MET) Rev Event Apogee (km) Perigee (km)
1 000/00:43:03.854 1 OMS-2 297 203
2 000/03:38:50.000 3 NC-1 410 294
3 000/15:01:32.847 10 NC-2 397 310
4 001/03:27:43.673 18 NC-3 411 299
5 001/12:25:05.751 24 NC-4 406 387
6 001/13:57:27.533 25 Terminal Init 412 392
7 001/15:19:33.533 26 Mir Docking 405 391
8 006/07:07:00.000 106 Final Sep. 404 390

Questions and Comments regarding this mission profile should be sent to:

Ken Ernandes

CompuServe: 70511,3107
Internet: n2wwd@amsat.org
Packet Radio: n2wwd@kc2fd.#nli.ny.usa.na

* ON-LINE MAGAZINE AVAILABLE *
==============================
A new Amateur Radio Operator-On-Line Magazine is up and running and available on the World Wide Web at the following URL:

http://www.amateurradio.com

This is a little different from other Web pages. It is a complete magazine on-line with links between articles and pages. Since this is the first magazine of this type for Amateur Radio, the creators are interested in receiving feedback from readers. The creators of the Web pages are also looking for future articles to include in the on-line magazine. Comments should be directed to: evegraph@aol.com.

[Info via Pam Salata, N9UPN]

* THANKS! *
===========
Thanks to all who sent messages of appreciation to SpaceNews, especially:

G3XGY G4ZCT KB6ZVP ZR6RSW ZS6AZG KW7E PS7KM

* FEEDBACK/INPUT WELCOMED *
===========================
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

1266. Re: NOAA decoder programme

Newsgroup: rec.radio.amateur.space
Date: 1995-06-13 00:00:00 UTC
From: public@mozart.ccl.itri.org.tw
Message-ID: <3rjl40$ki8@news.csie.nctu.edu.tw>
Source record: 24772

Ursus (arcadia@ormus.zynet.co.uk) wrote:
: Can anyone let me know where I can find a good programme to download
: for decoding the NOAA weather satellite signals?
: Thanks.

Hi,

JVFAX 7.0 is great, but first of all, you need to construct
a decoder hardware. There are articles discussing the hardware
and software systems in the March,April 1995 issues of 73 magzine.

Hopes this will help.

Leo Chen, BV3DC
wjchen@m300.ccl.itri.org.tw

1267. Re: ST-1 Sat Tracker, parallel & serial port?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-13 00:00:00 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1153426896D@128.220.101.100>
Source record: 24773

In Article <3rim1l$f1b@maureen.teleport.com>, n7ryw@teleport.com (William Roth) wrote:
>In article <n9rze-1206950251150001@ruger-5.slip.uiuc.edu>,
>n9rze@firefly.prairienet.org said...
>>
>> I was reading the literature about the ST-1 that AEA sent me and it
>>talks about using the parallel and serial port's to talk to the computer.
>>On the parallel port do you need a bi-directional port? Or does it just go
>>one way, out? Like for printers. I can't imagine that you would need the
>I looked at the ST-1, and I didn't like it. Using two ports is a waste. I bought
>the Sat Trak IV instead. It works very well, and uses one serial port only.
>
>--
>From Bill, n7ryw@teleport.com
>Amsat NA Life Member #2109
>
Just wanted to add my 2 cents worth.... the St-1 is currently not directly compatible with WISP. If you are using WISP for PACSATS, or if you plan to, look at other trackers.... I have an ST-1 (collecting dust) and I have seen many messages from other owners that have replaced them with other trackers... The ST-1 is a good idea but it seems to be a poor implementation and AEA appears to not be supporting it... On the other hand ... if you are willing to dedicate a PC to operate in stand alone tracking mode with the ST-1, I have heard that works... then with a second PC you can operate the digital satellites... seems like a waste to me...

For me... I puchased a TRAKBOX from TAPR and after a minorinitial problem with the CAT port (my fault) I have been very happy with it... I have also heard good things about the Kansas City Tracker... but the best feature of the TRAKBOX is that it doesn't tie up a slot or any ports on the PC... yes you need a serial port and terminal emulator to set it up and to update the keps ... but other then that it runs stand alone ... it is a good product .... I have also seen some messages recently implying that there is a new hardware implementation of TRAKBOX out .... but I do not have any facts about that ... if anyone out there knows... please drop me a line ... Thanks...

73 & Good Luck with auto tracking....

Art -- AA3GU
Art.Jeyes@jhuapl.edu
AMSAT Life Member
Registered owner of WISP

1268. soundblaster software for DOS

Newsgroup: rec.radio.amateur.space
Date: 1995-06-13 00:00:00 UTC
From: Aart.Wedemeijer@pa3cpl.idn.nl
Message-ID: <746_9506131855@idn.nl>
Source record: 24774

Hello All!

I remember a message by Dave Mullenix that he uploaded SB-files
somewhere.
With the programs you could decode fax or weather sat pics with
the soundblaster.
aptcap40.zip?

My question: where can I find those files?

Bye, aart!

1269. Re: ST-1 Sat Tracker, parallel & serial port?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-13 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3rim1l$f1b@maureen.teleport.com>
Source record: 24775

In article <n9rze-1206950251150001@ruger-5.slip.uiuc.edu>,
n9rze@firefly.prairienet.org said...
>
> I was reading the literature about the ST-1 that AEA sent me and it
>talks about using the parallel and serial port's to talk to the computer.
>On the parallel port do you need a bi-directional port? Or does it just go
>one way, out? Like for printers. I can't imagine that you would need the
>parallel port because there is so much information to pass. Thanks in
>advance.

Yes, it does indeed use the parallel port. If you want to tune the radio, it also uses a serial port. You don't need a "bi-directional" parallel port, though. Parallel ports do have lines going TO the computer, just not 8 or 9 bits wide for fast transfers.

I looked at the ST-1, and I didn't like it. Using two ports is a waste. I bought the Sat Trak IV instead. It works very well, and uses one serial port only.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1270. Two-Line Orbital Element Sets (TLE620)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-13 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.803010420@dolphin>
Source record: 24776

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #620 -
Alouette 1
1 00424U 62049A 95161.83956706 .00000020 00000-0 13027-4 0 1123
2 00424 80.4628 291.1348 0022071 272.1584 87.7034 13.67842482631430
ATS 1
1 02608U 66110A 95160.26526812 .00000005 00000-0 10000-3 0 9352
2 02608 14.6341 356.7707 0010402 61.0196 299.0732 1.00324632 21110
ATS 3
1 03029U 67111A 95162.07691456 -.00000120 00000-0 10000-3 0 3689
2 03029 14.8239 3.7386 0007774 272.0998 265.3936 1.00272736101039
Cosmos 398
1 04966U 71016A 95163.23768541 .00189922 92922-5 20489-3 0 8917
2 04966 51.3983 250.2540 0589903 73.1036 293.4220 14.93501949824458
Starlette
1 07646U 75010A 95159.45166637 -.00000140 00000-0 44830-5 0 8925
2 07646 49.8298 187.4854 0205751 72.8681 289.4633 13.82189106 27131
LAGEOS
1 08820U 76039A 95162.48272454 -.00000002 00000-0 10000-3 0 1137
2 08820 109.8434 258.6494 0044174 208.4863 151.3308 6.38664537190096
ETS-2
1 09852U 77014A 95161.34711366 .00000028 00000-0 10000-3 0 294
2 09852 12.7372 37.2043 0002969 57.7227 302.2223 1.00016449 13916
GOES 2
1 10061U 77048A 95160.47759234 .00000054 00000-0 10000-3 0 5366
2 10061 11.7962 41.4570 0003851 147.6458 63.8272 1.00264999 10693
IUE
1 10637U 78012A 95160.09620895 -.00000233 00000-0 10000-3 0 1394
2 10637 35.1892 89.1129 1329528 46.3859 101.4980 1.00280089 16189
GPS BI-01
1 10684U 78020A 95161.69692627 -.00000030 00000-0 10000-3 0 3627
2 10684 64.8353 34.8867 0060451 163.0627 197.2194 1.98069989112036
```

```
GPS BI-02
1 10893U 78047A 95159.85134114 -.00000034 00000-0 10000-3 0 1650
2 10893 63.3324 273.0021 0222773 14.8252 345.8208 2.01627864125266
GOES 3
1 10953U 78062A 95160.48340800 .00000098 00000-0 10000-3 0 4984
2 10953 10.7751 44.2371 0004323 100.6513 118.3476 1.00312485 15303
SeaSat 1
1 10967U 78064A 95160.40359987 -.00000090 00000-0 14791-4 0 4052
2 10967 107.9943 121.3794 0002128 258.1101 101.9810 14.38037906887718
GPS BI-03
1 11054U 78093A 95159.30886250 -.00000034 00000-0 10000-3 0 3300
2 11054 63.0372 271.2314 0044913 176.8796 183.1745 1.93505254121400
Nimbus 7
1 11080U 78098A 95162.60976697 -.00000076 00000-0 -30710-4 0 5070
2 11080 99.0006 36.8514 0008267 245.2282 114.8019 13.83709601839788
GPS BI-04
1 11141U 78112A 95156.40455296 -.00000045 00000-0 10000-3 0 9778
2 11141 64.8351 36.8539 0048781 26.7659 333.5347 1.92894845 10597
GPS BI-05
1 11690U 80011A 95151.93450515 -.00000043 00000-0 10000-3 0 9194
2 11690 65.1880 36.7965 0143448 197.5646 162.0245 2.00564300126532
GPS BI-06
1 11783U 80032A 95161.30174216 -.00000025 00000-0 10000-3 0 813
2 11783 62.4602 266.1970 0218492 29.5459 331.6952 2.03456735111246
GOES 5
1 12472U 81049A 95158.62575665 -.00000278 00000-0 10000-3 0 8618
2 12472 7.5142 54.0762 0007634 22.3525 337.5465 1.00278653 9330
Cosmos 1383
1 13301U 82066A 95162.13402954 .00000016 00000-0 16317-5 0 4110
2 13301 82.9332 46.5954 0026803 182.3541 177.7485 13.68066038646504
LandSat 4
1 13367U 82072A 95163.15809678 .00004484 00000-0 10032-2 0 6925
2 13367 98.1283 219.1486 0006291 200.0992 159.9960 14.57166238686488
DMSP B5D2-1
1 13736U 82118A 95162.49507592 .00000040 00000-0 35361-4 0 7808
2 13736 98.6297 351.7925 0009369 36.2793 323.9026 14.25737366648100
IRAS
1 13777U 83004A 95162.52739416 .00000342 00000-0 26505-3 0 9855
2 13777 98.9650 350.9254 0013820 46.3744 313.8568 13.99232156301395
Cosmos 1447
1 13916U 83021A 95161.90199453 .00000055 00000-0 41026-4 0 5089
2 13916 82.9432 106.3977 0039135 107.8338 252.7087 13.74326409612609
TDRS 1
1 13969U 83026B 95162.10575088 -.00000219 00000-0 10000-3 0 4222
2 13969 8.3744 47.4398 0001815 98.4295 289.9550 1.00726581 17650
GOES 6
1 14050U 83041A 95162.36227819 -.00000030 00000-0 10000-3 0 4125
2 14050 6.3342 57.2957 0005942 10.4141 204.5787 1.00322669102461
OSCAR 10
1 14129U 83058B 95160.46765047 .00000056 00000-0 10000-3 0 3574
```

```
2 14129 26.4685 264.0089 5998278 283.7378 19.6676 2.05880789 62173
LandSat 5
1 14780U 84021A 95161.13398047 .00000001 00000-0 10000-4 0 2610
2 14780 98.1106 217.7252 0003866 215.6519 144.4187 14.57157600599609
UoSat 2
1 14781U 84021B 95161.03538087 .00000092 00000-0 23455-4 0 8041
2 14781 97.7826 163.9081 0011150 199.7224 160.3549 14.69350218602850
GPS BI-09
1 15039U 84059A 95160.88081916 -.00000033 00000-0 10000-3 0 3407
2 15039 64.5084 31.1159 0081504 17.6199 342.7354 1.92302342 80257
Cosmos 1574
1 15055U 84062A 95161.52530688 .00000016 00000-0 15693-5 0 7090
2 15055 82.9572 160.7828 0026188 301.5808 58.2791 13.73622499549829
GPS BI-10
1 15271U 84097A 95162.58288617 -.00000020 00000-0 10000-3 0 125
2 15271 62.1345 266.4787 0155706 353.7212 6.0991 2.00599170 77817
Cosmos 1602
1 15331U 84105A 95159.33288277 .00000252 00000-0 26739-4 0 3950
2 15331 82.5331 104.1936 0022043 103.8008 256.5661 14.84627225577351
NOAA 9
1 15427U 84123A 95162.79080343 .00000027 00000-0 38192-4 0 2869
2 15427 99.0007 221.4867 0014195 286.1808 73.7799 14.13710567541152
GPS BI-11
1 16129U 85093A 95157.77556294 -.00000043 00000-0 10000-3 0 6580
2 16129 65.1651 34.3121 0154149 86.7337 275.0865 1.89368078 14791
Mir
1 16609U 86017A 95159.85480199 .00001550 00000-0 27977-4 0 928
2 16609 51.6461 199.3913 0005792 55.3682 304.7910 15.56866656531652
SPOT 1
1 16613U 86019A 95161.77025789 .00000090 00000-0 62356-4 0 8217
2 16613 98.6490 233.2622 0000874 50.4811 309.6428 14.20059589167451
Cosmos 1766
1 16881U 86055A 95162.45424370 .00000182 00000-0 19099-4 0 3111
2 16881 82.5189 159.1197 0020653 118.8980 241.4312 14.83630400478727
EGP
1 16908U 86061A 95161.35723678 -.00000083 00000-0 10000-3 0 52
2 16908 50.0058 63.2335 0011382 144.0329 216.1272 12.44412337 69988
NOAA 10
1 16969U 86073A 95162.75161222 .00000070 00000-0 47911-4 0 1933
2 16969 98.5120 165.7994 0013566 4.3858 355.7437 14.24940393453700
MOS-1
1 17527U 87018A 95162.19866724 .00000119 00000-0 12097-3 0 2156
2 17527 98.9898 227.5143 0001300 56.0936 304.0352 13.94922897422999
GOES 7
1 17561U 87022A 95159.33588140 .00000091 00000-0 10000-3 0 4236
2 17561 2.3110 72.6268 0003253 324.2938 204.9452 1.00261963 13541
Kvant-1
1 17845U 87030A 95162.80745357 .00012912 00000-0 18260-3 0 2768
2 17845 51.6441 184.6169 0005758 64.5498 295.4736 15.56886622532032
DMSP B5D2-3
```

```
1 18123U 87053A 95162.76170533 .00000033 00000-0 39378-4 0 253
2 18123 98.7788 354.0049 0013106 234.6747 125.3207 14.15407311411950
RS-10/11
1 18129U 87054A 95162.21919086 .00000044 00000-0 31772-4 0 751
2 18129 82.9261 63.4840 0013083 104.0360 256.2248 13.72353403399152
Meteor 2-16
1 18312U 87068A 95162.81433907 .00000057 00000-0 37594-4 0 4036
2 18312 82.5532 286.6253 0011911 175.9580 184.1676 13.84057869394800
Meteor 2-17
1 18820U 88005A 95162.93445851 .00000032 00000-0 15532-4 0 6411
2 18820 82.5361 342.4244 0015238 252.2647 107.6863 13.84739639372147
DMSP B5D2-4
1 18822U 88006A 95163.11261981 .00000002 00000-0 19317-4 0 9960
2 18822 98.4053 7.4762 0006534 18.2059 341.9352 14.23155759381798
Glonass 34
1 19163U 88043A 95159.11848517 .00000016 00000-0 10000-3 0 9954
2 19163 65.1270 98.4675 0006976 158.3573 201.6588 2.13102572 54240
Glonass 36
1 19165U 88043C 95161.05188389 -.00000000 00000-0 10000-3 0 3954
2 19165 65.1064 98.3792 0004774 321.8151 38.1351 2.13102111 54908
METEOSAT 3
1 19215U 88051A 95160.42397057 -.00000270 00000-0 10000-3 0 1343
2 19215 2.4902 69.9500 0001340 32.7951 238.5277 1.00279957 13492
AO-13
1 19216U 88051B 95158.95781096 .00000213 00000-0 10000-4 0 457
2 19216 57.5511 183.0575 7297050 10.7623 358.9747 2.09721811 21976
OKEAN 1
1 19274U 88056A 95163.21434743 .00000230 00000-0 25750-4 0 115
2 19274 82.5135 258.7900 0018049 267.2697 92.6453 14.82343946374413
Meteor 3-2
1 19336U 88064A 95161.82645107 .00000051 00000-0 10000-3 0 4000
2 19336 82.5396 69.9181 0018373 84.4588 275.8622 13.16973108330467
Glonass 39
1 19503U 88085C 95159.67245587 -.00000017 00000-0 10000-3 0 2873
2 19503 65.7206 337.3256 0010182 139.4887 220.6155 2.13101815 52366
NOAA 11
1 19531U 88089A 95162.71012439 -.00000004 00000-0 23016-4 0 950
2 19531 99.1928 165.9162 0011164 199.9220 160.1515 14.13053319345982
TDRS 2
1 19548U 88091B 95158.83118764 .00000123 00000-0 00000+0 0 1288
2 19548 1.7260 75.2808 0053941 280.7607 252.4901 0.99486038 11762
Glonass 40
1 19749U 89001A 95162.99552430 -.00000008 00000-0 10000-3 0 5032
2 19749 65.0734 97.8920 0007767 262.4066 97.4830 2.13101336 49942
Glonass 41
1 19750U 89001B 95161.17407797 -.00000002 00000-0 10000-3 0 4176
2 19750 65.0806 98.0120 0007449 254.3249 105.5708 2.13101792 49928
GPS BII-01
1 19802U 89013A 95160.20534194 .00000054 00000-0 10000-3 0 602
2 19802 55.1906 125.5340 0025081 186.4213 173.5316 2.00548475 46213
```

```
Akebono
1 19822U 89016A 95162.89471152 .00012461 00000-0 63345-3 0 5170
2 19822 75.0833 338.1160 3779719 24.8488 349.4779 7.86135807137402
Meteor 2-18
1 19851U 89018A 95162.14101080 .00000057 00000-0 37946-4 0 4011
2 19851 82.5206 217.7185 0013271 306.3675 53.6257 13.84391039317352
MOP-1
1 19876U 89020B 95159.28412037 .00000068 00000-0 00000+0 0 1216
2 19876 1.2125 72.2547 0002055 326.4416 326.0699 1.00417187 2926
TDRS 3
1 19883U 89021B 95160.29884838 -.00000262 00000-0 10000-3 0 828
2 19883 0.0830 88.0436 0001553 27.6198 208.0971 1.00266987228095
GPS BII-02
1 20061U 89044A 95162.54468972 -.00000065 00000-0 10000-3 0 786
2 20061 54.4449 301.7138 0144557 213.5486 145.5149 2.00563111 44005
Nadezhda 1
1 20103U 89050A 95162.78556071 .00000014 00000-0 -14484-5 0 4199
2 20103 82.9587 22.5791 0038359 10.1980 349.9935 13.73853436297687
GPS BII-03
1 20185U 89064A 95161.88697368 .00000035 00000-0 10000-3 0 1006
2 20185 55.0159 126.0101 0015200 295.1955 64.6051 2.00574653 42569
GMS 4
1 20217U 89070A 95160.59159654 -.00000283 00000-0 10000-3 0 1980
2 20217 1.0230 76.4817 0001058 40.4583 133.1878 1.00267659 21674
INTERCOSMOS 24
1 20261U 89080A 95162.05405894 .00000072 00000-0 15100-4 0 4168
2 20261 82.5911 148.4013 1242484 167.7361 195.7195 12.47251644259511
GPS BII-04
1 20302U 89085A 95160.42375322 .00000004 00000-0 10000-3 0 692
2 20302 53.3862 241.8319 0011452 191.0106 169.0286 2.00556163 41336
Meteor 3-3
1 20305U 89086A 95161.66238526 .00000044 00000-0 10000-3 0 3290
2 20305 82.5441 22.1369 0006403 111.1010 249.0759 13.04412456269639
COBE
1 20322U 89089A 95161.02158243 .00000128 00000-0 10991-3 0 1277
2 20322 98.9615 177.1719 0009141 0.9764 359.1358 14.03454665284582
Kvant-2
1 20335U 89093A 95162.80745357 .00012912 00000-0 18260-3 0 2880
2 20335 51.6441 184.6169 0005758 64.5498 295.4736 15.56886622315242
GPS BII-05
1 20361U 89097A 95161.43409037 -.00000046 00000-0 00000+0 0 9391
2 20361 55.7556 68.0412 0086768 118.9507 241.9709 2.00561120 30837
SPOT 2
1 20436U 90005A 95163.23508620 -.00000044 00000-0 00000+0 0 9414
2 20436 98.7353 237.3837 0000926 63.9036 296.2235 14.20021090279195
UO-14
1 20437U 90005B 95161.71478396 .00000012 00000-0 21403-4 0 1031
2 20437 98.5646 246.1857 0010227 215.9270 144.1231 14.29888590280827
UO-15
1 20438U 90005C 95162.31015732 -.00000021 00000-0 88107-5 0 9001
```

```
2 20438 98.5654 245.2986 0009408 218.1051 141.9450 14.29207649280807
PACSAT
1 20439U 90005D 95163.22621720 .00000033 00000-0 29562-4 0 9026
2 20439 98.5785 249.3374 0010585 211.9532 148.0994 14.29943235281059
DO-17
1 20440U 90005E 95159.22713738 .00000032 00000-0 29181-4 0 9019
2 20440 98.5802 245.8561 0010650 223.5993 136.4351 14.30083778280509
WO-18
1 20441U 90005F 95162.77756434 .00000028 00000-0 27771-4 0 9067
2 20441 98.5798 249.3283 0011243 213.2854 146.7621 14.30055584281010
LO-19
1 20442U 90005G 95162.73080729 .00000022 00000-0 25434-4 0 9025
2 20442 98.5811 249.6411 0011649 212.5463 147.4995 14.30157834281025
GPS BII-06
1 20452U 90008A 95160.33229100 .00000105 00000-0 10000-3 0 420
2 20452 54.0188 181.9945 0055787 81.8231 278.8739 2.00573796 39312
MOS-1B
1 20478U 90013A 95162.74676246 .00000091 00000-0 10000-3 0 7924
2 20478 98.9995 232.3613 0000851 52.9375 307.1864 13.94927511192774
DEBUT
1 20479U 90013B 95162.24321696 .00000074 00000-0 24550-3 0 9014
2 20479 99.0717 252.0987 0539587 246.3419 108.0165 12.83332122250191
FO-20
1 20480U 90013C 95162.24908583 -.00000020 00000-0 35366-4 0 7986
2 20480 99.0720 251.9545 0539736 246.7022 107.6409 12.83230219250184
MOS-1B R/B
1 20491U 90013D 95160.42798429 -.00000694 00000-0 -12492-2 0 1392
2 20491 99.0438 304.4414 0470483 89.7805 275.7188 13.02983366253182
LACE
1 20496U 90015A 95161.41081478 .00001151 00000-0 42026-4 0 5465
2 20496 43.1036 169.6108 0008826 164.1863 195.9271 15.34569937296535
Nadezhda 2
1 20508U 90017A 95162.74812712 .00000022 00000-0 77391-5 0 4189
2 20508 82.9537 157.1812 0044100 321.7565 38.0468 13.73493966264905
OKEAN 2
1 20510U 90018A 95159.18802741 .00000233 00000-0 28618-4 0 4101
2 20510 82.5244 214.1889 0020612 102.1318 258.2201 14.78495586284264
GPS BII-07
1 20533U 90025A 95162.73850030 -.00000065 00000-0 10000-3 0 603
2 20533 54.8056 302.3287 0048593 79.5198 281.0123 2.00563941 38138
PegSat
1 20546U 90028A 95162.44222577 .00006947 00000-0 14368-3 0 8105
2 20546 94.1110 140.9909 0066206 1.7814 358.3646 15.43477791287592
HST
1 20580U 90037B 95161.86887899 .00000475 00000-0 31936-4 0 6729
2 20580 28.4677 91.5027 0005782 237.6648 122.3403 14.90888312 82967
MACSAT 2
1 20608U 90043B 95162.06156863 .00000128 00000-0 19740-4 0 1022
2 20608 89.9272 176.5481 0103746 277.8040 81.1387 14.64838085271810
Glonass 44
```

```
1 20619U 90045A 95155.38683170 -.00000026 00000-0 10000-3 0 1936
2 20619 65.2947 336.9081 0024037 210.7966 149.0945 2.13102432 39237
Glonass 45
1 20620U 90045B 95159.72901724 -.00000018 00000-0 10000-3 0 2031
2 20620 65.3038 336.7495 0010347 56.1324 303.9962 2.13102520 39369
Glonass 46
1 20621U 90045C 95159.79528896 -.00000018 00000-0 10000-3 0 8007
2 20621 65.3267 336.8015 0013632 195.1523 164.8129 2.13101641 39360
Kristall
1 20635U 90048A 95162.80745357 .00012912 00000-0 18260-3 0 805
2 20635 51.6441 184.6169 0005758 64.5498 295.4736 15.56886622531986
ROSAT
1 20638U 90049A 95159.47460024 -.00000161 00000-0 83906-5 0 4666
2 20638 52.9907 186.2612 0013447 76.2597 283.9881 15.07189904275809
Meteor 2-19
1 20670U 90057A 95160.83011651 -.00000028 00000-0 -38127-4 0 9001
2 20670 82.5438 284.3983 0014471 221.1034 138.9039 13.84161327250099
CRRES
1 20712U 90065A 95161.83768431 .00000025 00000-0 17100-3 0 1041
2 20712 18.0082 41.5909 7183137 99.0473 340.9036 2.35414406 34330
GPS BII-08
1 20724U 90068A 95160.06723486 .00000051 00000-0 10000-3 0 9096
2 20724 54.8414 123.6921 0116691 174.1080 186.0072 2.00559774 33944
Feng Yun1-2
1 20788U 90081A 95163.04033124 .00000314 00000-0 23626-3 0 4090
2 20788 98.8150 176.2476 0016632 86.6688 273.6380 14.01353720244118
Meteor 2-20
1 20826U 90086A 95162.57594889 .00000050 00000-0 31959-4 0 9120
2 20826 82.5267 220.0187 0014554 115.7229 244.5437 13.83609102237459
GPS BII-09
1 20830U 90088A 95161.10996392 -.00000047 00000-0 10000-3 0 9186
2 20830 55.7066 66.0528 0066765 99.9428 260.8247 2.00571604 34609
GPS BIIA-10
1 20959U 90103A 95163.01494814 .00000023 00000-0 10000-3 0 8755
2 20959 55.0482 125.5623 0098187 230.4401 128.7045 2.00553476 33232
DMSP B5D2-5
1 20978U 90105A 95162.67444190 .00000121 00000-0 58919-4 0 2284
2 20978 98.6402 230.9300 0078744 185.1360 174.9023 14.32553179236522
Glonass 47
1 21006U 90110A 95160.29052925 .00000004 00000-0 10000-3 0 7676
2 21006 65.0472 97.3294 0058760 187.8244 172.0690 2.13102820 35045
Glonass 48
1 21007U 90110B 95159.07121752 .00000015 00000-0 10000-3 0 8994
2 21007 65.0770 97.4426 0033768 179.8071 180.2069 2.13101251 35009
Glonass 49
1 21008U 90110C 95161.77740577 -.00000006 00000-0 00000+0 0 850
2 21008 65.0488 97.3048 0010483 276.3178 83.5504 2.13099243 35056
AO-21
1 21087U 91006A 95162.26296902 .00000094 00000-0 82657-4 0 6030
2 21087 82.9423 236.9572 0035868 160.7709 199.4810 13.74555550218915
```

```
RS-12/13
1 21089U 91007A 95160.04837029 -.00000101 00000-0 -12315-3 0 8067
2 21089 82.9221 106.8153 0027704 192.7085 167.3287 13.74057342217653
MOP-2
1 21140U 91015B 95162.72666420 -.00000010 00000-0 00000+0 0 150
2 21140 0.2736 84.3698 0002588 27.5308 49.1674 1.00269811 17887
Nadezhda 3
1 21152U 91019A 95162.79119692 .00000041 00000-0 28564-4 0 1095
2 21152 82.9268 60.8820 0040991 297.2137 62.4839 13.73520012212760
Glonass 50
1 21216U 91025A 95160.77836610 -.00000024 00000-0 10000-3 0 4129
2 21216 65.0505 336.3898 0009079 185.7391 174.2680 2.13102856 32566
Glonass 51
1 21217U 91025B 95160.37784444 -.00000022 00000-0 10000-3 0 8248
2 21217 65.0334 336.3972 0010094 238.5682 121.3481 2.13101524 32540
Glonass 52
1 21218U 91025C 95160.48999329 -.00000022 00000-0 10000-3 0 2964
2 21218 65.0391 336.3844 0007414 329.9447 30.0528 2.13102824 32551
GRO
1 21225U 91027B 95159.15298808 .00002336 00000-0 46061-4 0 2708
2 21225 28.4644 277.8628 0003342 271.8551 88.1688 15.42685184111931
Meteor 3-4
1 21232U 91030A 95161.36302650 .00000050 00000-0 10000-3 0 8101
2 21232 82.5421 276.3629 0014115 16.1497 344.0078 13.16466718198488
NOAA 12
1 21263U 91032A 95162.70133801 .00000149 00000-0 85743-4 0 5211
2 21263 98.5838 186.9076 0011749 275.9474 84.0362 14.22528108211644
OKEAN 3
1 21397U 91039A 95160.61918593 .00000045 00000-0 32200-5 0 1103
2 21397 82.5236 125.9225 0022716 168.4976 191.6759 14.76374531216249
GPS BIIA-11
1 21552U 91047A 95162.28410447 -.00000047 00000-0 10000-6 0 8650
2 21552 55.9958 63.6891 0063549 242.8633 116.5091 2.00566487 28816
ERS-1
1 21574U 91050A 95162.18277241 .00000042 00000-0 31651-4 0 1605
2 21574 98.5507 236.5895 0001322 87.8435 272.2901 14.32248208204199
UO-22
1 21575U 91050B 95162.22872579 .00000020 00000-0 21142-4 0 6083
2 21575 98.3899 233.6914 0007237 304.9137 55.1368 14.36978694204643
ORBCOMM-X
1 21576U 91050C 95163.21957710 .00000036 00000-0 26943-4 0 7032
2 21576 98.3934 233.0873 0003747 321.3913 38.7003 14.36386044204699
TUBSAT-A
1 21577U 91050D 95163.21601312 .00000008 00000-0 17298-4 0 6027
2 21577 98.3885 233.6045 0006075 307.0474 53.0153 14.36485636204729
SARA
1 21578U 91050E 95161.71102534 .00000244 00000-0 92895-4 0 8023
2 21578 98.4138 237.5145 0004393 310.7100 49.3718 14.39015231204766
TDRS 4
1 21639U 91054B 95157.49420845 .00000089 00000-0 10000-3 0 9006
```

```
2 21639 0.0458 242.1888 0003160 170.1998 205.7002 1.00277387108110
Meteor 3-5
1 21655U 91056A 95161.68132439 .00000051 00000-0 10000-3 0 8087
2 21655 82.5522 223.5420 0014565 25.9750 334.2102 13.16838800183647
UARS
1 21701U 91063B 95163.12740373 -.00000124 00000-0 10245-4 0 6790
2 21701 56.9837 156.8860 0005077 104.3164 255.8433 14.96395096204810
DMSP B5D2-6
1 21798U 91082A 95162.73421621 .00000101 00000-0 76758-4 0 8747
2 21798 98.9607 174.4724 0012220 197.1790 162.8970 14.13893962182435
Glonass 53
1 21853U 92005A 95157.88618256 .00000024 00000-0 10000-3 0 100
2 21853 64.9974 97.1063 0007177 209.1154 150.8472 2.13102276 26100
Glonass 54
1 21854U 92005B 95162.86869205 -.00000009 00000-0 00000+0 0 1477
2 21854 65.0012 96.9294 0018205 13.7557 346.2636 2.13104556 26194
Glonass 55
1 21855U 92005C 95162.46329629 -.00000009 00000-0 00000+0 0 1385
2 21855 65.0035 96.9457 0007201 215.7779 144.1544 2.13102055 26178
JERS-1
1 21867U 92007A 95162.70191822 .00000637 00000-0 57898-4 0 6045
2 21867 97.7171 239.5643 0002784 91.6661 268.4441 14.98655628182228
GPS BIIA-12
1 21890U 92009A 95157.26772205 -.00000010 00000-0 10000-3 0 6632
2 21890 53.9335 242.1742 0058910 182.0435 177.9871 2.00576927 24080
GPS BIIA-13
1 21930U 92019A 95160.95920832 -.00000049 00000-0 10000-3 0 6372
2 21930 55.7013 3.5384 0039316 173.1817 186.9086 2.00566109 23081
EUVE
1 21987U 92031A 95159.20386933 .00000920 00000-0 32936-4 0 4594
2 21987 28.4330 183.2823 0009683 266.0612 93.8831 15.19298637166584
SAMPEX
1 22012U 92038A 95163.01426830 -.00000067 00000-0 -79791-5 0 6379
2 22012 81.6712 151.1566 0117360 305.1299 53.8932 14.91392676159908
GPS BIIA-14
1 22014U 92039A 95161.00287613 .00000105 00000-0 10000-3 0 5571
2 22014 54.8498 183.4790 0089914 312.0184 47.4920 2.00572450 14928
Glonass 56
1 22056U 92047A 95162.83227373 -.00000038 00000-0 00000+0 0 492
2 22056 64.8700 336.4409 0003165 279.4459 80.5275 2.13103397 22275
Glonass 57
1 22057U 92047B 95159.84265851 -.00000020 00000-0 00000+0 0 472
2 22057 64.8877 336.5682 0006865 333.5947 26.3874 2.13102655 22188
Glonass 58
1 22058U 92047C 95160.72135863 -.00000024 00000-0 10000-3 0 212
2 22058 64.8890 336.5374 0008571 272.6882 87.2313 2.13102963 22253
TOPEX
1 22076U 92052A 95159.76832553 -.00000061 00000-0 00000+0 0 8832
2 22076 66.0391 270.3556 0007642 266.1597 93.8546 12.80929060132162
KO-23
```

```
1 22077U 92052B 95159.26087875 -.00000037 00000-0 10000-3 0 4987
2 22077 66.0824 254.4545 0007874 200.8188 159.2503 12.86291734132585
S80/T
1 22078U 92052C 95160.35653601 -.00000037 00000-0 10000-3 0 4964
2 22078 66.0838 251.0648 0008208 189.6773 170.4087 12.86575980132809
GPS BIIA-15
1 22108U 92058A 95161.46025127 .00000010 00000-0 00000+0 0 5778
2 22108 54.1756 242.7823 0114050 151.3917 209.3178 2.00567584 20110
FREJA
1 22161U 92064A 95160.83416585 .00000222 00000-0 13265-3 0 5198
2 22161 62.9945 107.3594 0810055 346.2395 11.7656 13.21840559129072
LAGEOS II
1 22195U 92070B 95161.48291860 -.00000009 00000-0 10000-3 0 4086
2 22195 52.6489 227.2269 0138196 273.6456 84.8334 6.47294089 62148
GPS BIIA-16
1 22231U 92079A 95158.15241256 .00000093 00000-0 10000-3 0 5522
2 22231 54.6712 184.7580 0036683 286.6212 73.0188 2.00565808 18621
GPS BIIA-17
1 22275U 92089A 95160.29816166 .00000107 00000-0 10000-3 0 5624
2 22275 54.6272 182.2068 0053530 253.4474 106.0299 2.00560894 18075
TDRS 5
1 22314U 93003B 95162.04644115 -.00000280 00000-0 10000-3 0 5200
2 22314 1.8603 71.8544 0001093 12.7868 145.2853 1.00268249 8857
GPS BIIA-18
1 22446U 93007A 95161.37039806 -.00000063 00000-0 10000-3 0 5568
2 22446 54.4573 302.6176 0081139 354.4679 5.4934 2.00555195 17086
Glonass 59
1 22512U 93010A 95160.70315242 -.00000000 00000-0 10000-3 0 7061
2 22512 65.0143 96.8603 0008099 202.0466 157.9010 2.13102020 17733
Glonass 60
1 22513U 93010B 95162.51951083 -.00000009 00000-0 00000+0 0 7695
2 22513 65.0049 96.8155 0006603 206.7469 153.1988 2.13102600 17965
Glonass 61
1 22514U 93010C 95162.81302302 -.00000009 00000-0 00000+0 0 7660
2 22514 65.0302 96.7828 0009594 192.3882 167.5581 2.13102909 17976
ASTRO-D
1 22521U 93011A 95159.08678853 .00001042 00000-0 68158-4 0 4130
2 22521 31.1080 295.6358 0056539 48.3038 312.2423 15.02273408126007
UFO F1
1 22563U 93015A 95160.95230683 -.00000008 00000-0 10000-3 0 4216
2 22563 26.0134 294.4362 0001822 248.6298 86.8523 0.99251001 12381
GPS BIIA-19
1 22581U 93017A 95160.01428699 -.00000050 00000-0 10000-3 0 4375
2 22581 55.2124 3.1529 0056670 36.9142 323.5390 2.00575305 16119
ARSENE
1 22654U 93031B 95162.08456956 -.00000109 00000-0 10000-3 0 3169
2 22654 2.5509 84.9726 2895156 212.1828 125.6082 1.42201694 6300
GPS BIIA-20
1 22657U 93032A 95160.14351515 -.00000050 00000-0 10000-3 0 4743
2 22657 55.2393 2.9858 0072438 213.8878 145.6528 2.00566456 11449
```

```
RADCAL
1 22698U 93041A 95161.39944034 .00000068 00000-0 23867-4 0 4069
2 22698 89.5396 290.8575 0093303 99.6949 261.4790 14.21347042101479
GPS BIIA-21
1 22700U 93042A 95162.10558706 .00000012 00000-0 10000-3 0 4301
2 22700 54.3142 243.5296 0035401 349.8284 10.1605 2.00563552 14280
NOAA 13
1 22739U 93050A 95162.89860222 .00000096 00000-0 78744-4 0 8213
2 22739 98.9940 111.7345 0009650 184.2442 175.8644 14.10935897 94691
GPS BIIA-22
1 22779U 93054A 95159.19890549 -.00000054 00000-0 10000-3 0 4799
2 22779 54.5894 302.6981 0019450 245.1987 114.5913 2.00569232 12981
Meteor 2-21
1 22782U 93055A 95160.39597969 .00000036 00000-0 19997-4 0 4073
2 22782 82.5452 283.3560 0021686 309.1252 50.7974 13.83032555 89465
UFO F2
1 22787U 93056A 95162.83561774 -.00000063 00000-0 00000+0 0 4593
2 22787 4.5126 325.0960 0003537 78.4695 228.1931 1.00272320 5107
SPOT 3
1 22823U 93061A 95161.79612089 -.00000289 00000-0 -11528-3 0 4468
2 22823 98.7374 235.9952 0001687 45.0593 315.0709 14.20022942 88388
STELLA
1 22824U 93061B 95159.71015528 -.00000032 00000-0 48322-5 0 3944
2 22824 98.6181 235.9252 0005761 242.0920 117.9670 14.27101541 88529
AO-27
1 22825U 93061C 95159.19943076 -.00000012 00000-0 12817-4 0 3964
2 22825 98.6148 235.7346 0007829 249.8900 110.1452 14.27663844 88482
IO-26
1 22826U 93061D 95159.71466406 .00000029 00000-0 29321-4 0 3954
2 22826 98.6182 236.3397 0008441 250.3832 109.6432 14.27771995 88563
HEATHSAT
1 22827U 93061E 95159.24574993 .00000039 00000-0 33439-4 0 4568
2 22827 98.6161 235.8169 0008421 236.6163 123.4209 14.27894875 88507
ITAMSAT
1 22828U 93061F 95159.71313693 .00000008 00000-0 20665-4 0 3730
2 22828 98.6141 236.3744 0009435 232.4404 127.5916 14.28101809 56660
PO-28
1 22829U 93061G 95159.72464076 .00000043 00000-0 34840-4 0 3878
2 22829 98.6147 236.4186 0009197 233.9811 126.0517 14.28081094 88581
KO-25
1 22830U 93061H 95161.39678236 .00000008 00000-0 20630-4 0 4066
2 22830 98.5127 231.3459 0010861 203.3288 156.7401 14.28090756 88820
GPS BIIA-23
1 22877U 93068A 95161.74836727 -.00000049 00000-0 10000-3 0 2865
2 22877 55.3597 63.9841 0023674 305.4722 54.3199 2.00547336 11922
METEOSAT 6
1 22912U 93073B 95162.77424160 -.00000085 00000-0 00000+0 0 3179
2 22912 0.1195 271.3397 0002069 208.8312 48.3584 1.00273269 4137
HST Array
1 22920U 90037C 95160.10819483 .00005270 00000-0 38899-3 0 3335
```

```
2 22920 28.4710 64.3074 0004008 93.6866 266.4182 15.01123308 83096
Meteor 3-6
1 22969U 94003A 95159.46006438 .00000051 00000-0 10000-3 0 1738
2 22969 82.5575 164.8865 0017306 95.4981 264.8105 13.16729351 65738
TUBSAT-B
1 22970U 94003B 95162.91781803 .00000051 00000-0 10000-3 0 1651
2 22970 82.5563 162.3877 0017923 83.2344 277.0822 13.16825008 66195
GPS BIIA-24
1 23027U 94016A 95160.82608012 -.00000051 00000-0 10000-3 0 2165
2 23027 55.0708 4.9876 0062664 196.8658 162.9672 2.00556208 9215
Glonass 62
1 23043U 94021A 95162.42195234 -.00000036 00000-0 00000+0 0 2139
2 23043 64.7636 336.8681 0005747 173.2028 186.8183 2.13103183 9081
Glonass 63
1 23044U 94021B 95162.30463825 -.00000035 00000-0 00000+0 0 1904
2 23044 64.7569 336.8711 0028596 201.0649 158.8285 2.13103174 9089
Glonass 64
1 23045U 94021C 95162.95012626 -.00000039 00000-0 00000+0 0 2001
2 23045 64.7474 336.8596 0011055 38.2362 321.8530 2.13102720 9092
GOES 8
1 23051U 94022A 95160.53365070 -.00000246 00000-0 10000-3 0 3269
2 23051 0.0303 344.2604 0003380 140.3920 249.5170 1.00257702 11627
MSTI 2
1 23101U 94028A 95162.56906440 .00004431 00000-0 79307-4 0 2037
2 23101 97.1000 355.8802 0010142 260.1354 99.8752 15.50450753 61659
STRV-1A
1 23125U 94034B 95162.31423508 .00000630 00000-0 28305-3 0 1602
2 23125 7.4799 33.7818 7257303 114.7950 333.1120 2.29913936 7515
STRV-1B
1 23126U 94034C 95162.04732762 .00000802 00000-0 29624-3 0 1547
2 23126 7.4959 33.9444 7263674 114.3517 333.4760 2.29553401 7558
Nadezhda 4
1 23179U 94041A 95162.44985101 .00000035 00000-0 19883-4 0 1077
2 23179 82.9467 152.1156 0038220 82.0522 278.4977 13.75668438 45683
Glonass 65
1 23203U 94050A 95162.61858996 .00000078 00000-0 00000+0 0 1539
2 23203 64.7957 216.5958 0006962 158.0789 202.0443 2.13102087 6484
Glonass 66
1 23204U 94050B 95160.50636852 .00000070 00000-0 00000+0 0 1623
2 23204 64.7846 216.7026 0014925 341.8303 18.1993 2.13102404 6436
Glonass 67
1 23205U 94050C 95161.32777211 .00000076 00000-0 00000+0 0 1491
2 23205 64.7933 216.6634 0002733 281.3723 78.6840 2.13102638 6459
DMSP B5D2-7
1 23233U 94057A 95162.58869380 .00000087 00000-0 70719-4 0 3748
2 23233 98.8787 220.7309 0012816 149.4043 210.7878 14.12611997 40365
OKEAN 1-7
1 23317U 94066A 95161.14262877 .00000149 00000-0 19232-4 0 716
2 23317 82.5448 42.1821 0024459 211.2877 148.6872 14.73937691 35586
ELEKTRO
```

```
1 23327U 94069A 95158.67918981 -.00000093 00000-0 10000-3 0 743
2 23327 0.7910 262.1411 0006728 183.0882 130.7914 1.00269461 2237
RESURS 1-3
1 23342U 94074A 95163.12386296 .00000079 00000-0 21292-4 0 1313
2 23342 98.0166 222.8764 0001857 79.4555 280.6862 14.69743911 32308
Glonass 68
1 23396U 94076A 95162.10957424 -.00000008 00000-0 00000+0 0 1107
2 23396 64.9403 96.9053 0028126 193.4412 166.4634 2.13102529 4319
Glonass 69
1 23397U 94076B 95162.75427263 -.00000009 00000-0 00000+0 0 1136
2 23397 64.9259 96.8984 0014592 323.9691 35.9051 2.13102231 4326
Glonass 70
1 23398U 94076C 95159.82214844 .00000007 00000-0 00000+0 0 1160
2 23398 64.9176 96.9816 0004633 314.3870 45.5467 2.13102164 4275
RS-15
1 23439U 94085A 95158.74592410 -.00000039 00000-0 10000-3 0 557
2 23439 64.8192 270.2541 0167775 263.9557 94.2227 11.27523662 18453
NOAA 14
1 23455U 94089A 95162.78524789 .00000117 00000-0 88736-4 0 2080
2 23455 98.9018 105.3428 0008529 205.5959 154.4788 14.11516440 23052
ODERACS II A
1 23471U 95004C 95163.01231975 .00024049 00000-0 11248-3 0 1313
2 23471 51.6464 162.5451 0014551 76.8191 283.4867 15.82985351 20352
ODERACS II B
1 23472U 95004D 95162.36375363 .00063149 12637-4 20705-3 0 1349
2 23472 51.6417 161.8681 0013363 82.7538 277.5074 15.90735063 20300
Glonass 71
1 23511U 95009A 95159.43067823 -.00000019 00000-0 00000+0 0 561
2 23511 64.7703 337.2430 0005195 335.4027 24.5924 2.13102792 1988
Glonass 72
1 23512U 95009B 95162.53970311 -.00000036 00000-0 00000+0 0 628
2 23512 64.7704 337.1491 0012427 194.6308 165.3447 2.13102730 2054
Glonass 73
1 23513U 95009C 95162.12888387 -.00000033 00000-0 00000+0 0 600
2 23513 64.7755 337.1335 0005222 199.4128 160.5899 2.13103241 2041
Soyuz TM-21
1 23519U 95010A 95162.80745357 .00012912 00000-0 18260-3 0 1028
2 23519 51.6441 184.6169 0005758 64.5498 295.4736 15.56886622 13996
SFU
1 23521U 95011A 95163.20545374 .00002157 00000-0 67385-4 0 633
2 23521 28.4561 108.2132 0020650 167.0934 193.0200 15.28365928 13177
GMS 5
1 23522U 95011B 95156.34500397 -.00000113 00000-0 00000+0 0 308
2 23522 0.9396 292.6671 0000601 319.5883 284.9336 1.00270849 668
DMSP B5D2-8
1 23533U 95015A 95162.67510788 .00000051 00000-0 50938-4 0 1022
2 23533 98.8308 165.1322 0008296 35.0256 325.1458 14.12688717 11173
1995017C
1 23547U 95017C 95161.44310819 .00000149 00000-0 59407-4 0 270
2 23547 69.9830 314.9617 0012637 337.7724 22.2866 14.45363852 9805
```

```
1995017D
1 23548U 95017D 95161.88426721 -.00000002 00000-0 16624-4 0 306
2 23548 69.9859 314.1321 0012366 324.6023 35.4284 14.44802777 9866
OFEQ 3
1 23549U 95018A 95162.19206016 .00006017 00000-0 15798-3 0 510
2 23549 143.3672 135.2294 0258760 265.9429 91.1700 15.06660205 10068
GFZ-1
1 23558U 86017JE 95160.49218241 .00002119 00000-0 32138-4 0 329
2 23558 51.6491 195.3957 0006144 255.9106 104.1198 15.59876051531632
ERS-2
1 23560U 95021A 95162.20475874 .00000016 00000-0 22122-4 0 804
2 23560 98.5501 236.6212 0001486 91.0309 269.1045 14.32247961 7327
INTELSAT 706
1 23571U 95023A 95152.22834939 -.00000286 00000-0 00000+0 0 222
2 23571 0.0616 141.4448 0012807 49.2390 84.6644 1.00285405 179
1995023B
1 23572U 95023B 95162.48968193 .00444638 -10921-5 23523-1 0 62
2 23572 7.1240 139.4977 7167240 198.2719 105.1049 2.45999430 644
Spektr
1 23579U 95024A 95162.80745357 .00012912 00000-0 18260-3 0 400
2 23579 51.6441 184.6169 0005758 64.5498 295.4736 15.56886622 3553
1995024B
1 23580U 95024B 95160.40295446 .19282816 12770-4 11666-3 0 737
2 23580 51.6399 189.3490 0006749 262.0950 98.2631 16.53778081 3274
GOES 9
1 23581U 95025A 95159.33475532 -.00000156 00000-0 00000+0 0 242
2 23581 0.2757 253.7939 0019706 107.7606 284.3765 1.00144083 163
1995025B
1 23582U 95025B 95161.97991719 .00103715 -12734-5 77417-3 0 209
2 23582 27.0855 142.5691 7576974 189.6082 134.7405 1.96668720 375
1995020C
1 23583U 95020C 95159.46787815 .00016258 00000-0 22532-3 0 150
2 23583 51.6510 201.3061 0004392 50.2400 309.8978 15.57218856531677
Cosmos 2312
1 23584U 95026A 95161.30982789 -.00000923 00000-0 29137-2 0 217
2 23584 62.9045 131.5626 7360509 318.2289 4.5612 2.00600363 342
1995026B
1 23585U 95026B 95163.14692054 .00282271 74940-5 54024-3 0 327
2 23585 62.8213 66.3461 0236219 121.1157 241.3845 15.65961653 2864
1995026C
1 23586U 95026C 95162.89371495 .01253254 78659-5 67192-3 0 592
2 23586 62.8422 66.1566 0191346 123.6748 238.2785 15.90287634 2849
1995020D
1 23588U 95 20 D 95145.41138197 .00029097 00000-0 40599-3 0 11
2 23588 51.6634 271.6972 0012464 333.9415 25.4155 15.56559889529483
UFO F5
1 23589U 95027A 95162.55955990 .00000050 00000-0 00000+0 0 209
2 23589 5.0803 322.4398 0172742 145.2952 182.6711 1.00255748 162
1995027B
1 23590U 95027B 95162.36040291 .00003670 00000-0 13350-2 0 115
```

```
2 23590 26.9464 289.0756 6623285 181.5852 174.3109 3.12965624 318
1995014C
1 23591U 95014C 95152.16822844 .28896463 58209-5 21345-2 0 23
2 23591 67.1021 179.9664 0056543 106.9455 254.8135 16.31995263 11324
1995014D
1 23592U 95014D 95152.16875618 .33333659 57213-5 48100-2 0 22
2 23592 67.1218 179.9437 0053312 111.3520 250.2493 16.29697784 11326
1995011H
1 23593U 95011H 95152.03251678 .00221329 00000-0 50934-2 0 18
2 23593 28.4522 182.1104 0003723 31.9147 328.1591 15.40697481 11482
1995015D
1 23594U 95015D 95159.48493625 .00000708 00000-0 40490-3 0 23
2 23594 98.8261 161.9590 0003618 14.4069 345.7228 14.12799436 920
1995015E
1 23595U 95015E 95159.48553583 .00000599 00000-0 34580-3 0 25
2 23595 98.8244 161.9742 0009904 53.2145 306.9943 14.12784750 10726
1995028A
1 23596U 95028A 95163.11901747 .00000317 00000-0 10000-4 0 147
2 23596 65.0400 348.5801 0010086 265.8462 94.1458 15.52019282 599
1995028B
1 23597U 95028B 95159.68438728 .34405963 86767-5 32676-3 0 64
2 23597 65.0057 359.9697 0116834 54.7033 306.5078 16.32836446 84
1995029A
1 23598U 95029A 95162.89653599 .00021865 00000-0 34863-2 0 66
2 23598 7.0516 80.4542 7294198 179.0534 184.4872 2.27830600 35
1995029B
1 23599U 95029B 95162.82600395 .00021257 00000-0 25080-2 0 51
2 23599 7.1466 80.6508 7117962 179.5343 181.7429 2.50778243 4202
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1271. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-13 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <3rjg65$cgf@newsbf02.news.aol.com>
Source record: 24777

>>> Why couldn't you just measure the doppler error from the discrimiator
(an
>>> easy measurement on most satellite rigs) and feed that back into the
>>> tracking pc. It could then compare that to it's esimate and update
it's
>>> prediction (much like a GPS does)?

>>I'm not quite sure what is meant by "doppler error". Error relative to
what?

Simple, error relative to your prediction.

>>In any case, the observed doppler shift is independent of the antenna
beam
>>position, so measuring the doppler shift won't provide any angular error
>>information with which to steer the beam.

Once again, this is just an update of the prediction. This one of the
major data elements that NASA/JPL uses to compute the element sets in the
first place.

David A. Hoatson, KC6WYG
dhoatson@aol.com

1272. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-13 00:00:00 UTC
From: blanton@ni.net
Message-ID: <blanton-1306952152320001@xband.ni.net>
Source record: 24778

In article <3rjg65$cgf@newsbf02.news.aol.com>, dhoatson@aol.com (DHoatson) wrote:

> >>> Why couldn't you just measure the doppler error from the discrimiator
> (an
> >>> easy measurement on most satellite rigs) and feed that back into the
> >>> tracking pc. It could then compare that to it's esimate and update
> it's
> >>> prediction (much like a GPS does)?
...
> Once again, this is just an update of the prediction. This one of the
> major data elements that NASA/JPL uses to compute the element sets in the
> first place.

The original subject of this thread was 'satellite tracking by feedback' -- that is, keeping the antenna pointed at the satellite by means of a closed-loop feedback control system without requiring accurate predictions of the satellite's position. Of course, if one can accurately predict the satellite's position in the sky during a pass then a closed-loop tracking system is not needed.

Accurate ephemeris data and satellite tracking/prediction programs are readily available. The satellite data is updated regularly, primarily by Air Force and Navy sensors, so an individual need not try to independently determine the satellite's orbit except perhaps as an educational exercise.

73, Lee WA8YBT/6

1273. GMS-5

Newsgroup: rec.radio.amateur.space
Date: 1995-06-14 00:00:00 UTC
From: <>
Message-ID: <3rlk5p$3a6@rigel.pixi.com>
Source record: 24779

Hi,

Does anyone know what is up with GMS-5? The c-elements say the bird is up
at about 159E. When the cutover happenned, it transmitted from GMS-4's location.
Is the data from the new bird being transmitted to the old one until it reaches
station?

Chip

chip@pixi.com
2891-C Makuu LP
Aiea, HI 96701

1274. **1ST EVER HAM OPION POLL, NOW ON THE WEB**

Newsgroup: rec.radio.amateur.space
Date: 1995-06-14 00:00:00 UTC
From: john_fay@lightside.com
Message-ID: <john_fay-1406950003560001@user52.lightside.com>
Source record: 24780

I have estalished a WWW site that includes the 1st ever Ham opinion poll.
The question this month is "Do you support the new vanity call program,
about to go into effect in the US?" The poll takes into account license
class and the age of the voter. Your vote is tallied instintly and you see
the results on-line.
Check this site out at, http://www.csz.com/sarrio.html.

1275. WEBERSOFT ??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-14 00:00:00 UTC
From: ha5ts@ha5ts.ampr.ORG
Message-ID: <3063@ha5ts.ampr.org>
Source record: 24781

Hello to all!

Is there any image decoding/processing software for Webersat
(WO-18) bird?
Where can I find it? Please, what is the correct name of the
software?

Thanks: Ivan ha5ts@ha5ts.ampr.org

1276. RE: Stacking Sat. Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-06-14 00:00:00 UTC
From: don.patton@cornucopia.oau.org
Message-ID: <9506141134.0G8Z200@cornucopia.oau.org>
Source record: 24782

I prefer the first illustration,

1277. circuit to make two radios track?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-14 00:00:00 UTC
From: faunt@netcom3.netcom.com
Message-ID: <FAUNT.95Jun14122503@netcom3.netcom.com>
Source record: 24783

A few years back in QST there was an article on building a box that would tune two radios simultaneously using the up-down mike click connections. I can't locate the article now, but would like to.
Any help?
73, doug

1278. Re: ST-1 Sat Tracker, parallel & serial port?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-14 00:00:00 UTC
From: Rod Proctor <rproctor@u.washington.edu>
Message-ID: <Pine.ULT.3.91a.950614192753.13410B-100000@akbar.u.washington.edu>
Source record: 24784

Author of WISP drivers is finishing ST-1 driver now.
Rod, KI7ZI

On Tue, 13 Jun 1995, Art Jeyes wrote:

> In Article <3rim1l$f1b@maureen.teleport.com>, n7ryw@teleport.com (William
> Roth) wrote:
> >In article <n9rze-1206950251150001@ruger-5.slip.uiuc.edu>,
> >n9rze@firefly.prairienet.org said...
> >>
> >> I was reading the literature about the ST-1 that AEA sent me and it
> >>talks about using the parallel and serial port's to talk to the computer.
> >>On the parallel port do you need a bi-directional port? Or does it just go
> >>one way, out? Like for printers. I can't imagine that you would need the
> >I looked at the ST-1, and I didn't like it. Using two ports is a waste. I
> bought
> >the Sat Trak IV instead. It works very well, and uses one serial port only.
> >
> >--
> >From Bill, n7ryw@teleport.com
> >Amsat NA Life Member #2109
> >
> Just wanted to add my 2 cents worth.... the St-1 is currently not directly
> compatible with WISP. If you are using WISP for PACSATS, or if you plan to,
> look at other trackers.... I have an ST-1 (collecting dust) and I have seen
> many messages from other owners that have replaced them with other
> trackers... The ST-1 is a good idea but it seems to be a poor implementation
> and AEA appears to not be supporting it... On the other hand ... if you are
> willing to dedicate a PC to operate in stand alone tracking mode with the
> ST-1, I have heard that works... then with a second PC you can operate the
> digital satellites... seems like a waste to me...
>
> For me... I puchased a TRAKBOX from TAPR and after a minorinitial problem
> with the CAT port (my fault) I have been very happy with it... I have also
> heard good things about the Kansas City Tracker... but the best feature of
> the TRAKBOX is that it doesn't tie up a slot or any ports on the PC... yes
> you need a serial port and terminal emulator to set it up and to update the
> keps ... but other then that it runs stand alone ... it is a good product
> .... I have also seen some messages recently implying that there is a new
> hardware implementation of TRAKBOX out .... but I do not have any facts
> about that ... if anyone out there knows... please drop me a line ... Thanks...
>
> 73 & Good Luck with auto tracking....
>
> Art -- AA3GU

> Art.Jeyes@jhuapl.edu
> AMSAT Life Member
> Registered owner of WISP
>
>

1279. Seek info about foreward error-correction

Newsgroup: rec.radio.amateur.space
Date: 1995-06-14 00:00:00 UTC
From: Christian Stelter <stelter@Tubsat.fb12.tu-berlin.de>
Message-ID: <3rmilb$1o3@brachio.zrz.TU-Berlin.DE>
Source record: 24785

I'm seeking information about theory and algorithms about
error-correction codes for RF data-transfers.

Thanks in advance
Christian Stelter

1280. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.space
Date: 1995-06-15 00:00:00 UTC
From: jmaynard@admin5.hsc.uth.tmc.edu
Message-ID: <radio/personal-intro_803219959@rtfm.mit.edu>
Source record: 24786
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

Posted-By: auto-faq 3.1.1.2
Archive-name: radio/personal-intro
Revision: 2.1 1994/11/01 03:50:23
Posting-Frequency: posted on the 15th of each month

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info, and rec.radio.swap newsgroups, as well as their Internet mailing list counterparts and complements. It is intended to serve as a guide for the new reader on what to find where. Questions and comments may be directed to the author, Jay Maynard, K5ZC, by Internet electronic mail at jmaynard@admin5.hsc.uth.tmc.edu. This message was last changed on 31 October 1994 to add the discussion of non-Usenet mailing lists and streamline most of the history discussion, and to change the moderator information for rec.radio.info.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions were held on the mailing list, and sent to the mailboxes of those who had signed up for it. When the Usenet software was created, and net news as we now know it was developed, a newsgroup was created for hams: net.ham-radio. The mailing list and the newsgroup were gatewayed together, eventually.

Over the years, as the net grew, the volume of discussion became progressively higher. First one by one, and then as part of two reorganizations, what was once one group became many. In the process, developments elsewhere on the net were reflected in the groups as they were created, most notably the change to place all of the ham radio groups in one hierarchy.

The collection of newsgroups continues to grow as more people join the net, and as more topics of discussion gain volume, I expect to see more groups be created as well. This follows what is happening on the rest of the net.

Nearly all of the radio newsgroups have corresponding mailing lists, the notable exception being rec.radio.swap. There are also a few mailing lists that don't have newsgroups.

The Current Groups
==================

It's important to post messages to the group that's appropriate for them, and not to the groups that aren't. The whole idea of having different

newsgroups is so that folks who aren't interested in, say, homebrewing, don't have to wade through messages about homebrewing on the way to read about Field Day. Posting appropriately is just good etiquette.

The rec.radio.amateur.misc group is the catchall. It is what rec.ham-radio was renamed to during the first major reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, was removed on September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there. To answer a frequently asked question: No, there is no mailing list that goes along with this group. If you can't read Usenet news directly, you're out of luck.

The group rec.radio.amateur.policy was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate - it's now legal to order a pizza on the autopatch, if you're not in the pizza business - as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The group rec.radio.cb is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently David Dodell, WB7TPY. The email address for submissions to the group is rec-radio-info@stat.com. Inquires and other administrivia should be directed to rec-radio-info-request@stat.com. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

Mailing Lists

In addition to the mailing lists that mirror the Usenet newsgroups, there also are a few that stand alone. These cover specific areas of ham radio, and discussion is focused on just those areas.

The cq-contest mailing list is for discussions of contesting in ham radio. To join, send email with the word "subscribe" on a line by itself to cq-contest-request@tgv.com.

The DX mailing list covers the finer points of DXing. This one is also joined by mailing "subscribe" on a line by itself, this time to

dx-request@unbc.edu.

There's also a VHF mailing list, for VHF operators of the weak signal persuasion. You can join this one be sending "subscribe vhf" on a line by itself to vhf-request@w6yx.stanford.edu.

All of the following mailing lists are sponsored to the Boston Amateur Radio Club, as well as some others of local interest. Thanks to N1IST for the information.

qrp-l: This is the qrp mailing list, previously maintained by Bruce Walker at Think.com. It is for discussions about the design, construction, and use of qrp (low power) radios and related equipment.
arrl-ve-list: This is a one-way list, run by Bart Jahnke of the ARRL VEC, for announcements to VEs and VE teams.
w1aw-list: ARRL bulletins, news, and information
newsline-list: Redistribution of Amateur Radio Newsline
letter-list: Redistribution of the ARRL Letter
fox-list: Fox hunting and Radio Direction Finding
fieldorg-l: ARRL field organization discussions
ham-tech: Technical discussions and questions about Amateur Radio
arrl-exam-list: amateur radio license examinations scheduled in the US and in some foreign areas.

To sign up or inquire about these lists, send mail to listserv@netcom.com with the following in the body (subject is ignored) of the message.
<listname> is the name of the list to subscribe to.
To subscribe: subscribe <listname>
To unsubscribe: unsubscribe <listname>
For more information: help
To post (to the two-way lists), send your message to <listname>@netcom.com

Please do NOT send subscription requests to the mailing lists themselves; that doesn't work very often, and is very annoying to those on the list. Also, please keep your electronic mail address current with any mailing lists you subscribe to, as dealing with returned email is a nuisance for the person maintaining the mailing list.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while

still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
"All is strange and vague." "Are we dead?" "Or is this Ohio?"
-- Yakko and Dot Warner

1281. rs-15

Newsgroup: rec.radio.amateur.space
Date: 1995-06-15 00:00:00 UTC
From: poco@nervm.nerdc.ufl.edu
Message-ID: <poco-1506950254120001@ppp-21-nerdc-ts1.nerdc.ufl.edu>
Source record: 24787

Is this bird working? Got a 10 meter loop on the roof (only few feet of rg8, no preamp). Sweep the passband when orbitrack tells me to and I hear nothing. I'm using keps that are only about 2 weeks old but suppose program could be at fault. Hopefully someone can offer up some suggestions or perhaps even give me dates and times of a couple of upcoming passes (I'm in Gainesville, FL 29.57N,82.36W.) Thanks in advance.

Gary
poco@nervm.nerdc.ufl.edu

1282. Re: Wisp, KCT Tuner & AEA pk 96 ????

Newsgroup: rec.radio.amateur.space
Date: 1995-06-15 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3rp8ps$54a@news.onramp.net>
Source record: 24788

What are you tracking ?
A standard PK-96 will only be able to work
Dove-17 , Mir and Space shuttle Packet all this at
AFSK 1200 Baud.

I have not used KCT tuner.

Bob kc5ejk@onramp.net

1283. Re: Wisp, KCT Tuner & AEA pk 96 ????

Newsgroup: rec.radio.amateur.space
Date: 1995-06-15 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-1506950939270001@maria-6g.ip.realtime.net>
Source record: 24789

In article <3rp8ps$54a@news.onramp.net>, Bob Winingham <kc5ejk@onramp.net>
wrote:

> What are you tracking ?
> A standard PK-96 will only be able to work
> Dove-17 , Mir and Space shuttle Packet all this at
> AFSK 1200 Baud.
>
> I have not used KCT tuner.
>
> Bob kc5ejk@onramp.net

The AEA PK-96 has both 1200 AFSK and 9600 FSK (G3RUH) modems in it. Should
work for all 9600 bps satellites.

Ron W5RKN

1284. Sat tracking program?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-15 00:00:00 UTC
From: bobcast@eskimo.com
Message-ID: <DA83CG.187@eskimo.com>
Source record: 24790

```
--
-30-
You may reach me via, Internet: bobcast@eskimo.com
Ham Radio Internet: bob@radio.kc7qr.ampr.org.
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
```

1285. Wisp, KCT Tuner & AEA pk 96 ????

Newsgroup: rec.radio.amateur.space
Date: 1995-06-15 00:00:00 UTC
From: MWRW76A@prodigy.com
Message-ID: <3ro20g$1qca@usenetp1.news.prodigy.com>
Source record: 24791

I am using a PK 96 and wisp. Trying to make it all work. Getting frustrated. Been working on it since Dayton Hamvention time. So far I have the program setup I think....The Rotor control and radio control is working. Its seems to initialize the TNC...I don't know that for sure. What I mean by that is it says it is initialized but I don't know if the TNC is supposed to say something back. When a satellite comes up the rotors take off and do their thing. The radio takes over for freq. and doppler but not all the time. It seems like the program isn't talking to the TNC. The only thing the TNC does occasionally is the DCD flickers once in a while. Any suggestions ???
Doug, KG8F

1286. Landings?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-16 00:00:00 UTC
From: rayban3418@aol.com
Message-ID: <3rs5ca$fhs@newsbf02.news.aol.com>
Source record: 24792

```
if you enjoy space, radio, energize that modem at its highest speed
towards Galaxy SuperBoard 612-890-4828
```

1287. RE: Alliance rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-06-16 00:00:00 UTC
From: reinhart=40marlboro#%forwarder@shipco.geis.COM
Message-ID: <199506161732.AA285493940@relay2.geis.com>
Source record: 24793

N9AVG writes:

>Many sat-ops use a rotor from Alliance....The rotor costs about
>$ 100 new.

This rotor has been discontinued for a couple of years now.
There are still a lot of them around, being used for tv as well
as ham antennas. They frequently show up at garage sales and
flea markets...not just ham-sponsored events, either.
Good luck.

73,
David Reinhart
wa6ilt@amsat.org
WA6ILT@K1UGM.#EMA.MA.NA

1288. TRAKSAT satellite tracking software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-16 00:00:00 UTC
From: phubbard@baosc.com
Message-ID: <9506161957.AA03224@hawaii>
Source record: 24794
Cross-posted to: rec.radio.amateur.space,sci.astro.amateur

Hello,

I need to know where I can obtain TRAKSAT; a program written by Paul Trauffer of Huntsville, AL, for PCs. My brother needs it for an upcoming amateur radio contest (thus the weird cross-posting), but unfortunately, the hard drive on my PC is temporarily out to lunch, including, not only TRAKSAT itself, but the listings of any BBS's I might have gotten it from...

It doesn't have to be a BBS; anonymous ftp sites are fine as well. And, if you don't know where to find TRAKSAT, but know of a good satellite tracker for DOS, I'll gladly take that information as well.

Please note: I don't have access to Usenet, and I'm using an email-to-Usenet gateway to post this. So, please send replies directly to me instead of to the group, or I won't see them. I will post a summary early next week.

Thanks in advance,

Phil Hubbard
phubbard@baosc.com

1289. Re: TRAKSAT satellite tracking software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-16 00:00:00 UTC
From: jim4897@athena.athenet.net
Message-ID: <3rtfjs$69b@athena.athenet.net>
Source record: 24795

A good place to get satellite tracking programs is the ftp site
seds.lpl.arizona.edu/pub/software/pc/sat.
Tracksat is the files trak300a.zip & trak300b.zip.
stsplus (my favorite) is in the files sop9517a.zip & sop9517b.zip
quicksat is in the file quicks24.zip. this is a prediction program without
any graphics. It does a good job
if your'e into visual observing because it gives magnitudes and sizes
and such. It's free but would be a good investment even if it was
shareware. The newest version is 2.8d but I no not ware. The author,
Mike McCants said he would post the latest but I forgot where. He emailed
it to me.(Thanks Mike).
Jim

1290. contact PE1LZX

Newsgroup: rec.radio.amateur.space
Date: 1995-06-17 00:00:00 UTC
From: Mike Newman <newman@innet.be>
Message-ID: <3rul9d$n39@news.INbe.net>
Source record: 24796

Please can anyone help me to contact Erwin van den Bosch PE1LZX?
I have his packet address but have not got any answer.
does anyone have an e-mail address for him?
73s de Mike ON9CHZ/G0NFP

1291. RE: Alliance rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-06-17 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <3rupru$fub@news.internetmci.com>
Source record: 24797

>>>This rotor has been discontinued for a couple of years now.

Isn't something like the ratshack rotor or something sold at
Homedepot about equivelent?

--
Bob Smith, Atlanta, GA
rsmith@internetMCI.com
n3ftu@amsat.org

1292. Amateur Radio/Astronomy

Newsgroup: rec.radio.amateur.space
Date: 1995-06-17 00:00:00 UTC
From: rayban3418@aol.com
Message-ID: <3rv1ur$6mf@newsbf02.news.aol.com>
Source record: 24798

```
Energize your high speed modem towards 612-890-4828-----special feature
GUI forums for Hams and astronomy interests.....keyword: Excal
```

1293. Two-Line Orbital Element Sets (TLE623)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-17 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.803349967@dolphin>
Source record: 24799

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #623 -
Alouette 1
1 00424U 62049A 95161.83956706 .00000020 00000-0 13027-4 0 1123
2 00424 80.4628 291.1348 0022071 272.1584 87.7034 13.67842482631430
ATS 1
1 02608U 66110A 95165.24886945 .00000000 00000-0 10000-3 0 9367
2 02608 14.6363 356.7205 0010489 61.6802 298.4104 1.00325798 21167
ATS 3
1 03029U 67111A 95162.07691456 -.00000120 00000-0 10000-3 0 3689
2 03029 14.8239 3.7386 0007774 272.0998 265.3936 1.00272736101039
Cosmos 398
1 04966U 71016A 95165.24467687 .00158555 93143-5 16547-3 0 8944
2 04966 51.4024 241.0210 0588517 80.1030 286.5772 14.94161491824752
Starlette
1 07646U 75010A 95164.07895754 -.00000147 00000-0 -13933-5 0 8937
2 07646 49.8294 169.2216 0206003 88.1408 274.3058 13.82188947 27771
LAGEOS
1 08820U 76039A 95162.48272454 -.00000002 00000-0 10000-3 0 1137
2 08820 109.8434 258.6494 0044174 208.4863 151.3308 6.38664537190096
ETS-2
1 09852U 77014A 95161.34711366 .00000028 00000-0 10000-3 0 294
2 09852 12.7372 37.2043 0002969 57.7227 302.2223 1.00016449 13916
GOES 2
1 10061U 77048A 95165.43513444 .00000039 00000-0 10000-3 0 5394
2 10061 11.8038 41.3978 0010956 122.8374 78.0911 1.00266592 10740
IUE
1 10637U 78012A 95160.09620895 -.00000233 00000-0 10000-3 0 1394
2 10637 35.1892 89.1129 1329528 46.3859 101.4980 1.00280089 16189
GPS BI-01
1 10684U 78020A 95161.69692627 -.00000030 00000-0 10000-3 0 3627
2 10684 64.8353 34.8867 0060451 163.0627 197.2194 1.98069989112036
```

```
GPS BI-02
1 10893U 78047A 95163.32310022 -.00000025 00000-0 10000-3 0 1662
2 10893 63.3335 272.8958 0223008 15.1116 345.5494 2.01627075125335
GOES 3
1 10953U 78062A 95165.39938617 .00000087 00000-0 10000-3 0 5000
2 10953 10.7797 44.1687 0004805 98.0185 96.3691 1.00314498 15357
SeaSat 1
1 10967U 78064A 95164.43823633 -.00000006 00000-0 42682-4 0 4061
2 10967 107.9952 129.7263 0002279 263.8864 96.2011 14.38039500888292
GPS BI-03
1 11054U 78093A 95159.30886250 -.00000034 00000-0 10000-3 0 3300
2 11054 63.0372 271.2314 0044913 176.8796 183.1745 1.93505254121400
Nimbus 7
1 11080U 78098A 95162.60976697 -.00000076 00000-0 -30710-4 0 5070
2 11080 99.0006 36.8514 0008267 245.2282 114.8019 13.83709601839788
GPS BI-04
1 11141U 78112A 95165.73613056 -.00000041 00000-0 10000-3 0 9781
2 11141 64.8371 36.5926 0048859 26.9247 333.3954 1.92894847 10771
GPS BI-05
1 11690U 80011A 95165.89515140 -.00000040 00000-0 10000-3 0 9209
2 11690 65.1960 36.3775 0143594 197.8863 161.7086 2.00564427126812
GPS BI-06
1 11783U 80032A 95166.21678284 -.00000016 00000-0 10000-3 0 823
2 11783 62.4585 266.0314 0218466 29.4135 331.8233 2.03456581111342
GOES 5
1 12472U 81049A 95158.62575665 -.00000278 00000-0 10000-3 0 8618
2 12472 7.5142 54.0762 0007634 22.3525 337.5465 1.00278653 9330
Cosmos 1383
1 13301U 82066A 95166.15656706 .00000021 00000-0 70780-5 0 4123
2 13301 82.9319 43.6448 0027029 171.1043 189.0591 13.68066015647059
LandSat 4
1 13367U 82072A 95163.98211110 -.00000038 00000-0 15016-5 0 6948
2 13367 98.1274 219.9479 0006205 204.3843 155.7141 14.57154719686605
DMSP B5D2-1
1 13736U 82118A 95166.00402152 .00000048 00000-0 38603-4 0 7827
2 13736 98.6296 355.2460 0009306 27.1924 332.9741 14.25738042648609
IRAS
1 13777U 83004A 95165.53067916 .00000402 00000-0 30645-3 0 9888
2 13777 98.9651 353.8641 0013897 37.9367 322.2772 13.99235278301815
Cosmos 1447
1 13916U 83021A 95161.90199453 .00000055 00000-0 41026-4 0 5089
2 13916 82.9432 106.3977 0039135 107.8338 252.7087 13.74326409612609
TDRS 1
1 13969U 83026B 95164.49309711 -.00000193 00000-0 10000-3 0 4236
2 13969 8.3782 47.4137 0001814 99.5895 74.5214 1.00725715 17675
GOES 6
1 14050U 83041A 95162.36227819 -.00000030 00000-0 10000-3 0 4125
2 14050 6.3342 57.2957 0005942 10.4141 204.5787 1.00322669102461
OSCAR 10
1 14129U 83058B 95160.46765047 .00000056 00000-0 10000-3 0 3574
```

```
2 14129 26.4685 264.0089 5998278 283.7378 19.6676 2.05880789 62173
LandSat 5
1 14780U 84021A 95166.14671444 .00006575 00000-0 14659-2 0 2659
2 14780 98.1110 222.6076 0003967 201.0798 159.0238 14.57166684600337
UoSat 2
1 14781U 84021B 95165.52988453 .00000120 00000-0 28177-4 0 8054
2 14781 97.7824 168.1909 0011642 184.4095 175.7007 14.69351720603519
GPS BI-09
1 15039U 84059A 95160.88081916 -.00000033 00000-0 10000-3 0 3407
2 15039 64.5084 31.1159 0081504 17.6199 342.7354 1.92302342 80257
Cosmos 1574
1 15055U 84062A 95166.04145461 .00000057 00000-0 45092-4 0 7105
2 15055 82.9570 157.4532 0026016 288.2882 71.5441 13.73623081550443
GPS BI-10
1 15271U 84097A 95164.07840908 -.00000014 00000-0 10000-3 0 143
2 15271 62.1392 266.4262 0154424 353.9134 5.9301 2.00599029 77847
Cosmos 1602
1 15331U 84105A 95163.84858887 .00000258 00000-0 27474-4 0 3965
2 15331 82.5334 99.9648 0022268 90.1358 270.2398 14.84629506578029
NOAA 9
1 15427U 84123A 95165.76335530 .00000091 00000-0 71976-4 0 2891
2 15427 99.0002 224.4770 0013994 277.2512 82.7065 14.13711952541573
GPS BI-11
1 16129U 85093A 95157.77556294 -.00000043 00000-0 10000-3 0 6580
2 16129 65.1651 34.3121 0154149 86.7337 275.0865 1.89368078 14791
Mir
1 16609U 86 17 A 95165.69594255 .00001625 00000-0 25552-4 0 5415
2 16609 51.6454 170.1554 0005549 76.4480 283.7128 15.56891502532568
SPOT 1
1 16613U 86019A 95165.22276611 .00000090 00000-0 62356-4 0 8224
2 16613 98.6496 236.6382 0000971 66.6512 293.4766 14.20060339167946
Cosmos 1766
1 16881U 86055A 95162.45424370 .00000182 00000-0 19099-4 0 3111
2 16881 82.5189 159.1197 0020653 118.8980 241.4312 14.83630400478727
EGP
1 16908U 86061A 95165.45322726 -.00000083 00000-0 10000-3 0 67
2 16908 50.0109 50.6468 0011140 153.1335 206.9980 12.44412323 70498
NOAA 10
1 16969U 86073A 95165.70077500 .00000109 00000-0 64560-4 0 1961
2 16969 98.5115 168.6586 0013444 354.9721 5.1280 14.24941678454127
MOS-1
1 17527U 87018A 95166.21541421 .00000110 00000-0 11405-3 0 2161
2 17527 98.9905 231.4291 0001186 55.5761 304.5510 13.94924270423559
GOES 7
1 17561U 87022A 95164.19744468 .00000078 00000-0 10000-3 0 4250
2 17561 2.3211 72.5629 0003202 324.4524 159.6304 1.00263346 13594
Kvant-1
1 17845U 87030A 95165.82429154 .00013014 00000-0 18389-3 0 2796
2 17845 51.6441 169.5177 0005695 76.5236 283.4883 15.56901894532507
DMSP B5D2-3
```

```
1 18123U 87053A 95165.73071448 .00000014 00000-0 29762-4 0 286
2 18123 98.7789 356.9276 0013082 225.2690 134.7417 14.15407498412370
RS-10/11
1 18129U 87054A 95162.21919086 .00000044 00000-0 31772-4 0 751
2 18129 82.9261 63.4840 0013083 104.0360 256.2248 13.72353403399152
Meteor 2-16
1 18312U 87068A 95162.81433907 .00000057 00000-0 37594-4 0 4036
2 18312 82.5532 286.6253 0011911 175.9580 184.1676 13.84057869394800
Meteor 2-17
1 18820U 88005A 95165.53569203 .00000042 00000-0 23906-4 0 6435
2 18820 82.5364 340.3539 0015184 243.7444 116.2151 13.84739807372507
DMSP B5D2-4
1 18822U 88006A 95165.57334330 .00000025 00000-0 29271-4 0 9988
2 18822 98.4047 9.8244 0006457 11.5928 348.5398 14.23156298382149
Glonass 34
1 19163U 88043A 95159.11848517 .00000016 00000-0 10000-3 0 9954
2 19163 65.1270 98.4675 0006976 158.3573 201.6588 2.13102572 54240
Glonass 36
1 19165U 88043C 95161.05188389 -.00000000 00000-0 10000-3 0 3954
2 19165 65.1064 98.3792 0004774 321.8151 38.1351 2.13102111 54908
METEOSAT 3
1 19215U 88051A 95160.42397057 -.00000270 00000-0 10000-3 0 1343
2 19215 2.4902 69.9500 0001340 32.7951 238.5277 1.00279957 13492
AO-13
1 19216U 88051B 95165.15641564 -.00000204 00000-0 10000-4 0 464
2 19216 57.5420 181.8955 7300326 11.1837 358.8633 2.09725687 22100
OKEAN 1
1 19274U 88056A 95163.21434743 .00000230 00000-0 25750-4 0 115
2 19274 82.5135 258.7900 0018049 267.2697 92.6453 14.82343946374413
Meteor 3-2
1 19336U 88064A 95166.15684336 .00000051 00000-0 10000-3 0 4019
2 19336 82.5432 66.8582 0018304 74.6757 285.6390 13.16972775331036
Glonass 39
1 19503U 88085C 95165.77283808 -.00000052 00000-0 10000-3 0 2889
2 19503 65.7193 337.1207 0009841 139.2155 220.8708 2.13101835 52493
NOAA 11
1 19531U 88089A 95165.75486124 .00000030 00000-0 41459-4 0 985
2 19531 99.1917 169.0422 0011222 190.8670 169.2263 14.13054216346414
TDRS 2
1 19548U 88091B 95158.83118764 .00000123 00000-0 00000+0 0 1288
2 19548 1.7260 75.2808 0053941 280.7607 252.4901 0.99486038 11762
Glonass 40
1 19749U 89001A 95162.99552430 -.00000008 00000-0 10000-3 0 5032
2 19749 65.0734 97.8920 0007767 262.4066 97.4830 2.13101336 49942
Glonass 41
1 19750U 89001B 95161.17407797 -.00000002 00000-0 10000-3 0 4176
2 19750 65.0806 98.0120 0007449 254.3249 105.5708 2.13101792 49928
GPS BII-01
1 19802U 89013A 95160.20534194 .00000054 00000-0 10000-3 0 602
2 19802 55.1906 125.5340 0025081 186.4213 173.5316 2.00548475 46213
```

```
Akebono
1 19822U 89016A 95165.43902707 .00009384 00000-0 47317-3 0 5191
2 19822 75.0824 336.6586 3779886 22.9475 350.2845 7.86180259137604
Meteor 2-18
1 19851U 89018A 95166.18838724 .00000025 00000-0 94208-5 0 4022
2 19851 82.5195 214.4922 0012884 293.6926 66.2880 13.84390883317918
MOP-1
1 19876U 89020B 95159.28412037 .00000068 00000-0 00000+0 0 1216
2 19876 1.2125 72.2547 0002055 326.4416 326.0699 1.00417187 2926
TDRS 3
1 19883U 89021B 95160.29884838 -.00000262 00000-0 10000-3 0 828
2 19883 0.0830 88.0436 0001553 27.6198 208.0971 1.00266987228095
GPS BII-02
1 20061U 89044A 95165.53617163 -.00000066 00000-0 10000-3 0 798
2 20061 54.4453 301.5909 0143676 214.2002 144.8664 2.00563346 44067
Nadezhda 1
1 20103U 89050A 95165.77153527 .00000042 00000-0 28736-4 0 4228
2 20103 82.9584 20.3764 0038159 2.0684 358.0625 13.73853865298098
GPS BII-03
1 20185U 89064A 95165.37683569 .00000015 00000-0 10000-3 0 1011
2 20185 55.0160 125.8682 0015273 294.9873 64.8068 2.00574355 42635
GMS 4
1 20217U 89070A 95165.28415454 -.00000328 00000-0 10000-3 0 2008
2 20217 1.0204 76.4988 0009510 79.7040 345.6609 1.00146169 21728
INTERCOSMOS 24
1 20261U 89080A 95162.05405894 .00000072 00000-0 15100-4 0 4168
2 20261 82.5911 148.4013 1242484 167.7361 195.7195 12.47251644259511
GPS BII-04
1 20302U 89085A 95164.91111708 .00000011 00000-0 10000-3 0 706
2 20302 53.3842 241.6447 0011520 191.2479 168.8035 2.00556173 41425
Meteor 3-3
1 20305U 89086A 95164.27029361 .00000044 00000-0 10000-3 0 3318
2 20305 82.5409 20.3266 0005649 100.9354 259.2324 13.04411288269977
COBE
1 20322U 89089A 95164.08714211 -.00000040 00000-0 27598-5 0 1287
2 20322 98.9615 180.1919 0008848 353.3444 6.7585 14.03453264285011
Kvant-2
1 20335U 89093A 95165.82429154 .00013014 00000-0 18389-3 0 2919
2 20335 51.6441 169.5177 0005695 76.5236 283.4883 15.56901894315717
GPS BII-05
1 20361U 89097A 95164.92416630 -.00000041 00000-0 00000+0 0 9402
2 20361 55.7614 67.9042 0081731 120.5179 240.4572 2.00561282 30907
SPOT 2
1 20436U 90005A 95163.23508620 -.00000044 00000-0 00000+0 0 9414
2 20436 98.7353 237.3837 0000926 63.9036 296.2235 14.20021090279195
UO-14
1 20437U 90005B 95166.19321851 .00000013 00000-0 22124-4 0 1044
2 20437 98.5658 250.5938 0010383 201.6736 158.4014 14.29888989281461
UO-15
1 20438U 90005C 95162.31015732 -.00000021 00000-0 88107-5 0 9001
```

```
2 20438 98.5654 245.2986 0009408 218.1051 141.9450 14.29207649280807
PACSAT
1 20439U 90005D 95163.22621720 .00000033 00000-0 29562-4 0 9026
2 20439 98.5785 249.3374 0010585 211.9532 148.0994 14.29943235281059
DO-17
1 20440U 90005E 95163.70496028 .00000020 00000-0 24492-4 0 9025
2 20440 98.5803 250.2701 0010725 209.6689 150.3890 14.30084215281147
WO-18
1 20441U 90005F 95162.77756434 .00000028 00000-0 27771-4 0 9067
2 20441 98.5798 249.3283 0011243 213.2854 146.7621 14.30055584281010
LO-19
1 20442U 90005G 95162.73080729 .00000022 00000-0 25434-4 0 9025
2 20442 98.5811 249.6411 0011649 212.5463 147.4995 14.30157834281025
GPS BII-06
1 20452U 90008A 95160.33229100 .00000105 00000-0 10000-3 0 420
2 20452 54.0188 181.9945 0055787 81.8231 278.8739 2.00573796 39312
MOS-1B
1 20478U 90013A 95166.18968559 .00000091 00000-0 10000-3 0 7938
2 20478 98.9967 235.7174 0000626 311.1367 48.9734 13.94926971193252
DEBUT
1 20479U 90013B 95162.24321696 .00000074 00000-0 24550-3 0 9014
2 20479 99.0717 252.0987 0539587 246.3419 108.0165 12.83332122250191
FO-20
1 20480U 90013C 95162.24908583 -.00000020 00000-0 35366-4 0 7986
2 20480 99.0720 251.9545 0539736 246.7022 107.6409 12.83230219250184
MOS-1B R/B
1 20491U 90013D 95164.80473224 -.00000728 00000-0 -13131-2 0 1402
2 20491 99.0429 308.1149 0470572 79.6040 285.7745 13.02976990253754
LACE
1 20496U 90015A 95165.90187558 .00001061 00000-0 39384-4 0 5473
2 20496 43.1042 144.0129 0009560 196.1155 163.9416 15.34583615297229
Nadezhda 2
1 20508U 90017A 95165.66203588 .00000057 00000-0 44880-4 0 4216
2 20508 82.9531 155.0311 0043896 313.5364 46.2159 13.73494565265306
OKEAN 2
1 20510U 90018A 95164.12851523 .00000176 00000-0 20858-4 0 4118
2 20510 82.5246 209.6006 0020805 87.0133 273.3452 14.78496767284994
GPS BII-07
1 20533U 90025A 95163.73565669 -.00000066 00000-0 10000-3 0 617
2 20533 54.8101 302.2941 0049233 80.2486 280.2933 2.00564522 38154
PegSat
1 20546U 90028A 95162.44222577 .00006947 00000-0 14368-3 0 8105
2 20546 94.1110 140.9909 0066206 1.7814 358.3646 15.43477791287592
HST
1 20580U 90037B 95165.08217120 .00000326 00000-0 17103-4 0 6737
2 20580 28.4681 70.8544 0005735 274.3174 85.6748 14.90888638 83444
MACSAT 2
1 20608U 90043B 95162.06156863 .00000128 00000-0 19740-4 0 1022
2 20608 89.9272 176.5481 0103746 277.8040 81.1387 14.64838085271810
Glonass 44
```

```
1 20619U 90045A 95163.36422729 -.00000041 00000-0 10000-3 0 1942
2 20619 65.2923 336.6366 0024392 210.7718 149.0967 2.13102455 39401
Glonass 45
1 20620U 90045B 95165.36007296 -.00000052 00000-0 10000-3 0 2048
2 20620 65.3045 336.5594 0009429 51.3689 308.7183 2.13102536 39483
Glonass 46
1 20621U 90045C 95162.61086825 -.00000036 00000-0 10000-3 0 8014
2 20621 65.2692 336.6963 0012457 198.6432 161.3326 2.13101516 39421
Kristall
1 20635U 90048A 95165.82429154 .00013014 00000-0 18389-3 0 833
2 20635 51.6441 169.5177 0005695 76.5236 283.4883 15.56901894532452
ROSAT
1 20638U 90049A 95164.18272521 .00000149 00000-0 28721-4 0 4672
2 20638 52.9897 165.0668 0013799 89.2854 270.9717 15.07193324276517
Meteor 2-19
1 20670U 90057A 95165.23960699 -.00000031 00000-0 -40756-4 0 9011
2 20670 82.5440 280.8958 0014572 207.8158 152.2221 13.84160975250703
CRRES
1 20712U 90065A 95166.08388871 .00000135 00000-0 34654-3 0 1055
2 20712 18.0071 39.8873 7183374 102.1930 339.5248 2.35417392 34432
GPS BII-08
1 20724U 90068A 95160.06723486 .00000051 00000-0 10000-3 0 9096
2 20724 54.8414 123.6921 0116691 174.1080 186.0072 2.00559774 33944
Feng Yun1-2
1 20788U 90081A 95165.89628488 .00000398 00000-0 29201-3 0 4118
2 20788 98.8148 179.0052 0016781 79.6620 280.6433 14.01356853244510
Meteor 2-20
1 20826U 90086A 95162.57594889 .00000050 00000-0 31959-4 0 9120
2 20826 82.5267 220.0187 0014554 115.7229 244.5437 13.83609102237459
GPS BII-09
1 20830U 90088A 95166.09559586 -.00000043 00000-0 10000-3 0 9196
2 20830 55.7090 65.8540 0066845 99.9833 260.8039 2.00571669 34707
GPS BIIA-10
1 20959U 90103A 95165.00925188 .00000014 00000-0 10000-3 0 8771
2 20959 55.0338 125.4819 0097309 230.4159 128.6571 2.00553997 33278
DMSP B5D2-5
1 20978U 90105A 95165.67781747 .00000116 00000-0 57105-4 0 2313
2 20978 98.6384 233.9223 0078933 176.2493 183.9296 14.32554238236952
Glonass 47
1 21006U 90110A 95164.04458806 -.00000007 00000-0 10000-3 0 7686
2 21006 65.0507 97.1992 0058421 189.3009 170.6017 2.13102883 35122
Glonass 48
1 21007U 90110B 95159.07121752 .00000015 00000-0 10000-3 0 8994
2 21007 65.0770 97.4426 0033768 179.8071 180.2069 2.13101251 35009
Glonass 49
1 21008U 90110C 95165.06227894 -.00000003 00000-0 00000+0 0 866
2 21008 65.0551 97.1902 0010404 276.4289 83.4395 2.13098961 35122
AO-21
1 21087U 91006A 95165.75698862 .00000094 00000-0 82657-4 0 6049
2 21087 82.9414 234.3702 0035938 151.0736 209.2415 13.74555853219393
```

```
RS-12/13
1 21089U 91007A 95164.05338189 -.00000047 00000-0 -66433-4 0 8076
2 21089 82.9226 103.8459 0028199 181.2320 178.8777 13.74057085218205
MOP-2
1 21140U 91015B 95162.72666420 -.00000010 00000-0 00000+0 0 150
2 21140 0.2736 84.3698 0002588 27.5308 49.1674 1.00269811 17887
Nadezhda 3
1 21152U 91019A 95165.77790383 .00000007 00000-0 -83966-5 0 1123
2 21152 82.9272 58.6704 0040761 288.6618 71.0108 13.73519693213178
Glonass 50
1 21216U 91025A 95162.65539535 -.00000037 00000-0 10000-3 0 4139
2 21216 65.0451 336.3220 0010215 184.0776 175.9151 2.13102824 32609
Glonass 51
1 21217U 91025B 95160.37784444 -.00000022 00000-0 10000-3 0 8248
2 21217 65.0334 336.3972 0010094 238.5682 121.3481 2.13101524 32540
Glonass 52
1 21218U 91025C 95160.48999329 -.00000022 00000-0 10000-3 0 2964
2 21218 65.0391 336.3844 0007414 329.9447 30.0528 2.13102824 32551
GRO
1 21225U 91027B 95163.42251090 .00002159 00000-0 42130-4 0 2712
2 21225 28.4613 248.1257 0002930 331.8000 28.2424 15.42700334112595
Meteor 3-4
1 21232U 91030A 95165.77106973 .00000050 00000-0 10000-3 0 8111
2 21232 82.5416 273.2458 0014019 5.8252 354.3018 13.16467504199062
NOAA 12
1 21263U 91032A 95165.72583827 .00000162 00000-0 91881-4 0 5241
2 21263 98.5841 189.8546 0011702 266.7379 93.2470 14.22529441212074
OKEAN 3
1 21397U 91039A 95165.36344735 .00000156 00000-0 19053-4 0 1115
2 21397 82.5230 121.5302 0023173 153.4008 206.8393 14.76376511216949
GPS BIIA-11
1 21552U 91047A 95162.28410447 -.00000047 00000-0 10000-6 0 8650
2 21552 55.9958 63.6891 0063549 242.8633 116.5091 2.00566487 28816
ERS-1
1 21574U 91050A 95165.18676327 .00000073 00000-0 43147-4 0 1614
2 21574 98.5510 239.5513 0001326 81.7068 278.4267 14.32249192204626
UO-22
1 21575U 91050B 95162.22872579 .00000020 00000-0 21142-4 0 6083
2 21575 98.3899 233.6914 0007237 304.9137 55.1368 14.36978694204643
ORBCOMM-X
1 21576U 91050C 95163.21957710 .00000036 00000-0 26943-4 0 7032
2 21576 98.3934 233.0873 0003747 321.3913 38.7003 14.36386044204699
TUBSAT-A
1 21577U 91050D 95163.21601312 .00000008 00000-0 17298-4 0 6027
2 21577 98.3885 233.6045 0006075 307.0474 53.0153 14.36485636204729
SARA
1 21578U 91050E 95165.74388979 .00000185 00000-0 73925-4 0 8037
2 21578 98.4137 241.4696 0004229 296.5887 63.4862 14.39016721205348
TDRS 4
1 21639U 91054B 95165.40592050 .00000072 00000-0 10000-3 0 9028
```

```
2 21639 0.0438 127.4111 0003947 298.8236 167.7737 1.00272530108193
Meteor 3-5
1 21655U 91056A 95166.16410438 .00000051 00000-0 10000-3 0 8094
2 21655 82.5528 220.3766 0014235 15.7532 344.4007 13.16839317184237
UARS
1 21701U 91063B 95163.12740373 -.00000124 00000-0 10245-4 0 6790
2 21701 56.9837 156.8860 0005077 104.3164 255.8433 14.96395096204810
DMSP B5D2-6
1 21798U 91082A 95165.49409189 .00000144 00000-0 99898-4 0 8778
2 21798 98.9586 177.2377 0012289 188.5997 171.4961 14.13895554182822
Glonass 53
1 21853U 92005A 95165.86380550 .00000001 00000-0 10000-3 0 138
2 21853 65.0070 96.8519 0006883 176.8345 183.2596 2.13102194 26270
Glonass 54
1 21854U 92005B 95164.27646956 -.00000007 00000-0 00000+0 0 1489
2 21854 65.0042 96.8795 0016461 12.6055 347.4186 2.13103807 26220
Glonass 55
1 21855U 92005C 95165.74812644 .00000000 00000-0 00000+0 0 1394
2 21855 65.0042 96.8357 0007245 215.0262 144.9153 2.13102118 26244
JERS-1
1 21867U 92007A 95165.17236905 .00001274 00000-0 11103-3 0 6081
2 21867 97.7185 242.0097 0002685 90.8158 269.3535 14.98645916182590
GPS BIIA-12
1 21890U 92009A 95165.24447569 .00000009 00000-0 10000-3 0 6650
2 21890 53.9290 241.8459 0058364 181.7839 178.2697 2.00576541 24248
GPS BIIA-13
1 21930U 92019A 95160.95920832 -.00000049 00000-0 10000-3 0 6372
2 21930 55.7013 3.5384 0039316 173.1817 186.9086 2.00566109 23081
EUVE
1 21987U 92031A 95163.34224003 .00000876 00000-0 30922-4 0 4608
2 21987 28.4324 155.4826 0009367 312.7215 47.2592 15.19303546167212
SAMPEX
1 22012U 92038A 95163.01426830 -.00000067 00000-0 -79791-5 0 6379
2 22012 81.6712 151.1566 0117360 305.1299 53.8932 14.91392676159908
GPS BIIA-14
1 22014U 92039A 95164.99101481 .00000062 00000-0 10000-3 0 5583
2 22014 54.8488 183.3177 0093207 312.4882 46.7594 2.00572141 15000
Glonass 56
1 22056U 92047A 95162.83227373 -.00000038 00000-0 00000+0 0 492
2 22056 64.8700 336.4409 0003165 279.4459 80.5275 2.13103397 22275
Glonass 57
1 22057U 92047B 95163.59672602 -.00000044 00000-0 00000+0 0 482
2 22057 64.8907 336.4361 0006789 333.4904 26.4807 2.13102597 22263
Glonass 58
1 22058U 92047C 95160.72135863 -.00000024 00000-0 10000-3 0 212
2 22058 64.8890 336.5374 0008571 272.6882 87.2313 2.13102963 22253
TOPEX
1 22076U 92052A 95164.37480832 -.00000061 00000-0 00000+0 0 8845
2 22076 66.0412 260.7878 0007589 266.4618 93.5528 12.80929279132757
KO-23
```

```
1 22077U 92052B 95163.30391514 -.00000037 00000-0 10000-3 0 4996
2 22077 66.0809 245.9881 0007528 199.5187 160.5535 12.86291677133100
S80/T
1 22078U 92052C 95165.25374811 -.00000037 00000-0 10000-3 0 4972
2 22078 66.0862 240.8079 0007946 188.0006 172.0860 12.86575848133430
GPS BIIA-15
1 22108U 92058A 95161.46025127 .00000010 00000-0 00000+0 0 5778
2 22108 54.1756 242.7823 0114050 151.3917 209.3178 2.00567584 20110
FREJA
1 22161U 92064A 95166.20539694 -.00000264 00000-0 -60571-4 0 5216
2 22161 62.9953 93.7557 0810297 346.6940 11.3783 13.21837206129786
LAGEOS II
1 22195U 92070B 95165.49888953 -.00000009 00000-0 10000-3 0 4097
2 22195 52.6487 224.6902 0138150 275.4053 83.0762 6.47293989 62407
GPS BIIA-16
1 22231U 92079A 95165.13240038 .00000060 00000-0 10000-3 0 5530
2 22231 54.6161 184.4299 0039536 283.5876 76.0181 2.00565028 18760
GPS BIIA-17
1 22275U 92089A 95163.28965411 .00000085 00000-0 10000-3 0 5630
2 22275 54.6264 182.0866 0053642 252.1539 107.3250 2.00561250 18137
TDRS 5
1 22314U 93003B 95164.04193959 -.00000287 00000-0 10000-3 0 5215
2 22314 1.8638 71.9133 0001055 12.3287 146.0013 1.00267516 8874
GPS BIIA-18
1 22446U 93007A 95165.35859422 -.00000067 00000-0 10000-3 0 5579
2 22446 54.4595 302.4560 0078689 1.0738 358.9332 2.00579203 17165
Glonass 59
1 22512U 93010A 95165.39576153 -.00000002 00000-0 10000-3 0 7074
2 22512 65.0158 96.7015 0008130 201.9868 157.9660 2.13102021 17838
Glonass 60
1 22513U 93010B 95165.33508669 -.00000002 00000-0 00000+0 0 7701
2 22513 65.0067 96.7176 0006539 206.1236 153.8340 2.13102341 18020
Glonass 61
1 22514U 93010C 95166.09785598 .00000002 00000-0 00000+0 0 7679
2 22514 65.0304 96.6735 0009967 193.2020 166.7636 2.13102790 18041
ASTRO-D
1 22521U 93011A 95163.40566929 .00001065 00000-0 69725-4 0 4148
2 22521 31.1079 268.1266 0056545 91.0333 269.6784 15.02281639126659
UFO F1
1 22563U 93015A 95165.94550148 -.00000114 00000-0 10000-3 0 4220
2 22563 26.0058 294.3548 0002644 232.5548 87.1280 0.99253191 12436
GPS BIIA-19
1 22581U 93017A 95165.99683231 -.00000078 00000-0 10000-3 0 4394
2 22581 55.2133 2.9094 0056791 36.9826 323.4428 2.00575797 16235
ARSENE
1 22654U 93031B 95162.08456956 -.00000109 00000-0 10000-3 0 3169
2 22654 2.5509 84.9726 2895156 212.1828 125.6082 1.42201694 6300
GPS BIIA-20
1 22657U 93032A 95160.14351515 -.00000050 00000-0 10000-3 0 4743
2 22657 55.2393 2.9858 0072438 213.8878 145.6528 2.00566456 11449
```

```
RADCAL
1 22698U 93041A 95165.83468231 .00000039 00000-0 11139-4 0 4070
2 22698 89.5397 290.6262 0093716 85.6545 275.5342 14.21347110102102
GPS BIIA-21
1 22700U 93042A 95165.59563739 .00000005 00000-0 10000-3 0 4312
2 22700 54.3122 243.3871 0036191 347.9153 12.0763 2.00563934 14354
NOAA 13
1 22739U 93050A 95165.80608999 .00000013 00000-0 32306-4 0 8233
2 22739 98.9945 114.6456 0009865 175.7130 184.4119 14.10935633 95106
GPS BIIA-22
1 22779U 93054A 95164.18454774 -.00000067 00000-0 10000-3 0 4806
2 22779 54.5751 302.4988 0019526 245.4037 114.3780 2.00569406 13086
Meteor 2-21
1 22782U 93055A 95164.80905342 .00000044 00000-0 27211-4 0 4089
2 22782 82.5474 279.8598 0021243 296.0074 63.8897 13.83033020 90071
UFO F2
1 22787U 93056A 95162.83561774 -.00000063 00000-0 00000+0 0 4593
2 22787 4.5126 325.0960 0003537 78.4695 228.1931 1.00272320 5107
SPOT 3
1 22823U 93061A 95166.16471198 -.00000298 00000-0 -11952-3 0 4470
2 22823 98.7362 240.3055 0001055 59.5290 300.5995 14.20020056 89002
STELLA
1 22824U 93061B 95164.19732451 -.00000065 00000-0 -85629-5 0 3952
2 22824 98.6180 240.3472 0005748 228.6421 131.4267 14.27101167 89161
AO-27
1 22825U 93061C 95163.75491535 .00000009 00000-0 21480-4 0 3971
2 22825 98.6159 240.2279 0007744 235.1495 124.8958 14.27664479 89134
IO-26
1 22826U 93061D 95164.19972801 -.00000015 00000-0 11693-4 0 3963
2 22826 98.6181 240.7632 0008383 233.7265 126.3146 14.27771950 89204
HEATHSAT
1 22827U 93061E 95163.66035415 .00000031 00000-0 30053-4 0 4572
2 22827 98.6158 240.1699 0008536 221.6177 138.4358 14.27895477 89136
ITAMSAT
1 22828U 93061F 95164.19716605 -.00000003 00000-0 16533-4 0 3744
2 22828 98.6139 240.7966 0009435 218.0687 141.9831 14.28102196 57303
PO-28
1 22829U 93061G 95164.20873465 .00000051 00000-0 37959-4 0 3887
2 22829 98.6145 240.8414 0009313 218.3067 141.7452 14.28081748 89222
KO-25
1 22830U 93061H 95165.74072849 -.00000002 00000-0 16286-4 0 4075
2 22830 98.5133 235.5820 0011047 189.4939 170.6035 14.28090970 89444
GPS BIIA-23
1 22877U 93068A 95161.74836727 -.00000049 00000-0 10000-3 0 2865
2 22877 55.3597 63.9841 0023674 305.4722 54.3199 2.00547336 11922
METEOSAT 6
1 22912U 93073B 95165.29285880 -.00000093 00000-0 00000+0 0 3194
2 22912 0.1178 273.3174 0002093 215.2074 229.1949 1.00273371 4157
HST Array
1 22920U 90037C 95164.89510237 .00005048 00000-0 37168-3 0 3342
```

```
2 22920 28.4705 33.0380 0003395 149.4502 210.6274 15.01170219 83814
Meteor 3-6
1 22969U 94003A 95164.01921103 .00000051 00000-0 10000-3 0 1741
2 22969 82.5608 161.6750 0017116 83.9939 276.3143 13.16729850 66338
TUBSAT-B
1 22970U 94003B 95162.91781803 .00000051 00000-0 10000-3 0 1651
2 22970 82.5563 162.3877 0017923 83.2344 277.0822 13.16825008 66195
GPS BIIA-24
1 23027U 94016A 95164.81487816 -.00000070 00000-0 10000-3 0 2177
2 23027 55.0708 4.8254 0062703 196.7567 163.0685 2.00555975 9290
Glonass 62
1 23043U 94021A 95162.42195234 -.00000036 00000-0 00000+0 0 2139
2 23043 64.7636 336.8681 0005747 173.2028 186.8183 2.13103183 9081
Glonass 63
1 23044U 94021B 95165.58943792 -.00000054 00000-0 00000+0 0 1915
2 23044 64.7568 336.7550 0028610 201.0775 158.8030 2.13102985 9150
Glonass 64
1 23045U 94021C 95162.95012626 -.00000039 00000-0 00000+0 0 2001
2 23045 64.7474 336.8596 0011055 38.2362 321.8530 2.13102720 9092
GOES 8
1 23051U 94022A 95160.53365070 -.00000246 00000-0 10000-3 0 3269
2 23051 0.0303 344.2604 0003380 140.3920 249.5170 1.00257702 11627
MSTI 2
1 23101U 94028A 95162.56906440 .00004431 00000-0 79307-4 0 2037
2 23101 97.1000 355.8802 0010142 260.1354 99.8752 15.50450753 61659
STRV-1A
1 23125U 94034B 95165.35670539 .00000945 00000-0 46794-3 0 1631
2 23125 7.4756 32.4945 7260415 117.2601 331.3854 2.29923785 7588
STRV-1B
1 23126U 94034C 95162.04732762 .00000802 00000-0 29624-3 0 1547
2 23126 7.4959 33.9444 7263674 114.3517 333.4760 2.29553401 7558
Nadezhda 4
1 23179U 94041A 95162.44985101 .00000035 00000-0 19883-4 0 1077
2 23179 82.9467 152.1156 0038220 82.0522 278.4977 13.75668438 45683
Glonass 65
1 23203U 94050A 95162.61858996 .00000078 00000-0 00000+0 0 1539
2 23203 64.7957 216.5958 0006962 158.0789 202.0443 2.13102087 6484
Glonass 66
1 23204U 94050B 95163.79119386 .00000073 00000-0 00000+0 0 1639
2 23204 64.7849 216.5946 0014960 341.5467 18.4877 2.13102279 6507
Glonass 67
1 23205U 94050C 95165.08185688 .00000060 00000-0 00000+0 0 1504
2 23205 64.7966 216.5363 0002709 281.8161 78.2414 2.13102315 6531
DMSP B5D2-7
1 23233U 94057A 95165.56356804 .00000099 00000-0 77092-4 0 3778
2 23233 98.8786 223.6788 0012920 141.2008 219.0094 14.12612905 40782
OKEAN 1-7
1 23317U 94066A 95165.14797516 .00000153 00000-0 19853-4 0 728
2 23317 82.5448 38.4986 0024586 197.5733 162.4630 14.73938640 36171
ELEKTRO
```

```
1 23327U 94069A 95158.67918981 -.00000093 00000-0 10000-3 0 743
2 23327 0.7910 262.1411 0006728 183.0882 130.7914 1.00269461 2237
RESURS 1-3
1 23342U 94074A 95166.25554121 .00000102 00000-0 25293-4 0 1327
2 23342 98.0166 225.9521 0001872 74.9388 285.2025 14.69745114 32763
Glonass 68
1 23396U 94076A 95163.98660427 -.00000008 00000-0 00000+0 0 1119
2 23396 64.9404 96.8403 0029179 193.1994 166.7079 2.13102473 4357
Glonass 69
1 23397U 94076B 95166.03910731 .00000001 00000-0 00000+0 0 1140
2 23397 64.9287 96.7851 0014226 322.3233 37.5679 2.13102212 4398
Glonass 70
1 23398U 94076C 95164.51477351 -.00000006 00000-0 00000+0 0 1199
2 23398 64.9177 96.8199 0004647 310.6576 49.3020 2.13102260 4371
RS-15
1 23439U 94085A 95163.35800843 -.00000039 00000-0 10000-3 0 563
2 23439 64.8189 262.7956 0167796 263.2671 94.9128 11.27523775 18977
NOAA 14
1 23455U 94089A 95165.76243096 .00000026 00000-0 38902-4 0 2113
2 23455 98.9021 108.2956 0008617 196.9650 163.1223 14.11516058 23475
ODERACS II A
1 23471U 95004C 95166.16862853 .00019811 00000-0 92737-4 0 1333
2 23471 51.6459 146.1199 0014580 88.9505 271.3156 15.83115989 20853
ODERACS II B
1 23472U 95004D 95165.12760385 .00047849 12019-4 15716-3 0 1369
2 23472 51.6428 147.3139 0012880 93.9476 266.2827 15.91036857 20742
Glonass 71
1 23511U 95009A 95163.65400045 -.00000044 00000-0 00000+0 0 576
2 23511 64.7786 337.0962 0004893 332.8640 27.1158 2.13102684 2072
Glonass 72
1 23512U 95009B 95165.82449955 -.00000054 00000-0 00000+0 0 639
2 23512 64.7666 337.0332 0012443 193.7848 166.1762 2.13102720 2127
Glonass 73
1 23513U 95009C 95165.41366706 -.00000053 00000-0 00000+0 0 614
2 23513 64.7732 337.0172 0005292 200.7908 159.1890 2.13103166 2112
Soyuz TM-21
1 23519U 95010A 95165.82429154 .00013014 00000-0 18389-3 0 1056
2 23519 51.6441 169.5177 0005695 76.5236 283.4883 15.56901894 14462
SFU
1 23521U 95011A 95165.09903184 .00006598 00000-0 22233-3 0 656
2 23521 28.4541 95.3031 0019480 186.9706 173.0873 15.28404349 13462
GMS 5
1 23522U 95011B 95156.34500397 -.00000113 00000-0 00000+0 0 308
2 23522 0.9396 292.6671 0000601 319.5883 284.9336 1.00270849 668
DMSP B5D2-8
1 23533U 95015A 95165.43733969 .00000022 00000-0 35630-4 0 1050
2 23533 98.8315 167.8561 0008214 28.1565 332.0050 14.12688822 11566
1995017C
1 23547U 95017C 95165.87225096 .00000178 00000-0 67799-4 0 289
2 23547 69.9807 304.6835 0013027 331.2571 28.7839 14.45366010 10442
```

```
1995017D
1 23548U 95017D 95161.88426721 -.00000002 00000-0 16624-4 0 306
2 23548 69.9859 314.1321 0012366 324.6023 35.4284 14.44802777 9866
OFEQ 3
1 23549U 95018A 95163.78254258 .00007165 00000-0 19207-3 0 522
2 23549 143.3672 144.7949 0258729 279.1267 78.0352 15.06684053 10303
GFZ-1
1 23558U 86017JE 95165.23295842 .00002199 00000-0 33084-4 0 338
2 23558 51.6497 171.5644 0005597 276.9240 83.1116 15.59901308532372
ERS-2
1 23560U 95021A 95165.20875091 .00000047 00000-0 33607-4 0 817
2 23560 98.5501 239.5826 0001425 85.0579 275.0768 14.32248655 7751
INTELSAT 706
1 23571U 95023A 95163.46883237 -.00000293 00000-0 00000+0 0 234
2 23571 0.0764 147.1965 0012345 46.7703 179.1430 1.00273423 290
1995023B
1 23572U 95023B 95162.89821903 .00394965 -42417-4 41967-3 0 70
2 23572 7.2901 137.9401 7200391 201.4381 106.0141 2.45759424 652
Spektr
1 23579U 95024A 95165.82429154 .00013014 00000-0 18389-3 0 438
2 23579 51.6441 169.5177 0005695 76.5236 283.4883 15.56901894 4029
1995024B
1 23580U 95024B 95160.40295446 .19282816 12770-4 11666-3 0 737
2 23580 51.6399 189.3490 0006749 262.0950 98.2631 16.53778081 3274
GOES 9
1 23581U 95025A 95159.66666667 -.00000184 00000-0 00000+0 0 251
2 23581 0.2772 253.1097 0005201 109.0366 43.5413 1.00354699 174
1995025B
1 23582U 95025B 95165.52459250 .00092479 93338-6 38197-3 0 253
2 23582 27.0994 141.4711 7575270 191.4720 128.1050 1.97282130 447
1995020C
1 23583U 95020C 95165.43569625 .00018113 00000-0 24817-3 0 195
2 23583 51.6482 171.4171 0005100 70.1888 289.9652 15.57435607532520
Cosmos 2312
1 23584U 95026A 95164.30085589 -.00001018 00000-0 14479-2 0 222
2 23584 62.9070 131.1198 7358588 318.2459 4.5445 2.00593325 403
1995026B
1 23585U 95026B 95166.14671139 .00250252 75214-5 46642-3 0 361
2 23585 62.8204 55.1209 0230721 121.6988 240.6884 15.67478242 3336
1995026C
1 23586U 95026C 95166.34280012 .01322928 80186-5 57574-3 0 686
2 23586 62.8436 52.7272 0160120 124.2484 237.4604 15.98967498 3392
1995020D
1 23588U 95020D 95155.10738870 .00000214 00000-0 10000-4 0 39
2 23588 51.5643 223.0439 0014507 304.4358 55.9431 15.56317829530999
UFO F5
1 23589U 95027A 95162.55955990 .00000050 00000-0 00000+0 0 209
2 23589 5.0803 322.4398 0172742 145.2952 182.6711 1.00255748 162
1995027B
1 23590U 95027B 95164.27192304 .00004411 00000-0 15432-2 0 128
```

```
2 23590 26.9379 288.0606 6624079 183.3046 168.0467 3.12984909 373
1995014C
1 23591U 95014C 95152.16822844 .28896463 58209-5 21345-2 0 23
2 23591 67.1021 179.9664 0056543 106.9455 254.8135 16.31995263 11324
1995014D
1 23592U 95014D 95152.16875618 .33333659 57213-5 48100-2 0 22
2 23592 67.1218 179.9437 0053312 111.3520 250.2493 16.29697784 11326
1995011H
1 23593U 95011H 95152.03251678 .00221329 00000-0 50934-2 0 18
2 23593 28.4522 182.1104 0003723 31.9147 328.1591 15.40697481 11482
1995015D
1 23594U 95015D 95164.44238542 .00000734 00000-0 41858-3 0 39
2 23594 98.8271 166.8457 0003419 2.6030 357.5163 14.12807335 1628
1995015E
1 23595U 95015E 95164.44303561 .00000649 00000-0 37285-3 0 38
2 23595 98.8265 166.8627 0009704 41.2254 318.9652 14.12791902 11426
1995028A
1 23596U 95028A 95165.88983142 .00065729 00000-0 10741-2 0 218
2 23596 65.0389 339.2199 0009348 264.3923 95.6156 15.52119064 1026
1995028B
1 23597U 95028B 95159.68438728 .34405963 86767-5 32676-3 0 64
2 23597 65.0057 359.9697 0116834 54.7033 306.5078 16.32836446 84
1995029A
1 23598U 95029A 95165.84163408 -.00000130 00000-0 00000+0 0 111
2 23598 0.7981 77.2551 1642658 182.1852 81.6451 1.25858667 58
1995029B
1 23599U 95029B 95166.00157570 .00018648 00000-0 21957-2 0 102
2 23599 7.1687 79.1765 7116857 182.4632 169.3654 2.50903936 4280
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1294. Looking for Pittsfield Mass area frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-06-17 00:00:00 UTC
From: Bdaoust@cris.com
Message-ID: <3rta5r$f2f@warp.cris.com>
Source record: 24800

--

****
Brian Daoust Email: bdaoust@pobox.com
Criminal Justice Major bdaoust@cris.com
Westfield State College bdaoust@netcom.com
9336282@foma.wsc.mass.edu
****

1295. Re: TRAKSAT satellite tracking software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-17 00:00:00 UTC
From: milliron@ix.netcom.com
Message-ID: <3rtb0a$1v1@ixnews2.ix.netcom.com>
Source record: 24801
Cross-posted to: rec.radio.amateur.space,sci.astro.amateur

In <9506161957.AA03224@hawaii> phubbard@baosc.com (Phil Hubbard x6177) writes:
>
>Hello,
>
>I need to know where I can obtain TRAKSAT; a program written by Paul Trauffer
>of Huntsville, AL, for PCs.
//Stuff removed
>It doesn't have to be a BBS; anonymous ftp sites are fine as well. And, if
>you don't know where to find TRAKSAT, but know of a good satellite tracker
>for DOS, I'll gladly take that information as well.
>
>Please note: I don't have access to Usenet, and I'm using an email-to-Usenet
>gateway to post this. So, please send replies directly to me instead of
>to the group, or I won't see them. I will post a summary early next week.
>
>Thanks in advance,
>
>Phil Hubbard
>phubbard@baosc.com

Ditto to the above, except I DO have Usenet access so please post replies here as well!

1296. sts-71 sarex??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-17 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3rveit$1ask@ns2-1.CC.Lehigh.EDU>
Source record: 24802

After learning abou the June 23 launch of STS71, i wondered
if there Sarex will be up also?

thanks

DAvid
|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1297. KPC-9612 & WISP Xmit Problem

Newsgroup: rec.radio.amateur.space
Date: 1995-06-18 00:00:00 UTC
From: randyh@gvgadg.gvg.tek.com
Message-ID: <3s1i4o$jk3@gv-gate.gvg.tek.com>
Source record: 24803

I am currently using a KPC-9612 on the 9600 baud satellites. It work very good. But, once in a while, the TNC will not transmit from WISP. I see WISP ask for a file or fill, but the Xmit LED, and radio, don't transmit. When I close WISP and go into a terminal program, the TNC transmits.

I do set the TNC for the following:
maxusers 0/1
mydrop 1/0
int xkiss

Then I RESET the TNC.

When I go back into WISP, it still doesn't go into transmit. I fool around with various parameters, and it start to work. But, I haven't figured out the real fix yet.

And, trying different combinations during a pass is real fun. The only way to test the TNC is with WISP during a pass. Is there anyway to get WISP to transmit without a satellite?

So, does anyone have any ideas?

Randy
WA2AGE

1298. Amateur Radio Astronomy

Newsgroup: rec.radio.amateur.space
Date: 1995-06-18 00:00:00 UTC
From: BMLT76A@prodigy.com
Message-ID: <3s1l1c$1h1c@usenetp1.news.prodigy.com>
Source record: 24804

This may be the wrong usenet group to post this to but here goes: I'm trying to contact others who are interested in Amateur radio astronomy. Are there any SARA members online? I'm very interested in joining. Thanks in advance.

Les Rayburn, KCA4TSI

1299. Re: Amateur Radio Astronomy

Newsgroup: rec.radio.amateur.space
Date: 1995-06-18 00:00:00 UTC
From: daleh@skypoint.com
Message-ID: <3s1mk1$69v@stratus.skypoint.net>
Source record: 24805

In article <3s1l1c$1h1c@usenetp1.news.prodigy.com>, BMLT76A@prodigy.com (Les Rayburn) says:
>
>
>This may be the wrong usenet group to post this to but here goes: I'm
>trying to contact others who are interested in Amateur radio astronomy.
>Are there any SARA members online? I'm very interested in joining.
>Thanks in advance.
>
>Les Rayburn, KCA4TSI
>
>You can reach SARA % Hal Braschwitz, 3623 W 139th St, Cleveland, OH 44111

Dale A. Hagert NM0H
3881 Serpentine Circle
Eagan, MN 55122
612-688-7155
email daleh@skypoint.com

1300. Re: sts-71 sarex??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-18 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3rvv4i$m36@over.mhv.net>
Source record: 24806

c002@Lehigh.EDU wrote:
: After learning abou the June 23 launch of STS71, i wondered
: if there Sarex will be up also?

: thanks

: DAvid
: |---|
: | David Roseman | c002@lehigh.edu OUTTA ORDER! |
: | SysOp of NODE 3 BBS | The Flying HAm - BBS | |
: | Running OBV/2 Software | TechnoMage - BBS | |
: | | N3SQE/SVARC - Ham V |
: | HAmmy in IRC | N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet |
: |------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----|

Why YES IT WILL! But, they are using new freqs. for the docking missions.
uplinks are: 144.450 and 144.470. The downlink will be 145.840. They
will NOT favor one freq over the other, as always listen first.
Mir will stay on it's normal frequency.

Tom Randall - KB2SMS

1301. Re: sts-71 sarex??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-18 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3s2lil$158n@ns4-1.CC.Lehigh.EDU>
Source record: 24807

>: After learning abou the June 23 launch of STS71, i wondered
>: if there Sarex will be up also?
>
>
>
> Why YES IT WILL! But, they are using new freqs. for the docking missions.
>uplinks are: 144.450 and 144.470. The downlink will be 145.840. They
>will NOT favor one freq over the other, as always listen first.
>Mir will stay on it's normal frequency.
>
>Tom Randall - KB2SMS

thanks!!

|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1302. IC 970 connection to rfc 4-310 70 cm amp

Newsgroup: rec.radio.amateur.space
Date: 1995-06-19 00:00:00 UTC
From: ke4hw@aol.com
Message-ID: <3s4kqt$e34@newsbf02.news.aol.com>
Source record: 24808

Does anyone know which pins to use in the IC 970 accessory DIN plug to key
the amplifier. Is an extra outside relay required?
Helpful reply appreciated.
73, George, KE4HW

1303. Navstar GPS Constellation Status (95-06-19)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-19 00:00:00 UTC
From: lang@unb.ca
Message-ID: <ID9839.D950619.T110503.lang@unb.ca>
Source record: 24809
Cross-posted to:
comp.infosystems.gis,rec.aviation.misc,rec.boats,rec.radio.amateur.space,sci.electronics,sci.geo.satellite-nav,sci.space.news

```
Navstar GPS Constellation Status
(95-06-19)

Blk NASA Orbit Launch
II PRN Internat. Catalog Plane Date
Seq SVN Code ID Number Pos'n (UT) Clock Available/Decommissioned
-------------------------------------------------------------------------------
Block I
01 04 1978-020A 10684 78-02-22 78-03-29 85-07-17
02 07 1978-047A 10893 78-05-13 78-07-14 81-07-16
03 06 1978-093A 11054 78-10-06 78-11-13 92-05-18
04 08 1978-112A 11141 78-12-10 79-01-08 89-10-14
05 05 1980-011A 11690 80-02-09 80-02-27 83-11-28
06 09 1980-032A 11783 80-04-26 80-05-16 91-03-06
07 81-12-18 Launch failure
08 11 1983-072A 14189 83-07-14 83-08-10 93-05-04
09 13 1984-059A 15039 84-06-13 84-07-19 94-06-20
10 12 1984-097A 15271 A-1 84-09-08 Rb 84-10-03
11 03 1985-093A 16129 85-10-09 85-10-30 94-04-13

Block II
II-1 14 14 1989-013A 19802 E-1 89-02-14 Cs 89-04-15 05:02 UT
II-2 13 02 1989-044A 20061 B-3 89-06-10 Cs 89-08-10 20:46 UT
II-3 16 16 1989-064A 20185 E-3 89-08-18 Cs 89-10-14 20:21 UT
II-4 19 19 1989-085A 20302 A-4 89-10-21 Rb 89-11-23 03:13 UT
II-5 17 17 1989-097A 20361 D-3 89-12-11 Cs 90-01-06 03:30 UT
II-6 18 18 1990-008A 20452 F-3 90-01-24 Cs 90-02-14 22:26 UT
II-7 20 20 1990-025A 20533 B-2 90-03-26 Rb 90-04-18 23:13 UT
II-8 21 21 1990-068A 20724 E-2 90-08-02 Cs 90-08-22 15:00 UT
II-9 15 15 1990-088A 20830 D-2 90-10-01 Cs 90-10-15 00:39 UT

Block IIA
II-10 23 23 1990-103A 20959 E-4 90-11-26 Cs 90-12-10 23:45 UT
II-11 24 24 1991-047A 21552 D-1 91-07-04 Rb 91-08-30 04:44 UT
II-12 25 25 1992-009A 21890 A-2 92-02-23 Cs 92-03-24 11:00 UT
II-13 28 28 1992-019A 21930 C-2 92-04-10 Cs 92-04-25 20:32 UT
II-14 26 26 1992-039A 22014 F-2 92-07-07 Cs 92-07-23 19:43 UT
II-15 27 27 1992-058A 22108 A-3 92-09-09 Cs 92-09-30 20:08 UT
II-16 32 01 1992-079A 22231 F-1 92-11-22 Rb 92-12-11 14:49 UT
II-17 29 29 1992-089A 22275 F-4 92-12-18 Cs 93-01-05 16:39 UT
II-18 22 22 1993-007A 22446 B-1 93-02-03 Cs 93-04-04 05:20 UT
II-19 31 31 1993-017A 22581 C-3 93-03-30 Rb 93-04-13 20:53 UT
II-20 37 07 1993-032A 22657 C-4 93-05-13 Cs 93-06-12 16:15 UT
```

```
II-21 39 09 1993-042A 22700 A-1 93-06-26 Cs 93-07-20 12:54 UT
II-22 35 05 1993-054A 22779 B-4 93-08-30 Cs 93-09-28 19:29 UT
II-23 34 04 1993-068A 22877 D-4 93-10-26 Cs 93-11-22 18:20 UT
II-24 36 06 1994-016A 23027 C-1 94-03-10 Cs 94-03-28 14:20 UT
38 To be launched on need in FY '95
33 To be launched on need in FY '95
40 To be launched on need in FY '96
30 To be launched on need in FY '96

Notes
-----
1. NASA Catalog Number is also known as NORAD or U.S. Space Command object
number.
2. No orbital plane position = satellite no longer operational.
3. Clock: Rb = Rubidium; Cs = Cesium; PRN19 clock switched from Cs to Rb
between 94-10-16 and 94-10-19; PRN20 clock switched from Cs to Rb between
94-08-06 and 94-08-17; PRN31 clock switched from Cs to Rb on 95-01-18.
4. S/A had been enabled on Block II satellites during part of 1990; S/A off
between about 10 August 1990 and 1 July 1991 due to Gulf crisis; standard
level re-implemented on 15 November 1991; occasionally off for test and
other purposes. Currently, PRN15 and PRN28 appear to have little or no S/A
imposed.
5. Anti-spoofing was activated on 94-01-31 at 00:00 UT on all Block II
satellites (ref. NANU 050-94042); occasionally off for test and other
purposes. Anti-spoofing was turned off at 20:00 UT on 95-04-19 and back on
on 95-05-10. On 95-06-19, AS was again turned off.
6. PRN number of SVN32 was changed from 32 to 01 on 93-01-28.
7. PRN05 and PRN06 are equipped with corner-cube reflectors for satellite laser
ranging (SLR). SLR tracking of the satellites will permit onboard clock
errors and satellite ephemeris errors in GPS tracking to be differentiated.
8. The decommissioning date for PRN06/SVN03 is the date of termination of
operations of this satellite (ref. USNO) and is about 3 weeks later than the
date GPSIC gives for "deactivation".
9. The operational frequency standard of PRN32 was changed from a Cs to a Rb
between 95-05-03 and 95-05-12.
10. The operational frequency standard of PRN36 was changed from a Rb to a Cs
between 95-04-27 and 95-05-03.

==============================================================================
```

Richard B. Langley Internet: LANG@UNB.CA or SE@UNB.CA
Geodetic Research Laboratory BITnet: LANG@UNB or SE@UNB
Dept. of Geodesy and Geomatics Engineering Phone: (506) 453-5142
University of New Brunswick FAX: (506) 453-4943
Fredericton, N.B., Canada E3B 5A3 Telex: 014-46202
Fredericton? Where's that? See: http://degaulle.hil.unb.ca/NB/fredericton.html

```
==============================================================================
```

1304. Re: TRAKSAT satellite tracking software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-19 00:00:00 UTC
From: "Thomas C. Johnson" <johnsotc@email.wpafb.af.mil>
Message-ID: <3s44g8$gq3@blackbird.afit.af.mil>
Source record: 24810
Cross-posted to: rec.radio.amateur.space,sci.astro.amateur

phubbard@baosc.com (Phil Hubbard x6177) wrote:

>... And, if
>you don't know where to find TRAKSAT, but know of a good satellite tracker
>for DOS, I'll gladly take that information as well.
>

You might try PC-Track 3.1 available at ftp://ftp.jsci.com/ftp/pctrk31.zip, which
is part of my web site at http://www.jsci.com/

Tom Johnson
email@jsci.com

1305. Re: Amateur Radio Astronomy

Newsgroup: rec.radio.amateur.space
Date: 1995-06-19 00:00:00 UTC
From: hudakjm@mcmaster.ca
Message-ID: <hudakjm.78.001067F0@mcmaster.ca>
Source record: 24811

>Are there any SARA members online? I'm very interested in joining.

Try: //irsociety.com/0c:/sara.html

_____
John Hudak hudakjm@mcmaster.ca
Electron Optics
Institute for Materials Research
McMaster University
Hamilton, Ontario, Canada

1306. Re: KPC-9612 & WISP Xmit Problem

Newsgroup: rec.radio.amateur.space
Date: 1995-06-19 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3s4f60$qul@newshost.lanl.gov>
Source record: 24812

I
> I am currently using a KPC-9612 on the 9600 baud satellites. It work
> very good. But, once in a while, the TNC will not transmit from WISP.
> I see WISP ask for a file or fill, but the Xmit LED, and radio, don't
> transmit. When I close WISP and go into a terminal program, the TNC
> transmits.
>
> I do set the TNC for the following:

> maxusers 0/1
You do not need to do this

> mydrop 1/0
You do need to do this

> int xkiss
You do not need to do this WISP does it for you.

>
> Then I RESET the TNC.
You do not need to reset the TNC WISP will reset it.
>
> When I go back into WISP, it still doesn't go into transmit. I fool
> around with various parameters, and it start to work. But, I haven't
> figured out the real fix yet.
>
> So, does anyone have any ideas?
>
> Randy
> WA2AGE
>
I run a 9612 with a FT-736r very successfully on KO-23, KO-25 and
UO-22. If you want a copy of my WISP.ini file I can e-mail it to you.
I had a bit of trouble getting going but now it is completely seamless.

73 de Jerry
KC5EGG AMSAT

1307. Cheap Elevation Rotor

Newsgroup: rec.radio.amateur.space
Date: 1995-06-20 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3s6grl$479@nnrp2.primenet.com>
Source record: 24565

This is an eternal subject, at least for the four years I've been licensed.

I have been using the old Radio Shack/Alliance rotor found at the swap meet. It sometimes overheated and wouldn't move. So I've been thinking of buying another, the one I posted about. Well I did, here are the facts and conjecture.

Gemini Industries Inc.
215 Entin Rd.
Clifton, NJ 07014

It is a through-the-body style, with a position sensing pot and 5-wire control. It is a DC device however, 13.8 in fact. The bolt spacing is different from the Alliance. For new installations this doesn't matter. It caused a little extra work to replace the Alliance.
The DC nature means the magazine articles aimed at the Alliance must be reviewed carefully. The Alliance was a 24 volt AC device. But 13.8 VDC means much easier hacking and even portable use. The circut appears to be a balance bridge, with light-duty power transitors controlling the motor.
The fit and finish of this rotor is nowhere near as good as the old Alliances I have. I had to file-out the tube before the 1-1/4 cross-boom would slide in. This was a major pain.
The rotor is up and functioning. Now I have to find why my 726 only delivers 3 watts on 435. Someday I will get on the birds.

Jim n7tcf@primenet.com

1308. Re: sts-71 sarex??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-20 00:00:00 UTC
From: goris@fc.hp.com
Message-ID: <3s6u00$kk1@tadpole.fc.hp.com>
Source record: 24566

Can anyone tell me where to get the absolute most up-to-date 2-line orbital element set for the Shuttle, and a pointer to some software (shareware?) that converts this to viewing information (rise/set/alt/az info)? Since the Shuttle will be docking with MIR, I would expect their orbital elements to change a lot, meaning we'll need fresh data to predict passes.

Also, what frequencies does MIR normally use?

(I'm new to this aspect of amateur radio)

-Andy Goris
AA0CM
goris@fc.hp.com

1309. Re: sts-71 sarex??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-20 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3s7cje$boj@over.mhv.net>
Source record: 24567

Andy Goris (goris@fc.hp.com) wrote:
: Can anyone tell me where to get the absolute most up-to-date 2-line orbital
: element set for the Shuttle, and a pointer to some software (shareware?)
: that converts this to viewing information (rise/set/alt/az info)? Since
: the Shuttle will be docking with MIR, I would expect their orbital elements
: to change a lot, meaning we'll need fresh data to predict passes.

: Also, what frequencies does MIR normally use?

: (I'm new to this aspect of amateur radio)

: -Andy Goris
: AA0CM
: goris@fc.hp.com

Mir uses 145.550 simplex. As for where to get updated shuttle elms
subscribe to the shuttle element e-mail list:

listserv@alsys.com

In message body type subscribe elements your name

then send! You'll get confirmation almost right away.

As for a tracking program use STSPLUS. I don't know which FTP site has
it, hopefully someone can answer that one for you. If you don't have the
latest shuttle elms just track Mir since that's where the orbiter is
headed anyway.

Tom Randall

1310. RE: Alliance rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-06-20 00:00:00 UTC
From: drayegon@america.com
Message-ID: <NEWTNews.25517.803629027.drayegon@drayegon.america.com>
Source record: 24568

> From: rsmith@internetmci.com (Bob Smith)
> Subject: RE: Alliance rotors
> Date: 17 Jun 1995 14:46:22 GMT
> >>>This rotor has been discontinued for a couple of years now.
> Bob Smith, Atlanta, GA
> rsmith@internetMCI.com
> n3ftu@amsat.org
I picked up a new or at least very new condition Alliance u-100 from
norms rotor service.
He is listed in several mags.
cost me a outlandish $45
I mean this is terible price I have seen old broke trashy ones at hamfests and
listed on here for $50.
By the way it worked and came with a warrenty.
:)
73 dray AD4RR

1311. AO-10 mode Sked

Newsgroup: rec.radio.amateur.space
Date: 1995-06-20 00:00:00 UTC
From: afn13094@freenet.ufl.edu
Message-ID: <3s5huo$rnt@huron.eel.ufl.edu>
Source record: 24569

[No readable article body recovered]

1312. RE: Alliance rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-06-20 00:00:00 UTC
From: Frank Donovan <donovanf@holmes.sgate.com>
Message-ID: <Pine.OSF.3.91.950620203826.19329G-100000-100000@holmes.sgate.com>
Source record: 24570

Alliance rotator sales, service and repair is available from:
Norm's Rotor Service
home: 301-698-8168
work: 301-874-5885

73!
Frank
W3LPL

On 16 Jun 1995 reinhart=40marlboro#%forwarder@shipco.geis.COM wrote:

> N9AVG writes:
>
> >Many sat-ops use a rotor from Alliance....The rotor costs about
> >$ 100 new.
>
> This rotor has been discontinued for a couple of years now.
> There are still a lot of them around, being used for tv as well
> as ham antennas. They frequently show up at garage sales and
> flea markets...not just ham-sponsored events, either.

1313. References for beginning radio astronomers

Newsgroup: rec.radio.amateur.space
Date: 1995-06-20 00:00:00 UTC
From: phb@syseng1.melpar.esys.com
Message-ID: <phb.803672026@melpar>
Source record: 24571

The following two references are of general interest to those involved (or thinking of getting involved) in radio astronomy at the amateur level. The first article is particularly valuable for the home experimenter, while the second is more a "status of the state of the art" at the professional level (interesting stuff, though):

I. "My Radio Telescope" by Bob Drury (Alberta, Canada), Journal of the Royal Astronomical Society of Canada, Vol. 89, No. 2, April, 1995, pp. 72-80. (contact RASC at 136 DuPont Street, Toronto, Ontario, Canada M5R 1V2. Single copies of the Journal are available for $12.00)

At the age of 13, Bob Drury built a functional interferometer radio telescope for operation at 19 MHz using two corner-reflector antennas with dipoles as driven elements, a "ghetto blaster" with shortwave coverage to 20 MHz as a receiver, and a Rustrak chart recorder borrowed from the University of Alberta. Using this *very* "homebrew" setup he successfully charted a number of astronomical objects including Cygnus A.

This delightful article, written after Bob turned 14, describes the trials of this young experimenter's efforts to successfully enter the world of radio astronomy, from rabbits nibbling on his coax to successfully modifying his receiver for improved RF sensitivity and proper power combination from the two antennas. If you're interested in how to get started, this article is a *must* read!

BTW, young Bob is *not* a ham but is "learning electronics and radio" as he goes along. From what the article says, he already knows more about antennas, coax, and the insides of a receiver than a great many hams.

II. Proceedings of the IEEE, Vol. 82, No. 5, May, 1994.

The entire issue is devoted to the subject of Radio Telescopes, and features a total of eighteen articles. (Contact IEEE at 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. Single issues of the Proceedings are available at $10.00 for IEEE members, $20.00 for non-members)

* Paul H. Bock, Jr. K4MSG * Principal Systems Engineer
(|_|) * E-Systems/Melpar Div. * Telephone: (703) 560-5000 x2062
| |) * 7700 Arlington Blvd. * Internet: pbock@melpar.esys.com
* Falls Church, VA 22046 * Mailstop: N203

"Imagination is more important than knowledge." - Albert Einstein

1314. FS: DSP-12 DSP modem

Newsgroup: rec.radio.amateur.space
Date: 1995-06-20 00:00:00 UTC
From: wroth@netcom.com
Message-ID: <wrothDAHwHt.JyB@netcom.com>
Source record: 24813
Cross-posted to: rec.radio.swap,rec.radio.amateur.space

I have for sale an LL Grace DSP-12 DSP Modem. The DSP-12 is well known for it's use on the digital pacsats. Modems include 9600 terrestrial/pacsat, 4800, 1200 for pacsat, 1200 for terrestrial packet, 300 packet hf, many rtty modes, ascii, ao-13 telemetry decode, ACARS (aircraft telemetry), a signal generator, digital voice recorder and more. There are three separate radio ports, with separate ptt, tx, rx etc. so you can switch from one radio to another via software. This is the only DSP modem with more than two ports. The DSP-12 is compatible with WISP, PB/PG, SatLink for use with the pacsats. It also has a KISS mode, and is TNC-2 compatible.

Included is the 1 meg memory option, cables, manuals and a complete DSP development kit to write and compile your own modems.
The latest firmware is installed.

The unit works great, in fact it is now, and has been, tracking all of the accessable digital amateur birds in orbit for the last couple of years. My reason for selling is to generate money to pay off debts from my new obsessions, photograhy and aviation.

I'm asking $550, which is about $250 less than my purchase price. I'll ship ground freight. You can contact me at 817-240-1430 evenings, or 214-454-1448 days. A message to WA2N@AMSAT.ORG, or on Compuserve at 73055,1733 will work as well.

73's from Wayne Roth WA2N/5
Dallas, TX.

--
wroth@netcom.com

1315. OCX Connector

Newsgroup: rec.radio.amateur.space
Date: 1995-06-21 00:00:00 UTC
From: Dennis Erwin Thurlow <geosynq@indy.net>
Message-ID: <3s8e3e$521@indy-backup.indy.net>
Source record: 24572

Can anyone direct me to a source for the Motorola short OCX coax connector? It's the tiny one for GPS antennas.

1316. Yaesu 5400 Rotator Dealer near Eastern Europe

Newsgroup: rec.radio.amateur.space
Date: 1995-06-21 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3s926t$dje@news.doit.wisc.edu>
Source record: 24573

I have a friend in Eastern Europe who wants to buy a Yaesu 5400
rotator. Does anyone know of a dealer in Germany, Finland, Norway or
elsewhere that I can contact.
Thanks!

--
****
* Kevin G. Shea N9JKP *
* 4460 Dahmen Pass *
* Cross Plains, WI 53528 USA *
* 608.789.4326,voice; 608.798.1747,fax *
****

1317. CCI 70cm linear kit

Newsgroup: rec.radio.amateur.space
Date: 1995-06-21 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3s93ir$332@nnrp1.primenet.com>
Source record: 24574

I have purchased the CCI 70cm 100w linear kit. I would like comments and advice regarding it's care and feeding.
I will be driving it with a Yaseu 726. I have a real 28 volt power supply, (I have heard about tying two 12 volts together,
sounds like trouble.)

Jim n7tcf@primenet.com

1318. Re: sts-71 sarex??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-21 00:00:00 UTC
From: garym@alsys.com
Message-ID: <DAJAIA.1J8@thomsoft.com>
Source record: 24575

In <3s6u00$kk1@tadpole.fc.hp.com> goris@fc.hp.com (Andy Goris) writes:
>Can anyone tell me where to get the absolute most up-to-date 2-line orbital
>element set for the Shuttle, and a pointer to some software (shareware?)
>that converts this to viewing information (rise/set/alt/az info)? Since
>the Shuttle will be docking with MIR, I would expect their orbital elements
>to change a lot, meaning we'll need fresh data to predict passes.

The best way to get Shuttle elements, IMHO, is to subscribe to the Shuttle Elements Mailing List on the Internet. The list consolidates several different sources of elements for the shuttle and sends out only the most up to date information available.

To get more information about the list there is a new Web page that you can read at <ftp://ftp.cts.com/pub/garym/elements.html> that tells all about the list. If you don't have access to the Web, you can also get info by sending email to listserv@alsys.com with the text "info elements" as the first line in your mail message.

--GaryM

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <ftp://ftp.cts.com/pub/garym/elements.html>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)

1319. VHF/UHF converters?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-21 00:00:00 UTC
From: steve.ostrove@woodybbs.com
Message-ID: <93.4506.7587.0NFBA7A5@woodybbs.com>
Source record: 24576

I'm just getting into satellite operation. I've been on RS12 about one month with about a dozen contacts. I would like to try some of the other sats but only have 2M and 440 FM. Are there any converters that I can use on my HF or mobile (FM) rig? Other than purchasing a multi mode 2M 440 rig is there another way to get on these birds?

Also, what about antennas? Right now I'm on a G5RV or my Tri-bander (TA33Jr.). They work well on HF but I'm not sure of the best ant. to use for VHF/UHF op. I do have a 2M verticals I use with packet.

Thanks for reading this and any info would be appreciated.

Steve WB2CZW

• wcECHO 4.1 • AR-Net • Sunset-East BBS, Union, NJ 908.964.4357 • WB2JIO

1320. LO-19..CPU Crash??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-21 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <DAJB1C.49G@murdoch.acc.Virginia.EDU>
Source record: 24577

Has LO-19 undergone a system crash? There was a message in
Spanish which also (i think) asked this question on one of the
9600 baud birds. For several nights, all I've heard on LO-19
is an unmodulated "carrier." (Didn't check last night, but that
was the case for several prior nights).

Anyone know for sure what's going on?
Please E-mail direct.

---
thanks!!
de WB4QKT/Stacey
E-Mail: sem2r@galen.med.virginia.edu
or: wb4qkt@amsat.org
--
-73's de WB4QKT
Stacey E. (Chuck) Mills
E-mail: sem2r@galen.med.virginia.edu

1321. ARLS008 SAREX launch on Friday

Newsgroup: rec.radio.amateur.space
Date: 1995-06-22 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls008.1995@ampr.org>
Source record: 24578
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS008
ARLS008 SAREX launch on Friday

ZCZC AS87
QST de W1AW
Space Bulletin 008 ARLS008
From ARRL Headquarters
Newington, CT June 22, 1995
To all radio amateurs

SB SPACE ARL ARLS008
ARLS008 SAREX launch on Friday

The Space Shuttle Atlantis is scheduled to launch on Friday, June 23 at 2108 UTC. The mission, designated STS-71, carries the Shuttle Amateur Radio EXperiment or SAREX. Astronauts Ellen S. Baker and Charlie Precourt are both Amateur Radio operators. Ellen previously used ham radio from aboard the Shuttle Columbia during STS-50 in June 1992, and her call sign is KB5SIX. Charlie is KB5YSQ and also operated SAREX from Columbia during STS-55 in April 1993.

The crew has scheduled voice contacts with 4 school groups in the US and one in Russia. The crew plans to make random contacts with the Amateur Radio community as their busy schedules permit. Landing is planned for July 4 at the Kennedy Space Center in Florida.

The crew will operate 2 meter FM voice only, using a radio which will also facilitate a rendezvous and docking with the Russian Space Station Mir. The docking is planned to occur on Monday, June 26. The shuttle will carry two new Mir crew members (Mir 19) to the station, and return to Earth with the three Mir 18 crew members (Vladimir Dezhurov, Gennadiy Strekalov, and US astronaut Norm Thagard). This mission is the first of at least seven shuttle flights to Mir. The effort is a precursor to building the International Space Station.

Most of the SAREX activities are planned for after the Shuttle separates from Mir on July 1. The following Keplerian element set, JSC-008a, can be used to track the shuttle after the separation.

STS-71
1 99971U 95182.64126116 .00004001 00000-0 25599-3 0 86
2 99971 51.6471 85.3203 0005502 102.6430 257.5145 15.57450161 1230

Satellite: STS-71
Catalog number: 99971
Epoch time: 95182.64126116 = (01-Jul-95 15:23:24.96 UTC)

Element set: 008
Inclination: 51.6471 deg
RA of node: 85.3203 deg Space Shuttle Flight STS-71
Eccentricity: .0005502 Prelaunch element set JSC-008a
Arg of perigee: 102.6430 deg Launch: 23-Jun-95 21:08:37 UTC
Mean anomaly: 257.5145 deg
Mean motion: 15.57450161 rev/day Gil Carman
Decay rate: 4.001e-05 rev/day sq NASA Johnson Space Center
Epoch rev: 123
Checksum: 260

These elements are valid from post-separation on July 1 at 1449 UTC until the deorbit burn on July 4 at 1454 UTC. Thanks to Gil Carman, WA5NOM, at the NASA Johnson Space Center for the preceding element set.

A different set of frequencies will be used for this SAREX mission. The astronauts will operate split, transmitting and receiving on separate frequencies. Please do not transmit on the shuttles downlink frequency. The downlink is your receiving frequency. The uplink is your transmitting frequency. The FM voice downlink is 145.84 MHz. The FM voice uplinks are 144.45 and 144.47 MHz. The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the luck of the draw. To avoid causing interference to other stations transmit only when the shuttle is within range and when the SAREX station is on the air.

Send reports and QSLs to the ARRL Educational Activities Department. Include the mission number, date, time in UTC, frequency and mode in your report. You must also include a self-addressed stamped business-sized envelope if you wish to receive a card.
NNNN
/EX

1322. Position Indicator for U-100

Newsgroup: rec.radio.amateur.space
Date: 1995-06-22 00:00:00 UTC
From: rollinp@teleport.com
Message-ID: <rollinp.4.000C2C5C@teleport.com>
Source record: 24579

I recently purchased a used Alliance U-100 rotator without position indicator. I need some help in building the power supply for rotator (schematic etc.) and the position indicator. The 1995 ARRL Antenna Book provides a basic schematic, but inaddition what I need is info regarding the rotor cable hook-up and a source of supply for the single-turn, 1K (ohm) precision pot. Any help will be greatly appreciated. Ive been on RS-10 lately but not too much activity, so thought I would try getting on the big birds like AO-10 and AO-13.
Thanks in advance

Ron KE7BD in Battle Ground, WA

1323. Rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-06-22 00:00:00 UTC
From: edward.wagner@torii.COM
Message-ID: <9506212241.0VW0I00@torii.com>
Source record: 24580

Does anyone know where I can get a allaince rotators.

Edward KC5MWY

1324. Qadrifilar helix ?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-23 00:00:00 UTC
From: she@victor.hiof.no
Message-ID: <she.21.002429A6@victor.hiof.no>
Source record: 24581

Does anyone have a description on how
to build a quadrifilar antenna ?

Thanks in advance.

73, LA6UJA

1325. Shortwave Frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-06-23 00:00:00 UTC
From: pwiggins@fcom.cc.utah.edu
Message-ID: <3sd6j9$ru1@news.cc.utah.edu>
Source record: 24582

One of our patrons called asking if anyone rebroadcasts the audio
portion of NASA Select during shuttle missions on the shortwave frequencies.

If anyone does this I'd appreciate learning the frequencies.

Thanks very much!

Patrick Wiggins, Hansen Planetarium, SLC, UT
email: patrick.wiggins@k12.uen.gen.ut.us

1326. Re: Shortwave Frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-06-23 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3seh0a$802@over.mhv.net>
Source record: 24583

Patrick Wiggins (pwiggins@fcom.cc.utah.edu) wrote:
: One of our patrons called asking if anyone rebroadcasts the audio
: portion of NASA Select during shuttle missions on the shortwave frequencies.

: If anyone does this I'd appreciate learning the frequencies.

: Thanks very much!

: Patrick Wiggins, Hansen Planetarium, SLC, UT
: email: patrick.wiggins@k12.uen.gen.ut.us

WA3NAN retransmits the audio on: 3.860, 7.185, 14.285, 14.295,
21.390, 21.395, 28.650. In N.Y. I pick it up mainly on the first 2 freqs.
They are a volunteer club so their not on ALL the time during a mission.

Tom

1327. Shuttle - Audio - Houston

Newsgroup: rec.radio.amateur.space
Date: 1995-06-23 00:00:00 UTC
From: g-taylor4@tamu.edu
Message-ID: <3seh00$ikv@news.tamu.edu>
Source record: 24584

Which Houston repeater carries shuttle audio retransmissions?

Tnx, Greg, KD4HZ

1328. X11 Color Graphics Tracking Software NOW FOR DEC ALPHAS WITH APX/OSF

Newsgroup: rec.radio.amateur.space
Date: 1995-06-23 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <3sfde0$qii@agate.berkeley.edu>
Source record: 24585
Cross-posted to: sci.space.tech,sci.space.shuttle,rec.radio.amateur.space

June 23, 1995

In view of tomorrow's launch of Space Shuttle Atlantis and its docking mission with the Russian Space Station Mir, the SatTrack (V3.1) software package is being announced again, especially now that it also compiles on DEC Alpha Servers with APX/OSF.

SatTrack is a satellite orbit prediction and realtime tracking program with X Window System color graphics, and shows a worldmap tracking display similar to the one in NASA's mission control center.

The program has been written in C language and runs on a number of different UNIX systems (Sun, HP, IBM, DEC, Linux, FreeBSD, NetBSD) with X11R5. For detailed on-line information check the SatTrack web page at:

http://ssl.berkeley.edu/isi_www/sattrack.html

The source code distribution file sattrack-3.1.tar.gz (or sattrack.V3.1.tar.gz) is also available from:

archive.afit.af.mil /pub/space
ftp.amsat.org /amsat/software/Linux

A NEW MAKEFILE FOR DEC ALPHAS WITH APX/OSF IS AVAILABLE FROM THE WEB PAGE!

If you do not have access to the web, send me a note and I'll email this Makefile to you. Replace the Makefile that comes with the V3.1 distribution with the new Makefile that also includes DEC machines.

Manfred
manfred@SSL.Berkeley.Edu

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720

1329. SCHEDULED SAREX/SCHOOL COMS?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-23 00:00:00 UTC
From: tyler harpster <TJH112@psuvm.psu.edu>
Message-ID: <95174.160859TJH112@psuvm.psu.edu>
Source record: 24586

could somebody post the scheduled times of the sarex/school coms. I'd like to l
isten in, but don't want to have the radio on all the time. thanks. Tyler.
N3SPD

1330. Re: TRAKSAT satellite tracking software

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: bz089@cleveland.Freenet.Edu
Message-ID: <3sh1ka$hb7@usenet.INS.CWRU.Edu>
Source record: 24587
Cross-posted to: rec.radio.amateur.space,sci.astro.amateur

A version of TRAKSAT can be found at oak.oakland.edu in /SimTel/msdos/satelite.

1331. Re: Rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: Frank Donovan <donovanf@holmes.sgate.com>
Message-ID: <Pine.OSF.3.91.950624091424.30031B-100000@holmes.sgate.com>
Source record: 24588

Alliance rotators are available from:
Norm's Rotor Service
home: 301-698-8168
work: 301-874-5885

73!
Frank
W3LPL

On 22 Jun 1995 edward.wagner@torii.COM wrote:

>
> Does anyone know where I can get a allaince rotators.
>
> Edward KC5MWY
>
>
>

1332. Re: Shuttle - Audio - Houston

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: grstone@clark.net
Message-ID: <3shall$jr@clarknet.clark.net>
Source record: 24589

In <3seh00$ikv@news.tamu.edu>, g-taylor4@tamu.edu (Greg Taylor) writes:
>Which Houston repeater carries shuttle audio retransmissions?
>
>Tnx, Greg, KD4HZ

This list courtesy of a kind participant on rec.radiio.shortwave, where I asked
the same question recently. However, the STS-71 press kit(jun 95)
had some SW frequency changes for WA3NAN which I annotate below,
as well. WA3NAN is definitely where you want to listen for 24-hour
shuttle to Houston comms. In the local Greenbelt Maryland area WA3NAN
has in the past rebroadcast shuttle-to-Houston comms on SOMEWHERE
around 145+ Mhz (I just don't know the exact frequency, try 145.46 or 145.49
or 149.45 or something like that):

```
=======================================================
NASA / SHUTTLE RELATED FREQUENCYS.
---------------------------------
August 1989
KHZ. Activity.

2405 Data buoys
2622 SRB recovery primary
2664 Backup mission audio-Cape to Houston
2678 ETR range control
2716 Navy harbor cntl-Port Canaveral
2764 SRB recovery channel
3024 Coast Guard SAR-Primary
3187 SRB recovery ship channel
4376 Primary recovery zone SAR
4510 SRB recovery ship channel
4856 Cape radio/leader
4992 Cape radio/Coast Guard ships
5180 NASA tracking ships
5187 " "
5190 ETR primary night channel
5246 Cape radio ??
5350 Launch support aircraft
5680 " " ships
5810 ETR-Secondary night channel
6720 SAR primary Atlantic
6738 Anderson AFB
6837 Cape radio
6896 " "
7412 SAR comms with Bahamas
7461 Cape radio/launch support A/C
```

7525 NASA ground tracking net
7676 Launch support aircraft
7715 Ascension Is. to Cape Caneveral
7765 SRB recovery ships
7919 Data channel
7985 " "
8822 Mission control
8964 NASA and USAF
9020 Launch support aircraft
9043 " "
9130 " "
9132 Cape Caneveral to Ascension Is.
10305 Space missile tactical net
10310 Malabar to Ascension Is.-MUX
10780 ETR-primary day channel
11104 Launch support ships
11252 " "
11407 SRB recovery ships
11414 Cape Radio
11548 " "
11621 SRB recovery ships
13227 Launch support aircraft
13237 Data channel
13495 " "
13600 Malabar to Ascension Is.-MUX
13742 Ascension Is. to Cape Caneveral
13787 Launch support aircraft
14937 Ascension Is. to Malabar-MUX
18009 Launch support ships
19303 " "
19640 Cape radio
19961 Ascension Is. to Cape radio
19966 Ascension Is to Malabar-MUX
20186 Launch tracking net
20192 Malabar to Ascension Is.MUX
20198 SHUTTLE MISSION AUDIO !!!!
20272 Ascension Is. to Cape radio
20390 ETR-secondary day channel
22744 Ascension Is to Malabar-MUX
23413 Cape radio
27065 NASA CB radios (CB channel 9)

NOTE: Most stations use USB, but for some reason I have heard
NASA using LSB on 20198 KHZ.

WA3NAN at the Goddard Space Flight Center in Greenbelt Maryland
rebroadcasts Space Shuttle Audio on the following frequencies.

3860 lsb, 7185 lsb, 14295 usb, and 20395 KHZ usb.

[According to STS-71 press kit, June 95:

The Goddard Space Flight Center amateur radio club planned HF
operating frequencies:
3.860 MHz 7.185 MHz
14.295 21.395
28.650]

This list was compiled thanks to information from Monitoring Times
magazine, the Ontario DX Assocation, the South African SWL Club
and personal monitoring.
I am trying to keep this list as up to date as possible, therefore
if you have any corrections or additions, they would be
most welcome.

Good listening,
Paul Blanchard

1333. ARLK027 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk027.1995@ampr.org>
Source record: 24590
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK027
ARLK027 Keplerian data

ZCZC SK52
QST de W1AW
Keplerian Bulletin 27 ARLK027
From ARRL Headquarters
Newington, CT June 24, 1995
To all radio amateurs

SB KEP ARL ARLK027
ARLK027 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-71
1 99971U 99971A 95174.91046128 .00042677 75368-8 24386-4 0 11
2 99971 51.6462 124.6667 0077882 3.9787 185.6697 16.11199182 11
AO-10
1 14129U 83058B 95170.18056059 -.00000136 00000-0 10000-3 0 3592
2 14129 26.4651 262.4272 5999745 286.2911 18.6189 2.05879788 62370
RS-10/11
1 18129U 87054A 95171.18693714 .00000034 00000-0 20989-4 0 773
2 18129 82.9251 56.8551 0013317 81.2810 278.9851 13.72353503400382
UO-11
1 14781U 84021B 95174.04219287 .00000109 00000-0 26202-4 0 8079
2 14781 97.7827 176.3045 0011880 157.7315 202.4408 14.69354016604768
RS-12/13
1 21089U 91007A 95171.84494268 .00000031 00000-0 16774-4 0 8098
2 21089 82.9243 98.0708 0029341 159.3262 200.9086 13.74058219219275
AO-13
1 19216U 88051B 95169.44767167 .00000024 00000-0 10000-4 0 489
2 19216 57.5428 181.1026 7300582 11.5772 358.7645 2.09721692 22199
UO-14
1 20437U 90005B 95170.74162625 .00000067 00000-0 43047-4 0 1059
2 20437 98.5660 255.0701 0010763 186.6654 173.4375 14.29890058282115
RS-15
1 23439U 94085A 95171.69523643 -.00000039 00000-0 10000-3 0 581
2 23439 64.8182 249.3149 0167800 261.4999 96.6880 11.27523774 19912
```

```
AO-16
1 20439U 90005D 95172.18274545 .00000013 00000-0 22052-4 0 9047
2 20439 98.5785 258.1623 0010767 184.2741 175.8352 14.29943782282335
DO-17
1 20440U 90005E 95172.17084242 .00000017 00000-0 23472-4 0 9042
2 20440 98.5802 258.6149 0010924 182.8978 177.2143 14.30085029282355
WO-18
1 20441U 90005F 95171.24361736 .00000009 00000-0 20363-4 0 9087
2 20441 98.5800 257.6737 0011574 186.3563 173.7473 14.30056111282220
LO-19
1 20442U 90005G 95171.19625415 .00000034 00000-0 30018-4 0 9041
2 20442 98.5817 257.9897 0011903 186.1798 173.9240 14.30158703282238
FO-20
1 20480U 90013C 95171.21548560 .00000006 00000-0 91979-4 0 8007
2 20480 99.0721 259.2549 0539835 226.3892 129.1204 12.83230875251337
AO-21
1 21087U 91006A 95172.23547883 .00000094 00000-0 82657-4 0 6068
2 21087 82.9421 229.5763 0036209 133.4875 226.9301 13.74556475220285
UO-22
1 21575U 91050B 95170.72366369 .00000018 00000-0 20591-4 0 6109
2 21575 98.3927 241.9797 0006922 277.8904 82.1496 14.36979551205866
KO-23
1 22077U 92052B 95172.24524400 -.00000037 00000-0 10000-3 0 5015
2 22077 66.0797 227.2675 0006924 198.6067 161.4697 12.86291814134255
KO-25
1 22828U 93061F 95173.16521979 .00000014 00000-0 23202-4 0 3763
2 22828 98.6133 249.6410 0009594 190.2559 169.8428 14.28103466 58587
IO-26
1 22826U 93061D 95173.16985088 .00000016 00000-0 24156-4 0 3981
2 22826 98.6179 249.6105 0008455 206.4437 153.6312 14.27773258 90485
AO-27
1 22825U 93061C 95173.21630570 .00000014 00000-0 23347-4 0 3999
2 22825 98.6160 249.5569 0007852 204.7394 155.3404 14.27665522 90485
PO-28
1 22829U 93061G 95173.17691923 .00000013 00000-0 22910-4 0 3902
2 22829 98.6141 249.6869 0009675 190.2638 169.8349 14.28082716 90507
Mir
1 16609U 86017A 95174.42535880 .00003038 00000-0 48128-4 0 997
2 16609 51.6481 126.4678 0004949 103.2124 256.9819 15.56946825533846

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
June 27, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1334. Re: Qadrifilar helix ?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: ranecurl@engin.umich.edu
Message-ID: <3sfkia$s1l@srvr1.engin.umich.edu>
Source record: 24591

In article <she.21.002429A6@victor.hiof.no>,
Sindre Helvik <she@victor.hiof.no> wrote:
>Does anyone have a description on how
>to build a quadrifilar antenna ?
>73, LA6UJA

There is a decription in Chap 8 of _The Satellite Experimenter's Handbook_, published by ARRL (1992). One person in sci.geo.satellite-nav reported cobbling one up - and it worked. I'm cobbling my own together now - very slowly. The cited applications are for GPS.

rane curl n8reg

1335. Quadrifilar Helix (ulp!)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: KKEYSEEA@EUROPA.UMUC.EDU
Message-ID: <3sfrre$l4t@nova.umuc.edu>
Source record: 24592

Quadrifilar Helix, ay...

What does that buy you over a regular helix?
3dB gain?

Is a regular helix monofilar or bifilar?

73 de somewhat startled WB4U
Ken

1336. Re: Quadrifilar Helix (ulp!)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3sftto$jr4@news.doit.wisc.edu>
Source record: 24593

Ken, The QHA gets you a circular polarized signal over the entire hemisphere. This is very useful for NOAA Polar Orbiting Satellites.

It's the type of antenna used in handheld GPS units also.

Hope this helps.

--
****
* Kevin G. Shea N9JKP *
* 4460 Dahmen Pass *
* Cross Plains, WI 53528 USA *
* 608.789.4326,voice; 608.798.1747,fax *
****

1337. Two-Line Orbital Element Sets (TLE628)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.803952489@dolphin>
Source record: 24594

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #628 -
Alouette 1
1 00424U 62049A 95171.34855066 .00000020 00000-0 13027-4 0 1149
2 00424 80.4643 281.7543 0022206 246.7752 113.1055 13.67843166632734
ATS 1
1 02608U 66110A 95165.24886945 .00000000 00000-0 10000-3 0 9367
2 02608 14.6363 356.7205 0010489 61.6802 298.4104 1.00325798 21167
ATS 3
1 03029U 67111A 95171.26920606 -.00000128 00000-0 10000-3 0 3714
2 03029 14.8362 3.6649 0008366 271.0314 344.8227 1.00272687101127
Cosmos 398
1 04966U 71016A 95174.19718549 .00192806 93493-5 19114-3 0 9055
2 04966 51.4065 199.7212 0575385 111.6706 254.6484 14.97622151826090
Starlette
1 07646U 75010A 95173.26113762 -.00000170 00000-0 -19485-4 0 8955
2 07646 49.8280 132.9835 0206197 118.4487 243.7351 13.82188931 29049
LAGEOS
1 08820U 76039A 95171.40843150 -.00000017 00000-0 10000-3 0 1154
2 08820 109.8446 261.7085 0044193 206.6609 153.1735 6.38664617190665
ETS-2
1 09852U 77014A 95172.34476946 -.00000052 00000-0 10000-3 0 308
2 09852 12.7518 37.0769 0004338 55.3757 304.6198 1.00019740 14022
GOES 2
1 10061U 77048A 95173.59636678 .00000042 00000-0 10000-3 0 5434
2 10061 11.8222 41.3119 0010988 119.8937 147.0545 1.00268874 10822
IUE
1 10637U 78012A 95173.00750873 -.00000301 00000-0 00000+0 0 1413
2 10637 35.2066 88.9381 1330648 46.9048 85.1126 1.00328618 16317
GPS BI-01
1 10684U 78020A 95170.78461809 -.00000075 00000-0 10000-3 0 3655
2 10684 64.8430 34.6130 0061048 163.3913 196.8525 1.98069683112211
```

```
GPS BI-02
1 10893U 78047A 95172.25048247 -.00000070 00000-0 10000-3 0 1672
2 10893 63.3264 272.6150 0222448 14.6953 345.9916 2.01627630125518
GOES 3
1 10953U 78062A 95173.59498404 .00000094 00000-0 10000-3 0 5037
2 10953 10.7870 44.0616 0004609 99.6310 174.6477 1.00317828 15430
SeaSat 1
1 10967U 78064A 95168.47287271 -.00000038 00000-0 31991-4 0 4078
2 10967 107.9967 138.0756 0002396 267.0618 93.0248 14.38039956888877
GPS BI-03
1 11054U 78093A 95171.19480471 -.00000068 00000-0 10000-3 0 3336
2 11054 63.0398 270.8780 0045336 178.3917 181.6378 1.93505264121633
Nimbus 7
1 11080U 78098A 95171.14217676 -.00000059 00000-0 -14960-4 0 5096
2 11080 99.0000 45.0172 0008400 220.9534 139.0983 13.83709364840960
GPS BI-04
1 11141U 78112A 95172.99398041 -.00000068 00000-0 10000-3 0 9814
2 11141 64.8499 36.3914 0048335 27.2723 333.0390 1.92894859 10919
GPS BI-05
1 11690U 80011A 95168.88661896 -.00000067 00000-0 10000-3 0 9222
2 11690 65.1958 36.2889 0143961 198.0234 161.5346 2.00564559126876
GPS BI-06
1 11783U 80032A 95172.11483753 -.00000062 00000-0 10000-3 0 847
2 11783 62.4491 265.8392 0218568 29.2906 331.9497 2.03456353111461
GOES 5
1 12472U 81049A 95172.58666847 -.00000293 00000-0 10000-3 0 8631
2 12472 7.5367 53.9301 0007696 24.7758 335.1466 1.00273505 9479
Cosmos 1383
1 13301U 82066A 95170.61792655 .00000045 00000-0 34981-4 0 4132
2 13301 82.9295 40.3715 0027346 158.2808 201.9516 13.68066241647669
LandSat 4
1 13367U 82072A 95174.14494819 .00000125 00000-0 37652-4 0 7066
2 13367 98.1232 229.8659 0006972 172.4845 187.6459 14.57152117688087
DMSP B5D2-1
1 13736U 82118A 95173.02190816 .00000018 00000-0 25791-4 0 7874
2 13736 98.6294 2.1526 0009039 7.5917 352.5394 14.25739010649604
IRAS
1 13777U 83004A 95173.53942319 .00000189 00000-0 15984-3 0 9966
2 13777 98.9661 1.7037 0013620 16.2903 343.8686 13.99238699302931
Cosmos 1447
1 13916U 83021A 95170.85688185 .00000028 00000-0 13602-4 0 5100
2 13916 82.9440 99.7765 0039577 83.9885 276.5775 13.74326389613830
TDRS 1
1 13969U 83026B 95169.61657007 -.00000124 00000-0 10000-3 0 4266
2 13969 8.3872 47.3576 0001797 98.9761 133.0368 1.00724253 17729
GOES 6
1 14050U 83041A 95174.25363021 -.00000047 00000-0 10000-3 0 4186
2 14050 6.3586 57.1781 0005933 11.0764 178.8161 1.00324031102580
OSCAR 10
1 14129U 83058B 95170.18056059 -.00000136 00000-0 10000-3 0 3592
```

```
2 14129 26.4651 262.4272 5999745 286.2911 18.6189 2.05879788 62370
LandSat 5
1 14780U 84021A 95172.53279150 .00000025 00000-0 15408-4 0 2713
2 14780 98.1093 228.8273 0004445 179.0795 181.0412 14.57158642601264
UoSat 2
1 14781U 84021B 95174.04219287 .00000109 00000-0 26202-4 0 8079
2 14781 97.7827 176.3045 0011880 157.7315 202.4408 14.69354016604768
GPS BI-09
1 15039U 84059A 95173.88126565 -.00000059 00000-0 10000-3 0 3421
2 15039 64.5122 30.7514 0082025 18.0065 342.3428 1.92302285 80508
Cosmos 1574
1 15055U 84062A 95174.05398198 .00000022 00000-0 71516-5 0 7127
2 15055 82.9566 151.5433 0025873 264.7113 95.1085 13.73623096551543
GPS BI-10
1 15271U 84097A 95170.55898860 -.00000059 00000-0 10000-3 0 164
2 15271 62.1523 266.2108 0155907 353.7391 6.1012 2.00598558 77972
Cosmos 1602
1 15331U 84105A 95172.27339164 .00000221 00000-0 23171-4 0 3986
2 15331 82.5341 92.0759 0022333 64.7199 295.6331 14.84632843579271
NOAA 9
1 15427U 84123A 95173.76093706 .00000099 00000-0 76649-4 0 2986
2 15427 98.9996 232.5228 0013910 253.3881 106.5761 14.13713581542707
GPS BI-11
1 16129U 85093A 95173.08972556 -.00000066 00000-0 10000-3 0 6603
2 16129 65.1730 33.9051 0154259 86.6818 275.1419 1.89368084 15087
Mir
1 16609U 86017A 95173.39837993 .00004071 00000-0 62173-4 0 985
2 16609 51.6479 131.6075 0005041 104.3390 255.8322 15.56942868533685
SPOT 1
1 16613U 86019A 95171.35272940 .00000090 00000-0 62356-4 0 8248
2 16613 98.6493 242.6301 0001115 42.0230 318.1027 14.20061315168814
Cosmos 1766
1 16881U 86055A 95171.01961634 .00000112 00000-0 10539-4 0 3137
2 16881 82.5189 151.0944 0021266 93.3898 266.9740 14.83632092479990
EGP
1 16908U 86061A 95173.80583607 -.00000083 00000-0 10000-3 0 84
2 16908 50.0112 24.9663 0011232 174.8795 185.2155 12.44412387 71534
NOAA 10
1 16969U 86073A 95173.84608698 .00000055 00000-0 41624-4 0 2050
2 16969 98.5119 176.5586 0013101 331.8516 28.1955 14.24942374455281
MOS-1
1 17527U 87018A 95173.24474023 -.00000230 00000-0 -13896-3 0 2188
2 17527 98.9890 238.2772 0000935 59.6847 300.4405 13.94919388424533
GOES 7
1 17561U 87022A 95173.32840068 .00000081 00000-0 10000-3 0 4386
2 17561 2.3425 72.3406 0003273 327.1000 213.0893 1.00266152 13685
Kvant-1
1 17845U 87030A 95174.10445303 -.00012931 00000-0 -16954-3 0 2897
2 17845 51.6465 128.0769 0005455 104.0828 256.2267 15.56925471533791
DMSP B5D2-3
```

```
1 18123U 87053A 95173.71876011 .00000001 00000-0 23063-4 0 365
2 18123 98.7786 4.7900 0013394 200.9004 159.1625 14.15408391413505
RS-10/11
1 18129U 87054A 95171.18693714 .00000034 00000-0 20989-4 0 773
2 18129 82.9251 56.8551 0013317 81.2810 278.9851 13.72353503400382
Meteor 2-16
1 18312U 87068A 95171.34480914 .00000161 00000-0 13160-3 0 4054
2 18312 82.5521 279.8584 0011767 150.0204 210.1615 13.84059295395983
Meteor 2-17
1 18820U 88005A 95173.48390937 .00000021 00000-0 55544-5 0 6503
2 18820 82.5373 334.0306 0015303 217.5919 142.4167 13.84739996373607
DMSP B5D2-4
1 18822U 88006A 95173.51796318 .00000007 00000-0 21537-4 0 44
2 18822 98.4044 17.4089 0006116 349.1677 10.9369 14.23156940383278
Glonass 34
1 19163U 88043A 95168.03442666 .00000005 00000-0 10000-3 0 9969
2 19163 65.1301 98.1675 0006999 158.1852 201.8417 2.13102567 54433
Glonass 36
1 19165U 88043C 95173.72192765 -.00000047 00000-0 10000-3 0 3977
2 19165 65.1125 97.9388 0003369 332.9668 27.0047 2.13102141 55179
METEOSAT 3
1 19215U 88051A 95167.49610376 -.00000289 00000-0 10000-3 0 1350
2 19215 2.5045 69.8578 0001606 47.0180 257.5188 1.00277861 13565
AO-13
1 19216U 88051B 95169.44767167 .00000024 00000-0 10000-4 0 489
2 19216 57.5428 181.1026 7300582 11.5772 358.7645 2.09721692 22199
OKEAN 1
1 19274U 88056A 95171.71964132 .00000225 00000-0 25129-4 0 135
2 19274 82.5134 250.8312 0017977 235.4004 124.5513 14.82347039375678
Meteor 3-2
1 19336U 88064A 95170.18334088 .00000051 00000-0 10000-3 0 4024
2 19336 82.5433 64.0097 0018335 65.5496 294.7534 13.16973349331568
Glonass 39
1 19503U 88085C 95172.34241473 -.00000052 00000-0 10000-3 0 2927
2 19503 65.6911 336.8947 0007428 151.9478 208.1151 2.13101881 52633
NOAA 11
1 19531U 88089A 95173.82695395 .00000028 00000-0 40185-4 0 1066
2 19531 99.1941 177.3317 0011542 167.3702 192.7759 14.13054970347550
TDRS 2
1 19548U 88091B 95167.00000000 -.00000202 00000-0 10000-3 0 1295
2 19548 1.7522 73.9692 0003888 107.4050 167.2287 1.00280625 11847
Glonass 40
1 19749U 89001A 95169.09595368 -.00000001 00000-0 10000-3 0 5041
2 19749 65.0754 97.6858 0007742 262.6078 97.2938 2.13101322 50078
Glonass 41
1 19750U 89001B 95173.84416586 -.00000048 00000-0 10000-3 0 4191
2 19750 65.0864 97.5840 0006591 257.8526 102.0817 2.13101823 50197
GPS BII-01
1 19802U 89013A 95171.17490095 .00000024 00000-0 10000-3 0 620
2 19802 55.1975 125.0955 0024858 186.3705 173.5870 2.00548789 46439
```

```
Akebono
1 19822U 89016A 95172.43517745 .00011633 00000-0 57223-3 0 5235
2 19822 75.0827 332.6797 3780439 17.7012 352.5810 7.86313319138155
Meteor 2-18
1 19851U 89018A 95170.59713618 .00000048 00000-0 30115-4 0 4038
2 19851 82.5195 210.9771 0012568 279.5673 80.4066 13.84391337318529
MOP-1
1 19876U 89020B 95170.93175630 .00000089 00000-0 00000+0 0 1220
2 19876 1.2362 72.0978 0002055 326.8147 216.6446 1.00420782 3043
TDRS 3
1 19883U 89021B 95172.55256366 -.00000273 00000-0 10000-3 0 887
2 19883 0.1106 77.7904 0002415 4.4226 345.0223 1.00270781195496
GPS BII-02
1 20061U 89044A 95170.52197669 -.00000085 00000-0 10000-3 0 811
2 20061 54.4358 301.3864 0144680 213.9572 145.1123 2.00563221 44160
Nadezhda 1
1 20103U 89050A 95173.78268677 .00000041 00000-0 27973-4 0 4301
2 20103 82.9584 14.4667 0037792 339.9626 20.0046 13.73854207299190
GPS BII-03
1 20185U 89064A 95173.35367362 .00000003 00000-0 10000-3 0 1037
2 20185 55.0224 125.5496 0015404 295.1124 64.6807 2.00574309 42799
GMS 4
1 20217U 89070A 95173.38928289 -.00000341 00000-0 10000-3 0 2042
2 20217 1.0405 76.8596 0009669 81.1765 25.9901 1.00143994 21801
INTERCOSMOS 24
1 20261U 89080A 95170.87901183 -.00000015 00000-0 -13325-4 0 4187
2 20261 82.5924 142.7653 1242835 147.6707 220.7147 12.47252060260615
GPS BII-04
1 20302U 89085A 95172.39000431 -.00000025 00000-0 10000-3 0 725
2 20302 53.3782 241.3316 0011847 194.3970 165.6345 2.00556250 41573
Meteor 3-3
1 20305U 89086A 95174.16495874 .00000044 00000-0 10000-3 0 3357
2 20305 82.5472 13.4984 0007178 97.9679 262.2291 13.04414144271267
COBE
1 20322U 89089A 95171.57282332 -.00000302 00000-0 -16464-3 0 1306
2 20322 98.9609 187.5660 0008708 332.4121 27.6579 14.03447986286068
Kvant-2
1 20335U 89093A 95174.10445303 -.00012931 00000-0 -16954-3 0 3011
2 20335 51.6465 128.0769 0005455 104.0828 256.2267 15.56925471317003
GPS BII-05
1 20361U 89097A 95170.90677335 -.00000077 00000-0 00000+0 0 9429
2 20361 55.7705 67.6735 0075019 123.5141 237.2579 2.00562799 31027
SPOT 2
1 20436U 90005A 95173.38148496 -.00000044 00000-0 00000+0 0 9445
2 20436 98.7373 247.4058 0000756 83.2060 276.9206 14.20021689280635
UO-14
1 20437U 90005B 95170.74162625 .00000067 00000-0 43047-4 0 1059
2 20437 98.5660 255.0701 0010763 186.6654 173.4375 14.29890058282115
UO-15
1 20438U 90005C 95171.20128044 .00000021 00000-0 25173-4 0 9024
```

```
2 20438 98.5652 254.0348 0009519 190.5328 169.5657 14.29208622282076
PACSAT
1 20439U 90005D 95172.18274545 .00000013 00000-0 22052-4 0 9047
2 20439 98.5785 258.1623 0010767 184.2741 175.8352 14.29943782282335
DO-17
1 20440U 90005E 95172.17084242 .00000017 00000-0 23472-4 0 9042
2 20440 98.5802 258.6149 0010924 182.8978 177.2143 14.30085029282355
WO-18
1 20441U 90005F 95171.24361736 .00000009 00000-0 20363-4 0 9087
2 20441 98.5800 257.6737 0011574 186.3563 173.7473 14.30056111282220
LO-19
1 20442U 90005G 95171.19625415 .00000034 00000-0 30018-4 0 9041
2 20442 98.5817 257.9897 0011903 186.1798 173.9240 14.30158703282238
GPS BII-06
1 20452U 90008A 95169.80468909 .00000055 00000-0 10000-3 0 449
2 20452 54.0208 181.6053 0055781 82.1051 278.5579 2.00574033 39505
MOS-1B
1 20478U 90013A 95171.21061977 .00000091 00000-0 10000-3 0 7958
2 20478 98.9914 240.6047 0001034 74.8456 285.2820 13.94926935193953
DEBUT
1 20479U 90013B 95171.20891213 .00000044 00000-0 17618-3 0 9033
2 20479 99.0718 259.3985 0539576 226.0181 129.5212 12.83332711251342
FO-20
1 20480U 90013C 95171.21548560 .00000006 00000-0 91979-4 0 8007
2 20480 99.0721 259.2549 0539835 226.3892 129.1204 12.83230875251337
MOS-1B R/B
1 20491U 90013D 95172.86711056 -.00000460 00000-0 -80678-3 0 1421
2 20491 99.0430 314.8835 0470380 60.7058 304.0221 13.02970116254804
LACE
1 20496U 90015A 95172.21535458 .00001532 00000-0 53102-4 0 5490
2 20496 43.0999 108.0351 0010426 236.8826 123.1093 15.34599565298193
Nadezhda 2
1 20508U 90017A 95173.67529549 .00000026 00000-0 11831-4 0 4298
2 20508 82.9531 149.1204 0043414 290.8561 68.7953 13.73494521266408
OKEAN 2
1 20510U 90018A 95168.52757199 .00000196 00000-0 23524-4 0 4126
2 20510 82.5245 205.5150 0020957 74.2435 286.1090 14.78498354285646
GPS BII-07
1 20533U 90025A 95172.71015069 -.00000096 00000-0 10000-3 0 667
2 20533 54.8282 301.9002 0052823 84.9728 275.6903 2.00567646 38332
PegSat
1 20546U 90028A 95172.42615934 .00006304 00000-0 13054-3 0 8138
2 20546 94.1117 146.6440 0064349 322.9031 36.7774 15.43591776289138
HST
1 20580U 90037B 95174.18649419 .00000319 00000-0 16453-4 0 6760
2 20580 28.4680 12.3475 0006547 7.6885 352.3778 14.90892898 84806
MACSAT 2
1 20608U 90043B 95170.53229173 .00000149 00000-0 23288-4 0 1045
2 20608 89.9263 176.4725 0103311 247.1490 111.8789 14.64840530273050
Glonass 44
```

```
1 20619U 90045A 95173.68796645 -.00000058 00000-0 10000-3 0 1969
2 20619 65.2916 336.2826 0024523 210.6360 149.2282 2.13102453 39622
Glonass 45
1 20620U 90045B 95173.80676194 -.00000058 00000-0 10000-3 0 2074
2 20620 65.3015 336.2737 0009162 51.4336 308.6482 2.13102531 39666
Glonass 46
1 20621U 90045C 95173.40390078 -.00000057 00000-0 10000-3 0 8047
2 20621 65.3182 336.3493 0013432 193.0655 166.8995 2.13101624 39658
Kristall
1 20635U 90048A 95173.07746318 -.00017622 00000-0 -23375-3 0 925
2 20635 51.6469 133.2163 0005239 99.6633 260.5592 15.56916667533588
ROSAT
1 20638U 90049A 95171.87485631 .00000013 00000-0 19814-4 0 4699
2 20638 52.9872 130.4358 0014278 111.0253 249.2257 15.07195459277679
Meteor 2-19
1 20670U 90057A 95173.76944448 .00000015 00000-0 35421-6 0 9039
2 20670 82.5433 274.1205 0015412 181.4485 178.6635 13.84161052251888
CRRES
1 20712U 90065A 95172.87745989 .00000228 00000-0 39731-3 0 1106
2 20712 18.0344 37.1584 7186504 107.1792 337.0806 2.35422128 34597
GPS BII-08
1 20724U 90068A 95171.03618459 .00000020 00000-0 10000-3 0 9117
2 20724 54.8440 123.2491 0117112 173.9645 186.1458 2.00559617 34164
Feng Yun1-2
1 20788U 90081A 95173.89293109 .00000437 00000-0 31751-3 0 4178
2 20788 98.8143 186.7275 0016699 58.2320 302.0464 14.01363491245638
Meteor 2-20
1 20826U 90086A 95171.18148933 .00000048 00000-0 30086-4 0 9141
2 20826 82.5263 213.1726 0015147 94.8097 265.4791 13.83609379238649
GPS BII-09
1 20830U 90088A 95171.08119393 -.00000081 00000-0 10000-3 0 9203
2 20830 55.7100 65.6460 0066702 99.6363 261.1467 2.00571727 34800
GPS BIIA-10
1 20959U 90103A 95171.98970790 .00000017 00000-0 10000-3 0 8812
2 20959 55.0508 125.1968 0098207 230.5102 128.5969 2.00554317 33419
DMSP B5D2-5
1 20978U 90105A 95173.71008923 .00000094 00000-0 49084-4 0 2395
2 20978 98.6389 241.9276 0079353 152.5333 208.0075 14.32556496238102
Glonass 47
1 21006U 90110A 95172.02196772 -.00000034 00000-0 10000-3 0 7707
2 21006 65.0518 96.9323 0058803 188.2256 171.6583 2.13102859 35295
Glonass 48
1 21007U 90110B 95168.92570554 -.00000001 00000-0 10000-3 0 9005
2 21007 65.0803 97.1096 0033850 179.8408 180.1622 2.13101251 35219
Glonass 49
1 21008U 90110C 95173.97837658 -.00000050 00000-0 00000+0 0 907
2 21008 65.0561 96.8902 0010302 278.9042 80.9742 2.13098825 35318
AO-21
1 21087U 91006A 95172.23547883 .00000094 00000-0 82657-4 0 6068
2 21087 82.9421 229.5763 0036209 133.4875 226.9301 13.74556475220285
```

```
RS-12/13
1 21089U 91007A 95171.84494268 .00000031 00000-0 16774-4 0 8098
2 21089 82.9243 98.0708 0029341 159.3262 200.9086 13.74058219219275
MOP-2
1 21140U 91015B 95173.08661458 -.00000015 00000-0 00000+0 0 411
2 21140 0.3109 90.7350 0002526 25.1722 184.8564 1.00270622 17982
Nadezhda 3
1 21152U 91019A 95173.71818059 .00000020 00000-0 62166-5 0 1209
2 21152 82.9256 52.7888 0040618 265.9804 93.6706 13.73520056214264
Glonass 50
1 21216U 91025A 95168.75576298 -.00000053 00000-0 10000-3 0 4142
2 21216 65.0438 336.1114 0010190 184.7988 175.1784 2.13102800 32730
Glonass 51
1 21217U 91025B 95171.64014554 -.00000053 00000-0 10000-3 0 8264
2 21217 65.0320 336.0111 0010022 237.1130 122.8015 2.13101523 32785
Glonass 52
1 21218U 91025C 95168.46734984 -.00000054 00000-0 10000-3 0 2981
2 21218 65.0384 336.1090 0009681 44.1793 315.8700 2.13102381 32725
GRO
1 21225U 91027B 95172.22021083 .00001392 00000-0 25105-4 0 2730
2 21225 28.4604 186.8929 0003135 81.8083 278.2856 15.42722016113958
Meteor 3-4
1 21232U 91030A 95174.20716037 .00000050 00000-0 10000-3 0 8139
2 21232 82.5422 267.2820 0013460 345.6761 14.3980 13.16467804200173
NOAA 12
1 21263U 91032A 95173.74427486 .00000118 00000-0 71974-4 0 5332
2 21263 98.5850 197.6676 0011583 241.6807 118.3199 14.22531707213212
OKEAN 3
1 21397U 91039A 95169.83660547 .00000144 00000-0 17385-4 0 1127
2 21397 82.5231 117.3894 0023445 139.1514 221.1468 14.76377448217601
GPS BIIA-11
1 21552U 91047A 95171.25845784 -.00000084 00000-0 10000-6 0 8676
2 21552 56.0050 63.3335 0064078 242.8530 116.5239 2.00566228 28991
ERS-1
1 21574U 91050A 95174.19873286 .00000070 00000-0 42249-4 0 1640
2 21574 98.5502 248.4366 0001331 60.7647 299.3669 14.32250933205914
UO-22
1 21575U 91050B 95170.72366369 .00000018 00000-0 20591-4 0 6109
2 21575 98.3927 241.9797 0006922 277.8904 82.1496 14.36979551205866
ORBCOMM-X
1 21576U 91050C 95171.71801704 .00000013 00000-0 18903-4 0 7051
2 21576 98.3927 241.3658 0002949 289.7179 70.3690 14.36387063205910
TUBSAT-A
1 21577U 91050D 95171.71386640 .00000003 00000-0 15483-4 0 6046
2 21577 98.3900 241.8847 0005708 279.3273 80.7267 14.36486230205947
SARA
1 21578U 91050E 95174.22679365 .00000219 00000-0 84963-4 0 8056
2 21578 98.4115 249.7877 0003909 262.8362 97.2379 14.39021289206562
TDRS 4
1 21639U 91054B 95173.55945000 .00000078 00000-0 00000+0 0 9065
```

```
2 21639 0.0612 107.1445 0004075 318.5175 231.7065 1.00275279108275
Meteor 3-5
1 21655U 91056A 95170.19101649 .00000051 00000-0 10000-3 0 8105
2 21655 82.5521 217.5324 0014517 6.1105 354.0183 13.16838926184766
UARS
1 21701U 91063B 95171.87888747 -.00000186 00000-0 48364-5 0 6814
2 21701 56.9834 121.8195 0005169 102.2112 257.9500 14.96397498206124
DMSP B5D2-6
1 21798U 91082A 95173.77371141 .00000147 00000-0 10100-3 0 8865
2 21798 98.9600 185.5361 0012576 164.6948 195.4607 14.13898160183992
Glonass 53
1 21853U 92005A 95173.84114715 -.00000049 00000-0 10000-3 0 169
2 21853 65.0169 96.5633 0006864 185.8802 174.1347 2.13101992 26447
Glonass 54
1 21854U 92005B 95172.25386574 -.00000037 00000-0 00000+0 0 1510
2 21854 65.0082 96.6144 0016603 13.3054 346.7409 2.13103581 26392
Glonass 55
1 21855U 92005C 95173.25631927 -.00000046 00000-0 00000+0 0 1438
2 21855 65.0045 96.5830 0006898 211.8141 148.1339 2.13101815 26406
JERS-1
1 21867U 92007A 95173.85222344 .00000268 00000-0 27237-4 0 6119
2 21867 97.7182 250.6019 0002608 66.4648 293.6843 14.98656800183894
GPS BIIA-12
1 21890U 92009A 95173.22121278 -.00000017 00000-0 10000-3 0 6709
2 21890 53.9096 241.4996 0058731 182.7871 177.2459 2.00575517 24404
GPS BIIA-13
1 21930U 92019A 95171.42930512 -.00000085 00000-0 10000-3 0 6406
2 21930 55.6811 3.1115 0039185 172.9971 187.0926 2.00565944 23290
EUVE
1 21987U 92031A 95171.55325699 .00000762 00000-0 25689-4 0 4623
2 21987 28.4317 100.3182 0009644 45.2791 314.8561 15.19314355168460
SAMPEX
1 22012U 92038A 95171.40076642 -.00000290 00000-0 -27611-4 0 6396
2 22012 81.6716 142.3035 0116561 277.3562 81.4420 14.91388086161159
GPS BIIA-14
1 22014U 92039A 95173.96512190 .00000084 00000-0 10000-3 0 5622
2 22014 54.8539 182.9624 0099302 314.3091 44.9466 2.00573159 15181
Glonass 56
1 22056U 92047A 95173.15596956 -.00000057 00000-0 00000+0 0 520
2 22056 64.8790 336.0773 0003334 273.3770 86.5893 2.13102921 22499
Glonass 57
1 22057U 92047B 95173.92044390 -.00000060 00000-0 00000+0 0 519
2 22057 64.8909 336.0737 0006555 331.4435 28.5253 2.13102555 22482
Glonass 58
1 22058U 92047C 95172.92209855 -.00000056 00000-0 10000-3 0 237
2 22058 64.8862 336.1146 0008642 272.9621 86.9451 2.13102935 22515
TOPEX
1 22076U 92052A 95173.19739351 -.00000061 00000-0 00000+0 0 8860
2 22076 66.0403 242.4649 0007764 265.8241 94.1887 12.80929337133885
KO-23
```

```
1 22077U 92052B 95172.24524400 -.00000037 00000-0 10000-3 0 5015
2 22077 66.0797 227.2675 0006924 198.6067 161.4697 12.86291814134255
S80/T
1 22078U 92052C 95174.19310146 -.00000037 00000-0 10000-3 0 4998
2 22078 66.0839 222.0826 0007408 185.0484 175.0454 12.86576114134582
GPS BIIA-15
1 22108U 92058A 95166.94448708 -.00000009 00000-0 00000+0 0 5791
2 22108 54.1602 242.5596 0112571 151.3915 209.3016 2.00567224 20223
FREJA
1 22161U 92064A 95170.21490545 -.00000066 00000-0 18273-4 0 5225
2 22161 62.9943 83.6006 0810675 347.0430 11.0803 13.21838349130311
LAGEOS II
1 22195U 92070B 95173.68529002 -.00000009 00000-0 10000-3 0 4117
2 22195 52.6473 219.5162 0138169 278.9781 79.5166 6.47294034 62937
GPS BIIA-16
1 22231U 92079A 95172.11241048 .00000076 00000-0 10000-3 0 5557
2 22231 54.6153 184.1485 0036982 284.0383 75.5676 2.00564931 18907
GPS BIIA-17
1 22275U 92089A 95170.26980943 .00000061 00000-0 10000-3 0 5648
2 22275 54.6400 181.7987 0052087 247.1252 112.3503 2.00561303 18278
TDRS 5
1 22314U 93003B 95173.56306134 -.00000286 00000-0 10000-3 0 5267
2 22314 1.8840 71.8544 0001318 23.3156 331.7812 1.00262804 8968
GPS BIIA-18
1 22446U 93007A 95173.33514614 -.00000098 00000-0 10000-3 0 5627
2 22446 54.4507 302.1263 0080103 354.4406 5.4577 2.00580865 17325
Glonass 59
1 22512U 93010A 95171.02692700 -.00000023 00000-0 10000-3 0 7093
2 22512 65.0206 96.5134 0007961 196.9108 163.0623 2.13101992 17959
Glonass 60
1 22513U 93010B 95173.31250597 -.00000047 00000-0 00000+0 0 7734
2 22513 65.0108 96.4494 0006517 202.7826 157.1825 2.13102478 18193
Glonass 61
1 22514U 93010C 95173.60600774 -.00000049 00000-0 00000+0 0 7702
2 22514 65.0295 96.4251 0010053 192.2210 167.7519 2.13102855 18200
ASTRO-D
1 22521U 93011A 95172.44185013 .00000813 00000-0 51457-4 0 4168
2 22521 31.1093 210.5784 0057070 180.4887 179.5709 15.02294399128017
UFO F1
1 22563U 93015A 95170.00000000 -.00000196 00000-0 00000+0 0 4236
2 22563 25.9920 294.3014 0004674 228.0467 100.4311 0.99256026 12473
GPS BIIA-19
1 22581U 93017A 95173.47509494 -.00000081 00000-0 10000-3 0 4400
2 22581 55.2155 2.6034 0057461 37.1296 323.2920 2.00575840 16389
ARSENE
1 22654U 93031B 95171.92678343 -.00000141 00000-0 10000-3 0 3175
2 22654 2.5855 84.2126 2894042 213.3309 124.0485 1.42202229 6441
GPS BIIA-20
1 22657U 93032A 95173.60506536 -.00000081 00000-0 10000-3 0 4781
2 22657 55.2407 2.4368 0072852 213.9264 145.6164 2.00565853 11712
```

```
RADCAL
1 22698U 93041A 95173.36752265 .00000044 00000-0 13133-4 0 4094
2 22698 89.5418 290.2375 0093754 61.9404 299.1239 14.21347574103179
GPS BIIA-21
1 22700U 93042A 95169.08565917 -.00000032 00000-0 10000-3 0 4322
2 22700 54.3188 243.2447 0037676 335.4734 24.4280 2.00565092 14426
NOAA 13
1 22739U 93050A 95173.89032169 .00000075 00000-0 67049-4 0 8297
2 22739 98.9950 122.7398 0010158 152.8357 207.3342 14.10936687 96240
GPS BIIA-22
1 22779U 93054A 95173.65728430 -.00000099 00000-0 10000-3 0 4851
2 22779 54.5817 302.1009 0019729 245.7176 114.0898 2.00569963 13278
Meteor 2-21
1 22782U 93055A 95173.27347835 .00000079 00000-0 58897-4 0 4102
2 22782 82.5481 273.1529 0020837 271.2083 88.6705 13.83033746 91241
UFO F2
1 22787U 93056A 95173.49713542 -.00000065 00000-0 00000+0 0 4647
2 22787 4.4961 325.1421 0003720 105.9598 89.2684 1.00271726 5210
SPOT 3
1 22823U 93061A 95173.21082356 .00000078 00000-0 57441-4 0 4498
2 22823 98.7369 247.2622 0001305 57.7100 302.4206 14.20022366 90007
STELLA
1 22824U 93061B 95173.17166154 -.00000029 00000-0 61111-5 0 3972
2 22824 98.6194 249.1922 0006117 200.1981 159.8965 14.27101581 90442
AO-27
1 22825U 93061C 95173.21630570 .00000014 00000-0 23347-4 0 3999
2 22825 98.6160 249.5569 0007852 204.7394 155.3404 14.27665522 90485
IO-26
1 22826U 93061D 95173.16985088 .00000016 00000-0 24156-4 0 3981
2 22826 98.6179 249.6105 0008455 206.4437 153.6312 14.27773258 90485
HEATHSAT
1 22827U 93061E 95173.19029029 .00000026 00000-0 27985-4 0 4591
2 22827 98.6149 249.5654 0008544 192.4782 167.6181 14.27896724 90491
ITAMSAT
1 22828U 93061F 95173.16521979 .00000014 00000-0 23202-4 0 3763
2 22828 98.6133 249.6410 0009594 190.2559 169.8428 14.28103466 58587
PO-28
1 22829U 93061G 95173.17691923 .00000013 00000-0 22910-4 0 3902
2 22829 98.6141 249.6869 0009675 190.2638 169.8349 14.28082716 90507
KO-25
1 22830U 93061H 95170.15473770 -.00000016 00000-0 10624-4 0 4080
2 22830 98.5107 239.8842 0011601 175.3769 184.7535 14.28091248 90078
GPS BIIA-23
1 22877U 93068A 95173.71559779 -.00000087 00000-0 10000-3 0 2901
2 22877 55.4417 63.5941 0080254 310.7987 48.5151 2.00549216 12169
METEOSAT 6
1 22912U 93073B 95174.02951968 -.00000086 00000-0 00000+0 0 3240
2 22912 0.1094 267.2149 0001594 231.1065 133.2816 1.00274056 4249
HST Array
1 22920U 90037C 95173.67076803 .00004859 00000-0 35654-3 0 3374
```

```
2 22920 28.4709 335.7318 0004013 229.8906 130.1381 15.01244353 85133
Meteor 3-6
1 22969U 94003A 95172.45363534 .00000051 00000-0 10000-3 0 1768
2 22969 82.5578 155.7206 0017040 63.4779 296.8090 13.16729759 67444
TUBSAT-B
1 22970U 94003B 95171.04770582 .00000051 00000-0 10000-3 0 1679
2 22970 82.5567 156.6516 0017743 64.9558 295.3400 13.16825215 67262
GPS BIIA-24
1 23027U 94016A 95173.78969400 -.00000081 00000-0 10000-3 0 2236
2 23027 55.0706 4.4529 0063676 195.8219 164.0483 2.00557296 9478
Glonass 62
1 23043U 94021A 95171.80715278 -.00000054 00000-0 00000+0 0 2171
2 23043 64.7627 336.5407 0005800 174.1431 185.8781 2.13102834 9289
Glonass 63
1 23044U 94021B 95172.15908373 -.00000055 00000-0 00000+0 0 1935
2 23044 64.7532 336.5273 0028689 201.1806 158.7044 2.13102667 9299
Glonass 64
1 23045U 94021C 95173.27385915 -.00000058 00000-0 00000+0 0 2036
2 23045 64.7426 336.5028 0011187 37.7126 322.3722 2.13102314 9317
GOES 8
1 23051U 94022A 95174.19373968 -.00000257 00000-0 10000-3 0 3319
2 23051 0.0309 72.9312 0003293 59.0210 133.4870 1.00283580 11750
MSTI 2
1 23101U 94028A 95172.50798050 .00004962 00000-0 88357-4 0 2065
2 23101 97.0989 5.6797 0010577 218.9936 141.0572 15.50533380 63195
STRV-1A
1 23125U 94034B 95173.61354008 .00001111 00000-0 42001-3 0 1687
2 23125 7.4735 28.9538 7259520 124.1528 325.8210 2.29936552 7774
STRV-1B
1 23126U 94034C 95173.79985065 .00001572 00000-0 56470-3 0 1574
2 23126 7.4860 29.1211 7263766 123.8776 326.0911 2.29581057 7826
Nadezhda 4
1 23179U 94041A 95170.88685928 .00000028 00000-0 13076-4 0 1090
2 23179 82.9464 145.8626 0038088 59.3808 301.1098 13.75668802 46849
Glonass 65
1 23203U 94050A 95170.59598125 .00000025 00000-0 00000+0 0 1565
2 23203 64.7969 216.3322 0006993 158.6173 201.4800 2.13101919 6659
Glonass 66
1 23204U 94050B 95173.64563138 .00000061 00000-0 00000+0 0 1662
2 23204 64.7817 216.2652 0015002 340.4344 19.5827 2.13101995 6717
Glonass 67
1 23205U 94050C 95171.18221769 .00000031 00000-0 00000+0 0 1523
2 23205 64.7916 216.3330 0003005 283.6820 76.3549 2.13101976 6664
DMSP B5D2-7
1 23233U 94057A 95173.70904675 .00000093 00000-0 73978-4 0 3861
2 23233 98.8788 231.7510 0013252 118.9491 241.3009 14.12614990 41931
OKEAN 1-7
1 23317U 94066A 95173.56598033 .00000146 00000-0 18805-4 0 746
2 23317 82.5415 30.7527 0025565 168.8395 191.3389 14.73941289 37417
ELEKTRO
```

```
1 23327U 94069A 95170.28388866 -.00000109 00000-0 10000-3 0 756
2 23327 0.7935 261.5187 0006069 184.7881 358.6909 1.00268552 2350
RESURS 1-3
1 23342U 94074A 95173.94856989 .00000090 00000-0 23240-4 0 1379
2 23342 98.0159 233.5082 0001866 73.8120 286.3306 14.69747183 33894
Glonass 68
1 23396U 94076A 95171.02551688 -.00000023 00000-0 00000+0 0 1130
2 23396 64.9434 96.6007 0029099 192.7325 167.1936 2.13102500 4507
Glonass 69
1 23397U 94076B 95173.07800256 -.00000045 00000-0 00000+0 0 1163
2 23397 64.9332 96.5487 0014264 322.1943 37.7021 2.13102365 4549
Glonass 70
1 23398U 94076C 95173.43070050 -.00000047 00000-0 00000+0 0 1235
2 23398 64.9242 96.5173 0004160 291.4792 68.4826 2.13102128 4569
RS-15
1 23439U 94085A 95171.69523643 -.00000039 00000-0 10000-3 0 581
2 23439 64.8182 249.3149 0167800 261.4999 96.6880 11.27523774 19912
NOAA 14
1 23455U 94089A 95173.84334860 -.00000016 00000-0 15573-4 0 2200
2 23455 98.9043 116.3146 0009105 172.5320 187.5989 14.11516826 24616
ODERACS II A
1 23471U 95004C 95174.12128440 .00025217 00000-0 11493-3 0 1397
2 23471 51.6478 104.7200 0014396 116.9635 243.2740 15.83506052 22111
ODERACS II B
1 23472U 95004D 95174.04349439 .00057349 12434-4 17595-3 0 1435
2 23472 51.6476 100.3361 0011339 129.8991 230.3011 15.92166889 22165
Glonass 71
1 23511U 95009A 95173.50847243 -.00000058 00000-0 00000+0 0 605
2 23511 64.7719 336.7519 0004909 332.7155 27.2633 2.13102265 2287
Glonass 72
1 23512U 95009B 95172.39415125 -.00000055 00000-0 00000+0 0 654
2 23512 64.7753 336.8014 0012720 194.4259 165.5446 2.13102567 2266
Glonass 73
1 23513U 95009C 95171.04480568 -.00000053 00000-0 00000+0 0 646
2 23513 64.7712 336.8257 0005802 202.0454 157.9329 2.13102502 2238
Soyuz TM-21
1 23519U 95010A 95173.07746318 -.00017622 00000-0 -23375-3 0 1148
2 23519 51.6469 133.2163 0005239 99.6633 260.5592 15.56916667 15598
SFU
1 23521U 95011A 95171.82438598 .00002242 00000-0 70146-4 0 699
2 23521 28.4614 49.5152 0020899 260.4784 99.3374 15.28443093 14497
GMS 5
1 23522U 95011B 95169.37070177 -.00000298 00000-0 00000+0 0 318
2 23522 0.8591 295.0814 0001912 203.5357 40.9864 1.00271604 794
DMSP B5D2-8
1 23533U 95015A 95173.86568039 -.00000014 00000-0 16278-4 0 1150
2 23533 98.8324 176.1678 0007746 7.0400 353.0876 14.12689764 12758
Microlab 1
1 23547U 95017C 95170.78582658 .00000133 00000-0 54788-4 0 291
2 23547 69.9797 293.2824 0013306 324.2163 35.8077 14.45367566 11159
```

```
OFEQ 3
1 23549U 95018A 95173.52409222 .00015311 00000-0 43586-3 0 594
2 23549 143.3678 203.4015 0256861 359.5635 0.4985 15.06893701 11778
GFZ-1
1 23558U 86017JE 95172.27991657 .00002963 00000-0 42311-4 0 351
2 23558 51.6487 136.1358 0005428 306.1659 53.8834 15.59941738533477
ERS-2
1 23560U 95021A 95171.70575168 .00000066 00000-0 40506-4 0 830
2 23560 98.5506 245.9884 0001531 80.3074 279.8281 14.32250345 8681
Spektr
1 23579U 95024A 95173.07746318 -.00017622 00000-0 -23375-3 0 520
2 23579 51.6469 133.2163 0005239 99.6633 260.5592 15.56916667 5155
GOES 9
1 23581U 95025A 95173.17331483 -.00000185 00000-0 00000+0 0 305
2 23581 0.2392 252.6109 0004070 254.9386 94.1031 1.00270517 304
Cosmos 2312
1 23584U 95026A 95172.77600694 -.00001042 00000-0 26589-2 0 279
2 23584 62.9187 129.8603 7353179 318.2876 4.5797 2.00576175 573
1995026B
1 23585U 95026B 95174.04464973 .00354555 76079-5 60383-3 0 511
2 23585 62.8186 25.4221 0210871 122.8508 239.2742 15.72749210 4570
1995026C
1 23586U 95026C 95173.28137731 .21486975 89159-5 15100-3 0 1006
2 23586 62.8367 24.9416 0023782 113.0094 247.7652 16.51468703 4518
1995020D
1 23588U 95020D 95155.10738870 .00000214 00000-0 10000-4 0 39
2 23588 51.5643 223.0439 0014507 304.4358 55.9431 15.56317829530999
UFO F5
1 23589U 95027A 95173.57266288 .00000013 00000-0 00000+0 0 241
2 23589 5.0545 322.5003 0173263 146.0352 196.6212 1.00254940 277
1995027B
1 23590U 95027B 95169.36825339 .00005214 00000-0 20129-2 0 158
2 23590 26.9068 285.3503 6619150 187.7074 150.8957 3.13042916 532
1995014C
1 23591U 95014C 95152.16822844 .28896463 58209-5 21345-2 0 23
2 23591 67.1021 179.9664 0056543 106.9455 254.8135 16.31995263 11324
1995014D
1 23592U 95014D 95152.16875618 .33333659 57213-5 48100-2 0 22
2 23592 67.1218 179.9437 0053312 111.3520 250.2493 16.29697784 11326
1995011H
1 23593U 95011H 95165.09137681 .00277323 00000-0 48568-2 0 32
2 23593 28.4522 91.1227 0001812 174.1606 226.0699 15.48495124 13502
1995015D
1 23594U 95015D 95172.51589874 .00000664 00000-0 38069-3 0 57
2 23594 98.8274 174.8048 0002360 352.1247 7.9884 14.12817975 2766
1995015E
1 23595U 95015E 95172.51663445 .00000540 00000-0 31442-3 0 56
2 23595 98.8297 174.8257 0009362 20.5902 339.5628 14.12801064 12568
Cosmos 2313
1 23596U 95028A 95173.81542912 .00001321 00000-0 26521-4 0 354
```

```
2 23596 65.0410 312.4431 0010364 275.9852 84.0113 15.52016109 2259
1995028B
1 23597U 95028B 95159.68438728 .34405963 86767-5 32676-3 0 64
2 23597 65.0057 359.9697 0116834 54.7033 306.5078 16.32836446 84
DBS 3
1 23598U 95029A 95169.56586376 -.00000065 00000-0 00000+0 0 181
2 23598 0.0717 280.2917 0007216 322.9734 116.6527 1.00218141 72
1995029B
1 23599U 95029B 95173.14222485 .00019800 00000-0 23825-2 0 166
2 23599 7.2023 75.7191 7114568 189.2079 142.6354 2.51183759 4462
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1338. Re: sts-71 sarex??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-24 00:00:00 UTC
From: goris@fc.hp.com
Message-ID: <3sg7ub$d47@tadpole.fc.hp.com>
Source record: 24595

Thanks for the pointers...I got on the shuttle mailing list, and even
got the first elements (pre-launch). I also have STSPLUS up and running...
NICE PROGRAM!

-Andy Goris
goris@fc.hp.com
AA0CM

1339. Re: Shuttle - Audio - Houston

Newsgroup: rec.radio.amateur.space
Date: 1995-06-25 00:00:00 UTC
From: mbordel@phoenix.net
Message-ID: <mbordel-2506950009100001@dial30.phoenix.net>
Source record: 24596

In article <3seh00$ikv@news.tamu.edu>, g-taylor4@tamu.edu (Greg Taylor) wrote:

> Which Houston repeater carries shuttle audio retransmissions?

146.64 Mhz

--
Matt Bordelon KC5BTL
SAREX Principal Investigator

-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: 2.6.2

mQCPAy86OVEAAAEEALhqyXqqkrVcTH2/DSEj0OfxsMTzYeVwWlv2fJJRBXhUWo7c
2fenbLpKn7UToL5HpD+KVxDg5PVmH0/BrD6PvNifnwgrfXIhtFTR+v+bR9PEj6lb
ByC9dyr5ktiVCDTk1t3C5mN15vD89U+6sUvNKapSASCNYJ7rUOPCe/MuQrNtABEB
AAG0KU1hdHRoZXcgRy4gQm9yZGVsb24gPG1ib3JkZWxAcGhvZW5peC5uZXQ+
=11am
-----END PGP PUBLIC KEY BLOCK-----

1340. Re: Quadrifilar Helix (ulp!)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-26 00:00:00 UTC
From: icesb@iroe.fi.cnr.it
Message-ID: <icesb.82.2FEE6589@iroe.fi.cnr.it>
Source record: 24597

In article <3sfrre$l4t@nova.umuc.edu> KKEYSEEA@EUROPA.UMUC.EDU (Kenneth L. Keyseear) writes:
>From: KKEYSEEA@EUROPA.UMUC.EDU (Kenneth L. Keyseear)
>Subject: Quadrifilar Helix (ulp!)
>Date: 24 Jun 1995 02:04:30 GMT

>Quadrifilar Helix, ay...

>What does that buy you over a regular helix?
>3dB gain?

>Is a regular helix monofilar or bifilar?

>73 de somewhat startled WB4U
>Ken

Quadrifilar Helix is an opt antenna where cicular polarization is required and omnidirectional too.
It's hard to realize, or bettere, to adjust even with high expensive instrumentation, for home made contruction I'll suggest you the Lindenblad antenna, thats ok for LEO bird.

Regular helix is monofilar.

Hope this help
73 de Lapo IK5NAX

Lapo Pieri IK5NAX internet: icesb@iroe.fi.cnr.it
@IROE-CNR (Italy) lpieri@nyx.cs.du.edu
Phone: +39 55 4235276 (IROE) packet: ik5nax@IW5CZJ.ITOS.IT.EU
+39 55 410209 (home) [TCP/IP] 44.134.208.174

1341. HELP! pk232 or dsp2232

Newsgroup: rec.radio.amateur.space
Date: 1995-06-26 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3sn27j$1v1e@ns4-1.CC.Lehigh.EDU>
Source record: 24598

I'm looking into getting a AEA pk232MBX, but since i got info from aea about
their products i'm not sure which is better for pacsat's?
do i need a PSK satellite modem <dsp2232> or can i use a regular
packet modem <pk232>? i AM looking for a multi-Mode system

PLEASE HELP!

DAvid
|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1342. Re: HELP! pk232 or dsp2232

Newsgroup: rec.radio.amateur.space
Date: 1995-06-26 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-2606951900400001@lia-a5.ip.realtime.net>
Source record: 24599

In article <3sn27j$1v1e@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> I'm looking into getting a AEA pk232MBX, but since i got info from aea about
> their products i'm not sure which is better for pacsat's?
> do i need a PSK satellite modem <dsp2232> or can i use a regular
> packet modem <pk232>? i AM looking for a multi-Mode system
>
> PLEASE HELP!
>
> DAvid

Depending on how many modes you want to use ...

To work the 1200 pacsats, you will need a 1200 PSK modem to add on to the pk232 (I believe this requires adding a modem disc. header (TAPR has a kit)). Ditto for the 9600 bps FSK satellites.

Once you add all this up, and any other modes you want, the DSP-2232 may start to become cost-effective. I use a DSP-2232 a lot in a variety of modes, both satellite and terrestrial.

1343. GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-06-26 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3snmak$19gi@ns4-1.CC.Lehigh.EDU>
Source record: 24600

are the GOES sat's tx freq 137.xx or 1691mhz?

thanks

david

|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1344. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-06-26 00:00:00 UTC
From: gkennedy@helix.net
Message-ID: <7S47vMvqxGRa083yn@helix.net>
Source record: 24601

In article <3snmak$19gi@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> are the GOES sat's tx freq 137.xx or 1691mhz?

1691 MHz. The polar orbiters (NOAA and Russian Meteor) use
frequencies between 137.5 and 137.85 MHz, depending on which bird it is.
The NOAAs also use 1701 MHz for the high-resolution (HRPT) imagery.

> thanks

Yer Welkum. :-)

****
* Geoff L. Kennedy ** Located on the WEsT Coast of *
* "Kennedy's Space Centre" 8-) ** Beautiful British Columbia ! *
* E-mail: gkennedy@helix.net ** Coquitlam, BC, Canada *
****

1345. Non expensive PACSAT operation ?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-26 00:00:00 UTC
From: Peter@hfk.e-technik.uni-kassel.de
Message-ID: <3sm1j0$pto@hrz-ws11.hrz.uni-kassel.de>
Source record: 24602

Hi ,

For quite a while I have been interested in PACSAT operation (9600Bd)
I posess allmost everything to begin PACSAT reception but a 70 cm
transceiver . My problem now is : Do I Need to make doppler correction
in FM , that is : does my transceiver NEED small steps in FM ???

Most of the PACSAT operators seem to use FT736 or TS790 etc .
To me these TRXs seem way too expensive to just use them for PACSATs.
I am thinking about byuing a TR851 or the Yaesu 790RII , will I be
able to use them for PACSATS ?? (9600 FSK , FM ?)

Is there an alternative like building a TRX only to be used for
PACSAT?

TNX in advance ,
Peter

ps : not sure wether it was PACSATS or MICROSATS ... But 9600 BD like
KO23 and KO25 etc.

1346. Re: HELP! pk232 or dsp2232

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3snl4p$rff@maureen.teleport.com>
Source record: 24603

In article <3sn27j$1v1e@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU said...
>
>I'm looking into getting a AEA pk232MBX, but since i got info from aea about
>their products i'm not sure which is better for pacsat's?
>do i need a PSK satellite modem <dsp2232> or can i use a regular
>packet modem <pk232>? i AM looking for a multi-Mode system
>
>PLEASE HELP!

The PK-232 will NOT do pacsats, either 1200 baud psk or 9600 fsk. If you intend to do satellite packet ever, don't waste your money on the PK-232, save up and get the DSP-2232. It does everything the PK-232 does and more.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1347. Internet resources on Sats

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: phufh@csv.warwick.ac.uk
Message-ID: <3sp06m$c70@crocus.csv.warwick.ac.uk>
Source record: 24604

I have been trying to find WWW pages concerning the specifications of satellites and the technology used to create them. Example would be the tx power, antenna array, power supply requirements and how they were met etc etc..

I have still not been able to locate such information and wonder if anyone can help me in this matter,

Cheers,

Andrew David Lambert	phufh@csv.warwick.ac.uk	"I don't like it and I'm sorry
3rd Year Physics	g7jaf	I've had anything to do with
University of Warwick		it.".....Quantum Mechanics
England_____	_____	ERWIN SCHRODINGER 1887-1961___

1348. RS10 Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: mellerso@uga.cc.uga.edu
Message-ID: <mellerso.80.0041C8BC@uga.cc.uga.edu>
Source record: 24605

I have a couple of simple questions about working RS10.

I am using an Icom 728 with a Butternut vertical for the downlink which appears to work fine. My uplink is a Kenwwod TR9000 running 10Watts into a vertically polarized beam. I get a pretty decent signal into the sat using CW for a large portion of the pass. However, when I go to USB for voice, the signal sounds kind of weak and distorted. The TR9000 seems to be working fine, so is this an antenna or a power related problem ?

I also have been somewhat confused as to the proper method for opearating the Sats. I notice that some operators are staying on the same downlink frequency while adjusting the uplink frequency to compensate for doppler. I thought you are supposed to stay on the same uplink and adjust the downlink to compensate for doppler so you would not run over someone elses signal ?

Thanks

1349. Astronomy!

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: karl.leite@dialdata.COM.BR
Message-ID: <1dd.25599.50.0CC722E5@dialdata.com.br>
Source record: 24606

Dear OM's,

Please, can anyone help me to receive ASTRONOMY
NEWSLETTER/BULLETIN or other publication via
E-mail?
FYI, I have not full acess via Internet yet. So,
all things will be via my E-mail.
I hope hear from you soon. And, I would like to
thank you in advance!
Vy best wishes and 73,

[]'s, Karl Leite, Natal/RN - Brasil
karl.leite@dialdata.com.br
PS7KM@PY1AA.#RJ.BRA.SA
RBT 12:2840/1

---
* UniQWK #1812* REALITY SYS Corrupted: re-boot universe? (Y/N/Q)

1350. Sat. Tracking Program?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: bobcast@eskimo.com
Message-ID: <DAu8Ew.Etw@eskimo.com>
Source record: 24607

```
--
-30-
You may reach me via, Internet: bobcast@eskimo.com
Ham Radio Internet: bob@radio.kc7qr.ampr.org.
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
```

1351. Re: RS10 Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: gmolnar@nexus.interealm.com
Message-ID: <3spbb4$eg2@nexus.interealm.com>
Source record: 24608

mellerso@uga.cc.uga.edu (Mike Ellerson) wrote:

>I have a couple of simple questions about working RS10.

>I am using an Icom 728 with a Butternut vertical for the downlink which
>appears to work fine. My uplink is a Kenwwod TR9000 running 10Watts into a
>vertically polarized beam. I get a pretty decent signal into the sat using CW
>for a large portion of the pass. However, when I go to USB for voice, the
>signal sounds kind of weak and distorted. The TR9000 seems to be working fine,
>so is this an antenna or a power related problem ?

Check the rig with another station on 2m ssb to make sure there's not
an RF problem. If it's clean "simplex", it's likely that power is the
issue (maybe too much, maybe too little - experiment).

>I also have been somewhat confused as to the proper method for opearating the
>Sats. I notice that some operators are staying on the same downlink frequency
>while adjusting the uplink frequency to compensate for doppler. I thought you
>are supposed to stay on the same uplink and adjust the downlink to compensate
>for doppler so you would not run over someone elses signal ?

Keep your downlink (10m) signal on the same frequency by adjusting
your transmitter to compensate for doppler. That way, you won't run
over other users on the bird.

>Thanks

Hope to see you there soon!
73

1352. Re: Any shuttle repeaters in the Los Angeles area?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: jaminge@pb2esac.esac.pacbell.com
Message-ID: <3spcrb$8tk@gw.PacBell.COM>
Source record: 24609

In article <riveroDAu3no.I6L@netcom.com>,
Michael Rivero <rivero@netcom.com> wrote:
>
>Any shuttle repeaters in the Los Angeles area?
>
I've heard shuttle audio on two different 2-meter repeaters:

TRW: 145.320 (-)
JPL: 147.150 (+)

Usually the repeater still functions normally, with the shuttle
feed being heard during idle periods.

-73, John

--
John Minger KE6DTC "Society is like a stew. If you
Glendale, CA don't keep it stirred up, you get a
<jaminge@esac.pacbell.com> lot of scum on top." -Edward Abbey

1353. ARLS009 Shuttle carries two hams

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls009.1995@ampr.org>
Source record: 24610
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB SPACE @ ARL $ARLS009
ARLS009 Shuttle carries two hams

ZCZC AS88
QST de W1AW
Space Bulletin 009 ARLS009
From ARRL Headquarters
Newington, CT June 27, 1995
To all radio amateurs

SB SPACE ARL ARLS009
ARLS009 Shuttle carries two hams

Launch of the Space Shuttle Atlantis occurred on Friday, June 27,
1995 at 1932 UTC. The mission, designated STS-71, carries the
Shuttle Amateur Radio EXperiment or SAREX. Amateur Radio-licensed
astronauts Ellen S. Baker, KB5SIX and Charlie Precourt, KB5YSQ will
operate a 2-meter FM voice radio to make contacts with amateurs and
student groups. This same radio will also facilitate a rendezvous
and docking with the Russian Space Station Mir. Docking will occur
approximately 2 days after launch, and separation is scheduled
approximately 7 days after launch. Most SAREX activities are
planned for after the shuttle and space station separate. Keep
posted to W1AW for possible operating times and Keplerian elements.
NNNN
/EX
```

1354. ARLK028 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk028.1995@ampr.org>
Source record: 24611
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK028
ARLK028 Keplerian data

ZCZC SK53
QST de W1AW
Keplerian Bulletin 28 ARLK028
From ARRL Headquarters
Newington, CT June 27, 1995
To all radio amateurs

SB KEP ARL ARLK028
ARLK028 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-71
1 99971U 99971A 95178.84379461 .00042677 75368-8 24386-4 0 16
2 99971 51.6462 104.5436 0077882 3.9787 185.6697 16.11199182 12
AO-10
1 14129U 83058B 95170.18056059 -.00000136 00000-0 10000-3 0 3592
2 14129 26.4651 262.4272 5999745 286.2911 18.6189 2.05879788 62370
RS-10/11
1 18129U 87054A 95175.70726171 .00000037 00000-0 24124-4 0 788
2 18129 82.9251 53.5142 0013397 70.1404 290.1189 13.72353643401001
UO-11
1 14781U 84021B 95174.04219287 .00000109 00000-0 26202-4 0 8079
2 14781 97.7827 176.3045 0011880 157.7315 202.4408 14.69354016604768
RS-12/13
1 21089U 91007A 95176.14122222 .00000049 00000-0 35907-4 0 8104
2 21089 82.9241 94.8852 0029618 147.4206 212.8777 13.74058635219866
AO-13
1 19216U 88051B 95177.07680724 -.00000322 00000-0 10000-4 0 516
2 19216 57.5350 179.6775 7302843 12.2421 358.6956 2.09726537 22352
UO-14
1 20437U 90005B 95175.22005865 .00000003 00000-0 18079-4 0 1067
2 20437 98.5663 259.4766 0010879 173.7284 186.4028 14.29890151282754
RS-15
1 23439U 94085A 95176.21862484 -.00000039 00000-0 10000-3 0 594
2 23439 64.8190 242.0007 0167800 260.6927 97.4988 11.27524017 20423
```

```
AO-16
1 20439U 90005D 95176.24117049 .00000005 00000-0 19013-4 0 9058
2 20439 98.5785 262.1611 0011078 171.7073 188.4294 14.29944099282913
DO-17
1 20440U 90005E 95176.22886700 .00000010 00000-0 20856-4 0 9058
2 20440 98.5802 262.6151 0011077 170.7818 189.3569 14.30085365282935
WO-18
1 20441U 90005F 95175.72152835 -.00000001 00000-0 16453-4 0 9091
2 20441 98.5801 262.0878 0011778 172.8370 187.2990 14.30056433282860
LO-19
1 20442U 90005G 95175.25406913 .00000042 00000-0 33068-4 0 9050
2 20442 98.5816 261.9900 0011784 174.3584 185.7721 14.30159490282819
FO-20
1 20480U 90013C 95175.26990383 -.00000002 00000-0 71533-4 0 8012
2 20480 99.0721 262.5558 0539961 217.1975 139.0549 12.83230938251853
AO-21
1 21087U 91006A 95175.65670181 .00000094 00000-0 82657-4 0 6076
2 21087 82.9396 227.0390 0036064 124.1456 236.3129 13.74556771220750
UO-22
1 21575U 91050B 95175.18002294 .00000041 00000-0 28186-4 0 6113
2 21575 98.3928 246.3259 0006842 263.6595 96.3816 14.36980365206509
KO-23
1 22077U 92052B 95176.52153178 -.00000037 00000-0 10000-3 0 5021
2 22077 66.0791 218.3142 0006861 196.9631 163.1159 12.86291715134800
KO-25
1 22828U 93061F 95177.22886794 .00000004 00000-0 19043-4 0 3771
2 22828 98.6132 253.6484 0009879 177.7271 182.3953 14.28103734 59165
IO-26
1 22826U 93061D 95177.23443690 .00000018 00000-0 24819-4 0 3990
2 22826 98.6175 253.6178 0008418 194.3468 165.7464 14.27773734 91060
AO-27
1 22825U 93061C 95173.21630570 .00000014 00000-0 23347-4 0 3999
2 22825 98.6160 249.5569 0007852 204.7394 155.3404 14.27665522 90485
PO-28
1 22829U 93061G 95177.24062613 .00000007 00000-0 20549-4 0 3912
2 22829 98.6139 253.6940 0009834 177.9948 182.1273 14.28083097 91083
Mir
1 16609U 86017A 95177.57042795 .00002606 00000-0 42223-4 0 1007
2 16609 51.6480 110.7224 0004878 115.5949 244.5543 15.56965667534337

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
July 1, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1355. Any shuttle repeaters in the Los Angeles area?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: rivero@netcom.com
Message-ID: <riveroDAu3no.I6L@netcom.com>
Source record: 24612

Any shuttle repeaters in the Los Angeles area?

--
========== T H E A N I M A T I O N P L A N T A T I O N ==========
| Michael F. Rivero - rivero@netcom.com - 16 years in the business |
| Award Winning Digital Effects for TV & Feature Films - 818-763-2800 |
| RECENT: Coneheads, Son of Pink Panther, Brainscan, Stargate |
| ftp site is at ftp.netcom.com in /pub/ri/rivero |
==========

1356. Re: Sources for Elevation Rotators?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: daveb@delphi.com
Message-ID: <JW18HiA.daveb@delphi.com>
Source record: 24613

Joe Mack <mack@ncifcrf.gov> writes:

>In article <3renpd$d2v@mail.one.net> Jeff Davis <jdavis@one.net> writes:
>>blanton@ni.net (J. L. Blanton) wrote:
>>>I've been searching the amateur catalogs for elevation rotators but so far
>>>I've only found the two from Yaesu: G-500A (El only) for $309 and G-5400B
>>>(Az/El) for $589. These prices seem a little steep and I thought that
>>>there would be more choices than that. Does anyone know of any other
>>>manufacturers or sellers of elevation rotators, especially
>>>lighter-duty/lower-cost units?
>>>
>>>Thanks,

Try using the Alliance U110. I have been using one for awhile now. I also
can tell you an easy way to get accurate reliable position feedback.
Usually these can be had at hamfests for less than ten bucks.
The newer the better.

1357. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: n2ete@ag.net
Message-ID: <3sp81f$50b@agis.ag.net>
Source record: 24614

In article <3snmak$19gi@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:
>
>are the GOES sat's tx freq 137.xx or 1691mhz?
>
>

In the 136 and 1600 MHz region.

Jim

1358. Re: HELP! pk232 or dsp2232

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3sqd46$1ndh@ns4-1.CC.Lehigh.EDU>
Source record: 24615

>Depending on how many modes you want to use ...
>
>To work the 1200 pacsats, you will need a 1200 PSK modem to add on to the
>pk232 (I believe this requires adding a modem disc. header (TAPR has a
>kit)). Ditto for the 9600 bps FSK satellites.
>
>Once you add all this up, and any other modes you want, the DSP-2232 may
>start to become cost-effective. I use a DSP-2232 a lot in a variety of
>modes, both satellite and terrestrial.

ok, thanks for the info, i guess i better start saveing up a bit more then i
expected :(

DAvid

|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1359. Re: HELP! pk232 or dsp2232

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3sqda0$qq7@ns4-1.CC.Lehigh.EDU>
Source record: 24616

>The PK-232 will NOT do pacsats, either 1200 baud psk or 9600 fsk. If you intend
to
>do satellite packet ever, don't waste your money on the PK-232, save up and get
the
>DSP-2232. It does everything the PK-232 does and more.

well, there goes the summer w/ sats

ok, two people said to forget the 232 and get a 2232, so i will

but how MUCH does the dps2232 cost <cheapest, and where>

thanks all,
DAvid

|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1360. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-06-27 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3sqddi$i37@ns4-1.CC.Lehigh.EDU>
Source record: 24617

>> are the GOES sat's tx freq 137.xx or 1691mhz?
>
> 1691 MHz. The polar orbiters (NOAA and Russian Meteor) use
>frequencies between 137.5 and 137.85 MHz, depending on which bird it is.
>The NOAAs also use 1701 MHz for the high-resolution (HRPT) imagery.
>
>> thanks
>
> Yer Welkum. :-)

i just got a txt file from sci.space.news and another txt from somewhere else, and they both have the FREQ at 137.xx. Yes i do believe you, but out of 2 places i am still not sure WHY they say it is 137mhz

thanks anyhow

Davis

|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1361. Re: LO-19..CPU Crash??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: wk@muscle.frc.maf.govt.nz
Message-ID: <WK.95Jun28125712@muscle.frc.maf.govt.nz>
Source record: 24618

Stacey WB4QKT wrote:

> Has LO-19 undergone a system crash? There was a message in
> Spanish which also (i think) asked this question on one of the
> 9600 baud birds. For several nights, all I've heard on LO-19
> is an unmodulated "carrier." (Didn't check last night, but that
> was the case for several prior nights).

> Anyone know for sure what's going on?

LO-19 crashed some time around Su 18/6 midday UTC. It is back on the
air, transmitting MBL telemetry, and beacons periodically. Signals
appear to be down somewhat. See SpaceNews of 26/6 for further details.
AO-16 is open as per normal, with good signals and lots of activity,
carrying the South American forwarding whilst LO-19 is QRT.

Wilbert, ZL2BSJ

--
Wilbert Knol, Acoustics Group, MAF Marine Research, Wellington, New Zealand.
Usenet:wk@frc.maf.govt.nz packet:ZL2BSJ@ZL2WA.NZL.OC or @ AO16, LO19
AMPR:[44.147.180.88] AX25 NET/ROM TCP/IP MBX 146.625 147.075 MHz 24 hrs.

1362. Need shuttle keps, and freqs

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: gsmith@manny.rcinet.com
Message-ID: <gsmith.1.0001A9B3@manny.rcinet.com>
Source record: 24619

Hi all:

1363. Re: Any shuttle repeaters in the Los Angeles area?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: cbm@netcom.com
Message-ID: <cbmDAvCHB.5B4@netcom.com>
Source record: 24620

In <riveroDAu3no.I6L@netcom.com>, rivero@netcom.com (Michael Rivero) writes:
>
>Any shuttle repeaters in the Los Angeles area?

448.500 Mt. Wilson usually carries the shuttle with no interruptions.

Rob.
WA6JJY

1364. Re: Any shuttle repeaters in the Los Angeles area?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: Skip.Reymann@jpl.nasa.gov
Message-ID: <3sro6s$l8l@ampersand.jpl.nasa.gov>
Source record: 24621

> Any shuttle repeaters in the Los Angeles area?

Try 145.46, 224.08.

1365. Shuttle Retransmission FAQ

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: hrsblackwell@stars.gsfc.nasa.gov
Message-ID: <hrsblackwell-2806951621540001@dimsdale.gsfc.nasa.gov>
Source record: 24622

Greetings,

This is an attempt to answer some commonly asked questions about the Goddard Amateur Radio Club's Shuttle Retransmission Activity. It was composed of bits and pieces of other documents as well as some new information. Unfortunately, I have lost some of the references to other authors who have contributed to this document. If you see something in this document that looks familiar, please let me know so I can give you credit for it.

This document is really a first draft and I expect it will expand. It can also be found on GARC's WWW server

URL: http://garc.gsfc.nasa.gov/www/garc-home-page.html

under Shuttle Retransmission.

Please send any comments or other questions to

jim.blackwell@gsfc.nasa.gov

I will try to answer them.

73

Jim Blackwell, N3KWU
Past President, Goddard Amateur Radio Club, Inc.

Shuttle Retransmission Fact Sheet
by Jim Blackwell, N3KWU
Last Update 06/21/95

I. History

Kindled by a desire to spread the excitement of America's space program and of the Space Shuttle in particular, members of the Goddard Amateur Radio Club (WA3NAN) and the Amateur Satellite Corporation (AMSAT) devised a plan to re-transmit live, air-to-ground audio over amateur frequencies.

After overcoming many hurdles, the Shuttle Retransmission effort began on August 31, 1983, 7 hours prior to the launch of Challenger on mission STS-8 on the local AMSAT/GARC 2 meter repeater by virtue of a waiver granted by the FCC for this purpose.

Retransmissions expanded to HF frequencies with the launch of STS-9 on November 28, 1983. Among many firsts for the Shuttle program during this mission was the first use of amateur radio from space by Payload Specialist Owen Garriott, W5LFL.

The success of this effort is shared by NASA, the Goddard Space Flight Center, AMSAT, hundreds of dedicated volunteer control operators, and by the world-wide support of the Amateur Community.

II. Frequencies

Retransmission of Shuttle air-to-ground audio from WA3NAN may be heard on the following frequencies:

Frequency (MHz)	Mode	Antennas
3.860	SSB LSB	N-S/E-W Dipoles
7.185	SSB LSB	N-S/E-W Dipoles
14.295	SSB USB	3-element Yagi
21.395	SSB USB	5-element Yagi
28.650	SSB USB	4-element Yagi
147.45	FM Simplex	Phased vertical

Where SSB is Single-Side-Band and LSB, USB indicate either Lower and Upper Side Band. A short-wave receiver possessing a Beat Frequency Oscillator (BFO) is needed to receive these transmissions.

III. Frequently Asked Questions About Shuttle Retransmissions

1. When Are You On The Air ?---There are several criteria that best determine when you will be able to receive Shuttle Retransmissions (not necessarily in order of priority):

A. While The Crew Is Awake---We are usually on the air from the time the crew gets its wakeup call (assuming the mission is not of the 24 hour variety) till the time they go into what is called "Pre-Sleep".

B. When Volunteer Operators Are Available---We have a limited pool of operators available during any single mission. The most difficult days and nights to schedule are usually on the weekends.

C. When Local Weather Permits---We are located in Greenbelt, MD just outside Washington DC. If you do not hear us and have the means to do so, check our current local weather. If there are thunderstorms (or other inclement weather such as a recent snowfall) currently in the area or predicted, we will likely be off the air until such weather has passed.

D. When Equipment Is Operational---Given the nature of our equipment, we typically have at least one major failure during a mission. Though we strive to get the failed equipment back on-line as soon as possible there will be downtimes for all bands.

2. How Soon Before Launch Do You Go On The Air?---We usually begin retransmissions about 1 hour before the predicted launch time.

3. Does Anyone Get Paid To Do This?---No. This is purely a voluntary activity by our membership as a public service to all Radio Amateurs.

4. What Is NASA's Involvement With The Club?---The Goddard Amateur Radio Club is one of many employee clubs sanctioned by the Goddard Employee Welfare Association (GEWA).

5. Your Shuttle Retransmissions Are Interfering With My Net...---We apologize and try to accommodate other Amateur Radio activities that our retransmissions may interfere with. This decision is usually made by the Control Operator on duty and/or the Shuttle Retransmission Director. The club leadership may also consider requests made , in writing, by groups or individual Radio Amateurs.

6. Why Do Other Hams Interfere With Shuttle Retransmissions---Contrary to popular belief, Radio Amateurs share the frequencies we are allotted by the FCC and our license class. All are free to use the frequencies whenever they want and may not even realize that they are on top of our signal. During missions, we ID the station frequently to let others know that the frequency is in use.

7. I Do Not Hear You In Anytown, Planet Earth, But I Know You Must Be On The Air, Why?---If you know that we are on the air and you cannot receive our signal and the problem is not with your equipment (receiver and antenna), then it is likely that signal propagation is not good for your geographic location.. Good propagation depends on a number of factors and varies with solar cycle (and storms), time of day, some atmospheric conditions, whether the given frequencies "skip zone" is such that the signal even reaches your location, and what direction and power we are transmitting. We welcome propagation reports since it tells us if it is indeed propagation, or that perhaps it is an antenna or transmitter problem at the station.

8. I Want To Send A Signal Report---You can send us a signal report to the addresses listed under "Contact Information". Please include a Self-Addressed Stamped Envelope (SASE) with appropriate postage if you wish to receive confirmation of your report (we use the QSL bureaus for requests made outside the US). Note that postage comes out of the club budget.

9. How Can I Get NASA TV---NASA Television offers the general public a front-row seat at mission launches and activities taking place in space during a mission, as well as informational and educational programming, historical documentaries, and updates on the latest developments in aeronautics and space science. NASA TV occasionally airs live coverage of SAREX activities. Programming is received by satellite dish or may be available through your local cable television network. NASA TV can be received from: Spacenet 2, Transponder--5, Channel--9, located at 69 degrees west longitude, at a frequency of 3880.0 MHz (C-band) with horizontal polarization (audio on 6.8 MHz).

For more information, contact: Technology and Evaluation Branch, Education Division, Code FET, NASA Headquarters, Washington D.C. 20546, or call (202) 358-1540.

10. Can I Retransmit Communications Between The Space Shuttle And Mission Control On Amateur Frequencies?---The FCC rules indicate that amateur stations are permitted to retransmit Space Shuttle air-to-ground

communications, provided that approval has been obtained from NASA (FCC Rules, Part 97.113 (e)).

In 1990, ARRL sought permission from NASA, on behalf of radio amateurs, to retransmit shuttle communications. The response from NASA's Office of Public Affairs encouraged such retransmissions, and indicated that the audio is public domain.

If you plan to rebroadcast NASA Shuttle audio, please follow these guidelines:

A. In keeping with good amateur practice and the FCC rules, shuttle audio retransmissions should be limited to missions of a specific educational purpose (non-commercial), such as those carrying the SAREX payload.

B. Retransmissions should be done manually (with a control operator present).

C. Occasionally, NASA audio may contain music. Amateurs should avoid, if at all possible, retransmitting music or any other prohibited transmissions not permitted by the FCC rules (FCC Rules, Part 97.113).

Please note however that the Shuttle audio retransmitted by GARC is not what one can receive from NASA TV. Rather, we get a direct feed from NASCOM. The difference is that this audio feed does not contain other coverage such as press briefings and mission status reports. This is significant because of restrictions on what are considered "permissible" transmissions by the FCC (see item C. above).

11. I Want NASA Goodies, Where Can I Get Them?---By "goodies" I refer to patches, photos, information related to the Space program, NASA centers, GSFC, projects and so on. Rather than send such requests to GARC, we prefer that you send your queries to the GSFC Visitor's Center at:

GSFC Visitor's Center
Code 130.0
NASA Goddard Space Flight Center, Greenbelt MD 20771

12. Can I Become A Member?---Membership is presently limited to GSFC Civil Servant and Contractor employees and their immediate families. We do extend membership to those outside GSFC provided they assist us with our public service activities including Shuttle Retransmission. We are working to allow other levels of membership to include a "Contributing Membership" that would allow interested individuals to receive our monthly newsletter and help to offset the cost of our activities.

IV. Contact Information

You can contact the Goddard Amateur Radio Club at the following address:

Goddard ARC/WA3NAN
P.O. Box 86

Greenbelt, MD 20768-0086
(301) 286-6673 (during missions)

V. WA3NAN Club BBS

The Goddard Amateur Radio Club, Inc. maintains a Bulletin Board System (BBS) which is accessible by way of the Internet, modem and packet radio. The BBS contains areas with information on the club, mail distributed by the Amateur Satellite Corporation BB (AMSAT-BB) listserver, SAREX bulletins and Space Shuttle mission information. During Shuttle missions, users can also access Keplerian Orbital Elements (Keps) which are generated by the club based on information generated by NASCOM at GSFC (these orbital elements are read over-the-air by our volunteer operators).

The BBS is accessible by the following means:

1. Internet: telnet to wa3nan.gsfc.nasa.gov (128.183.105.17)
2. Telephone: (301) 286-4137 (up to 14.4 kbaud supported)
3. Packet Radio: WA3NAN on 145.090 MHz in DC area.

Just follow the login instructions. Note: Full access to the BBS is limited to members of the club.

VI. GARC World Wide Web (WWW) Server

The Goddard Amateur Radio Club, Inc. maintains a WWW Server containing a wide variety of information about the club, its activities, as well as links to other Amateur Radio resources. To access this server, you must have an Internet connection and a WWW browser such as NCSA Mosaic, Netscape Communications Corporation NetScape Navigator, or the text-based Lynx. The URL address is:

http://garc.gsfc.nasa.gov/www/garc-home-page.html

--
Jim Blackwell, N3KWU
Goddard Amateur Radio Club, Inc.
NASA/GSFC Code 681.0
Greenbelt, MD 20771

1366. Re: Any shuttle repeaters in the Los Angeles area?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: ghiscox@netcom.com
Message-ID: <ghiscoxDAvG67.Jqs@netcom.com>
Source record: 24623

cbm@netcom.com wrote:
: In <riveroDAu3no.I6L@netcom.com>, rivero@netcom.com (Michael Rivero) writes:
: >
: >Any shuttle repeaters in the Los Angeles area?

: 448.500 Mt. Wilson usually carries the shuttle with no interruptions.

You can also get a direct feed from JPL on their repeater at 224.08 MHz.

ghiscox@netcom.com

--
ghiscox@netcom.com

1367. Where??: TrakBox, KCT, SatTrack hardware

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: Guenter Stautz <Guenter.Stautz@zfe.siemens.de>
Message-ID: <3sr52r$i2f@ztivax.zfe.siemens.de>
Source record: 24624

I'm searching for tracking hardware like
TrakBox, KCT board or SATTRACK
I've found lots of software for these units, but where are
the sources for kits or assembled units???

Guenter Stautz DK7KV

1368. NEED SHUTTLE FREQUINCES BADLY!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: gsmith@manny.rcinet.com
Message-ID: <gsmith.2.0016EEFE@manny.rcinet.com>
Source record: 24625

Hi all I need thg efreqs the shuttle will be using on two meters this time
mail me
gsmith@manny.rcinet.com

-73- De Greg, N8PPZ

1369. Shuttle freqs

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: Greg <gpacho1@gl.umbc.edu>
Message-ID: <Pine.SGI.3.91.950628235704.3221B-100000@umbc8.umbc.edu>
Source record: 24626

```
If you have them, post them.
-G
```

1370. Need Interface/decoder for NOAA Polar orbiters on 137 MHz..

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: aa164@detroit.freenet.org
Message-ID: <3ssgd4$qb2@detroit.freenet.org>
Source record: 24627

I'd like to build a demodulator to interface my 45Khz Bandwidth receiver
to my IBM for fax reception. Any help would be appreciated... Thanks.

ttyl, etb

--
eric bader / kb8tul |
http://www.grfn.org/~ebader | ducttape forever
aa164@detroit.freenet.org |
ebader@nox.cs.du.edu |

1371. Re: Satellite Tracking by Feedback

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: Gary Snyder <Snyderg@compumedia.com>
Message-ID: <3srmke$rl6@news.compumedia.com>
Source record: 24628

afoxvfox@iafrica.com (Tony/Vicki) wrote:

>
> >I don't remember where, but I heard that is possible to calculate complete
> >element set by recording doppler shift during 3 consecutive pass.
> >If someone know something about this metod please post on this newsgroup
>
It's not all that tough, Take your best guess at the satellites element set
(position,velocity,etc is easiest) and calculate the expected doppler.
compare the expected and measured dopplers and 'correct' the elements
(aka state vector) to reduce the error. The vector of derivatives of the
states with respect to the observable is how the error is used. All sorts
of fun stuff is also done with the weighting and error estimation.

Hope this helps.

g.

1372. STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-06-28 00:00:00 UTC
From: mfn@astral.magic.ca
Message-ID: <mfn-2806951439570001@pm1pool1.magic.ca>
Source record: 24629

Greetings.

I've heard that it's often possible to see Mir as it comes over the horizon in early mornings. It must follow then that once Atlantis is coupled with the Mir station, it would be possible to see both craft.

Can anyone tell me how I might go about 'finding' the craft in the sky, if in fact it's even possible. I'm located in Toronto, ON.

Thanks much.

--
Michael F. Nunan
"the future belongs to those who see it coming!"

1373. Re: RS10 Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3sthpu$9ou@nnrp1.primenet.com>
Source record: 24630

I worked RS10 on verticals for my first year.
Signals are higly varible, depending what sort of pass you are seeing. I built a JFET preamp that helped bring the signal up a little. You will still have complete fades, 29 MHz is subject to Faraday rotation, not to mention the random polarized sat signal.
Always tune your transmit signal. Everybody hears the downlink at the same point on the dial. By tuning the transmit, will not step on anybody, unless they are local.
10 watts is ok. RS10 has an AGC system. One loud signal will shut-down the reciever. The loud-mouthed operator will wonder why nobody answers him.
As for distortion, if the signals from the bird sound clean, then check your equipment. RS10 is a linear transponder, whatever goes in, comes out the same.
Good luck and 73

Jim

1374. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.804390400@dolphin>
Source record: 24631

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
Mir
1 16609U 86017A 95178.66157061 .00002044 00000-0 34587-4 0 1023
2 16609 51.6485 105.2627 0004953 121.1692 238.9758 15.56968809534561
STS 71
1 23600U 95030A 95178.96715941 -.00003388 10714-4 00000+0 0 35
2 23600 51.6422 103.9096 0070572 183.6826 3.6349 15.75974500 26
```

```
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1375. STS-71 Element_Set (95179.949)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-71.95179.949@thomsoft.com>
Source record: 24632
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-71
1 23600U 95030A 95179.94929537 .00073094 00000+0 27300-3 0 9086
2 23600 51.6490 98.8688 0071891 181.9594 178.1134 15.72904686 180

This data is also available on the Shuttle Elements Mailing List.
For information, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:ftp://ftp.cts.com/pub/garym/elements.html>

--
--
Gary Morris Internet: garym@thomsoft.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

1376. sat in vhf ? how ?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: capi@hds.univ-compiegne.fr
Message-ID: <3sual0$ehq@sunsic.si.univ-compiegne.fr>
Source record: 24633

73 to everybody from f1tyn
i'm a new ham and i've just bought a multimode vhf tx, linear of 100w
and a 2x11 element antenna
is a good configuration to traffic via sat ?
i use too a ft890sat in rx (hf tx/rx) i think that a can make traffic
via sat in 145.900 uplink 29... dowlink
what sat must i use ?

who could help me
good trafic and me be via sat ?

1377. Re: Need Interface/decoder for NOAA Polar orbiters on 137 MHz..

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: Terry Fugate <tfugate@uklans.uky.edu>
Message-ID: <3sudrn$lha@service1.uky.edu>
Source record: 24634

Thereare several different routes to go.
Currently I am using JVFAX 7.0 with a simple opamp hf fax adaptor. The
software includes plans for a real simple VCO front end to convert the
NOAA AM FAX signal into an FM fax signal. It works pretty good.
There is also a program called SBDSP(.ZIP) that allows you to feed the
audio from your receiver into a SOUND BLASTER and convert the recorded
WAV or VOC file into an APT image. This sounds like a good method, but
I have yet to display the resultant image. There is a BBS in dallas tx
ran by The Dallas Remote Imaging Group(DRIG) that has lots of sat weather
software. I don't have the phone number handy but if you need it I will
post it here. They only offer internet access to members that have paid
something like $75. APTCAP$(.zip) is supposed to allow you to view the
image created by SBDSP, but again I've not had much luck.
JVFAX 7.0 and SBDSP should be at the oakland simtel ftp site
the APTCAPO.zip should be at the AMSAT Home page ftp site.

If you are willing to shell out "real" money there are several
"comercial" systems to receive wx sat stuff. If you need I have several
addresses but I can only speak with knowledge on the JVFAX, SPDSP,
aptcap40. I have posted a question over in rec.amateur.homebrew so I
might have more information later.
Terry Fugate
WN4ISX

1378. Re: RS10 Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: charlier@lsid.hp.com
Message-ID: <DAy22u.Ls3@hpcvsnz.cv.hp.com>
Source record: 24635

n7tcf@primenet.com wrote:

>Always tune your transmit signal. Everybody hears
>the downlink at the same point on the dial.

Not quite precisely true (if the satellite is approaching me, all the downlink signals will be higher in frequency than for someone who has the satellite receding from him.) But in *relative* terms, all the signals in the downlink will have the same relationship to one another, no matter where you are. But your main point is correct. To keep from "drifting" on top of someone else due to uplink doppler, you should keep adjusting your uplink frequency.

The problem I kept having during FD is this: if the other guy was transmitting for more than a few seconds, and the sat was near maximum elevation, the doppler would have moved my signal right out of my receiver passband while he was transmitting! So I have to frantically swish to try to find myself when it's my turn to transmit. Meanwhile he has started to call me again. I guess it's a matter of practice. I've gotten used to RS-12, where doppler is such a minor problem because of the lower frequencies, that it is usually ignored.

--
Charlie Panek KX7L Hewlett Packard Company
charlier@lsid.hp.com Lake Stevens Instrument Division
Everett, Washington

1379. NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: mikecox@iaccess.za
Message-ID: <mikecox.2.0012BEE3@iaccess.za>
Source record: 24636

Hi folks

Could any one tell me were to find out which Noaa satellites are off air or on air as need them for setting up my decoder

Mni Thanks
Mike Cox
Sunny South Africa

1380. Re: Sat. Tracking Program?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: Chris Lewicki <chrisl@lpl.arizona.edu>
Message-ID: <3sv1pd$cng@news.ccit.arizona.edu>
Source record: 24637

ftp://ftp.seds.org/pub/sat/software
--

Christopher A. Lewicki + (520) 621-4662 + Maintainer of SEDS.LPL.Arizona.EDU
ChrisL@seds.org Near Earth Asteroid Rendezvous (NEAR) XRS/GRS Team
Chair, Students for the Exploration and Development of Space (SEDS-USA)

1381. sts-71 freqs repost - sts-71.txt [01/01]

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: garyb@psych.ualberta.ca
Message-ID: <3sug77$1clu@rover.ucs.ualberta.ca>
Source record: 24638

For those who didn't catch the first announcement:

BEGIN -- Cut Here -- cut here
Path: rover.ucs.ualberta.ca!news.bc.net!unixg.ubc.ca!vanbc.wimsey.com!news.cyberstore.ca!math.ohio-state.edu!howland.reston.ans.net!news.sprintlink.net!news.tcd.net!pagesat.net!a3bsrv.nai.net!mgate.arrl.org!usenet
From: w1aw@arrl.org
Newsgroups: rec.radio.info,rec.radio.amateur.space
Subject: ARLS008 SAREX launch on Friday
Followup-To: rec.radio.amateur.space
Date: 22 Jun 1995 14:02:52 -0400
Organization: American Radio Relay League
Lines: 80
Sender: root@mgate.arrl.org
Approved: mtracy@arrl.org
Message-ID: <$arls008.1995@ampr.org>
NNTP-Posting-Host: mgate.arrl.org
Xref: rover.ucs.ualberta.ca rec.radio.info:8969 rec.radio.amateur.space:2887
Status: N

SB SPACE @ ARL $ARLS008
ARLS008 SAREX launch on Friday

ZCZC AS87
QST de W1AW
Space Bulletin 008 ARLS008
From ARRL Headquarters
Newington, CT June 22, 1995
To all radio amateurs

SB SPACE ARL ARLS008
ARLS008 SAREX launch on Friday

The Space Shuttle Atlantis is scheduled to launch on Friday, June 23
at 2108 UTC. The mission, designated STS-71, carries the Shuttle
Amateur Radio EXperiment or SAREX. Astronauts Ellen S. Baker and
Charlie Precourt are both Amateur Radio operators. Ellen previously
used ham radio from aboard the Shuttle Columbia during STS-50 in
June 1992, and her call sign is KB5SIX. Charlie is KB5YSQ and also
operated SAREX from Columbia during STS-55 in April 1993.

The crew has scheduled voice contacts with 4 school groups in the US
and one in Russia. The crew plans to make random contacts with the
Amateur Radio community as their busy schedules permit. Landing is
planned for July 4 at the Kennedy Space Center in Florida.

The crew will operate 2 meter FM voice only, using a radio which will also facilitate a rendezvous and docking with the Russian Space Station Mir. The docking is planned to occur on Monday, June 26. The shuttle will carry two new Mir crew members (Mir 19) to the station, and return to Earth with the three Mir 18 crew members (Vladimir Dezhurov, Gennadiy Strekalov, and US astronaut Norm Thagard). This mission is the first of at least seven shuttle flights to Mir. The effort is a precursor to building the International Space Station.

Most of the SAREX activities are planned for after the Shuttle separates from Mir on July 1. The following Keplerian element set, JSC-008a, can be used to track the shuttle after the separation.

STS-71
1 99971U 95182.64126116 .00004001 00000-0 25599-3 0 86
2 99971 51.6471 85.3203 0005502 102.6430 257.5145 15.57450161 1230

Satellite: STS-71
Catalog number: 99971
Epoch time: 95182.64126116 = (01-Jul-95 15:23:24.96 UTC)
Element set: 008
Inclination: 51.6471 deg
RA of node: 85.3203 deg Space Shuttle Flight STS-71
Eccentricity: .0005502 Prelaunch element set JSC-008a
Arg of perigee: 102.6430 deg Launch: 23-Jun-95 21:08:37 UTC
Mean anomaly: 257.5145 deg
Mean motion: 15.57450161 rev/day Gil Carman
Decay rate: 4.001e-05 rev/day sq NASA Johnson Space Center
Epoch rev: 123
Checksum: 260

These elements are valid from post-separation on July 1 at 1449 UTC until the deorbit burn on July 4 at 1454 UTC. Thanks to Gil Carman, WA5NOM, at the NASA Johnson Space Center for the preceding element set.

A different set of frequencies will be used for this SAREX mission. The astronauts will operate split, transmitting and receiving on separate frequencies. Please do not transmit on the shuttles downlink frequency. The downlink is your receiving frequency. The uplink is your transmitting frequency. The FM voice downlink is 145.84 MHz. The FM voice uplinks are 144.45 and 144.47 MHz. The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the luck of the draw. To avoid causing interference to other stations transmit only when the shuttle is within range and when the SAREX station is on the air.

Send reports and QSLs to the ARRL Educational Activities Department. Include the mission number, date, time in UTC, frequency and mode in your report. You must also include a self-addressed stamped business-sized envelope if you wish to receive a card.
NNNN
/EX

```
END -- Cut Here -- cut here
```

1382. Re: RS10 Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: greg@core.rose.hp.com
Message-ID: <DAyK16.E9I@icon.rose.hp.com>
Source record: 24639

Mike Ellerson (mellerso@uga.cc.uga.edu) wrote:
: I have a couple of simple questions about working RS10.
:
: I am using an Icom 728 with a Butternut vertical for the downlink which
: appears to work fine. My uplink is a Kenwwod TR9000 running 10Watts into a
: vertically polarized beam. I get a pretty decent signal into the sat using CW
: for a large portion of the pass. However, when I go to USB for voice, the
: signal sounds kind of weak and distorted. The TR9000 seems to be working fine,
: so is this an antenna or a power related problem ?

How big is the beam? 10 watts, minus feed cable and such, is a little marginal
on RS-10 these days for SSB. Depending on conditions and how busy the bird
is, I have found 10 watts into a J-pole is sometimes all I need. Other times,
I need 50 watts into my 5 element beam. Try a late night pass when few are
on, and see if it improves.

:
: I also have been somewhat confused as to the proper method for opearating the
: Sats. I notice that some operators are staying on the same downlink frequency
: while adjusting the uplink frequency to compensate for doppler. I thought you
: are supposed to stay on the same uplink and adjust the downlink to compensate
: for doppler so you would not run over someone elses signal ?
:

The idea is to move the higher frequency knob. For RS-10 that's the 2 meter
uplink. For other satelites, it might be the downlink (e.g. FO-20 mode JA).

Greg.

1383. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-06-29 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3svd2v$1u4v@ns4-1.CC.Lehigh.EDU>
Source record: 24640

In article <3sp81f$50b@agis.ag.net>, n2ete@ag.net (Jim Laughlan) writes:
>In article <3snmak$19gi@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:
>>
>>are the GOES sat's tx freq 137.xx or 1691mhz?
>>
>>
>
>In the 136 and 1600 MHz region.

ok, now i am TOTALLY confused!!!!!

david
|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1384. Re: Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: neill.taylor@ukaea.ORG.UK
Message-ID: <9506301502.AA20748@fusrs3b.culham.aea.orgn.uk>
Source record: 24641

tkelso@afit.af.mil (TS Kelso) wrote:
>Mir
>1 16609U 86017A 95178.66157061 .00002044 00000-0 34587-4 0 1023
>2 16609 51.6485 105.2627 0004953 121.1692 238.9758 15.56968809534561
>STS 71
>1 23600U 95030A 95178.96715941 -.00003388 10714-4 00000+0 0 35
>2 23600 51.6422 103.9096 0070572 183.6826 3.6349 15.75974500 26

OK, so why are these different?

Neill G4HLX
---
neill.taylor@ukaea.org.uk
ntaylor@rmplc.co.uk
g4hlx@g4hlx.ampr.org

Dr. Neill Taylor UKAEA Government Division, Fusion
Culham, Abingdon, Oxfordshire OX14 3DB, UK.
Internet (work): neill.taylor@ukaea.org.uk
(home): ntaylor@rmplc.co.uk
Tel: +44 1235 463348 FAX: +44 1235 463435

1385. Re: Sat. Tracking Program?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: Bob Castaneda <bobcast@eskimo.com>
Message-ID: <Pine.SUN.3.91.950630074417.20154C-100000@eskimo.com>
Source record: 24642

```
Chris, thanks for the info. I'll check it out as soon as I can...

On Thu, 29 Jun 1995, Chris Lewicki wrote:

> ftp://ftp.seds.org/pub/sat/software
> --
> -----------------------------------------------------------------------------
> Christopher A. Lewicki + (520) 621-4662 + Maintainer of SEDS.LPL.Arizona.EDU
> ChrisL@seds.org Near Earth Asteroid Rendezvous (NEAR) XRS/GRS Team
> Chair, Students for the Exploration and Development of Space (SEDS-USA)
>
>
>

-30-
You may reach me via, Internet: bobcast@eskimo.com
Ham Radio Internet: bob@radio.kc7qr.ampr.org.
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
```

1386. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.804525789@dolphin>
Source record: 24643

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
Mir
1 16609U 86017A 95180.77965038 .00002979 00000-0 47258-4 0 1036
2 16609 51.6494 94.6597 0004908 133.4070 226.7332 15.56986519534891
STS 71
1 23600U 95030A 95181.05208333 -.00000501 00000-0 00000+0 0 117
2 23600 51.6485 93.3043 0004918 142.6081 305.8138 15.57117374 355
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1387. Two-Line Orbital Element Sets (TLE631)

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.804527497@dolphin>
Source record: 24644

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #631 -
Alouette 1
1 00424U 62049A 95179.76034576 .00000020 00000-0 13027-4 0 1160
2 00424 80.4654 273.4562 0022469 223.8493 136.0871 13.67843942633883
ATS 1
1 02608U 66110A 95165.24886945 .00000000 00000-0 10000-3 0 9367
2 02608 14.6363 356.7205 0010489 61.6802 298.4104 1.00325798 21167
ATS 3
1 03029U 67111A 95178.25650760 -.00000116 00000-0 10000-3 0 3730
2 03029 14.8281 3.6019 0007991 272.0765 346.1650 1.00273114101190
Cosmos 398
1 04966U 71016A 95180.93138538 .00195403 93057-5 18376-3 0 9149
2 04966 51.4234 168.5438 0566934 135.2514 229.6258 15.00046762827108
Starlette
1 07646U 75010A 95177.88833099 -.00000171 00000-0 -21318-4 0 8969
2 07646 49.8291 114.7266 0206183 133.7171 228.0998 13.82188928 29681
LAGEOS
1 08820U 76039A 95179.55118454 .00000005 00000-0 10000-3 0 1178
2 08820 109.8479 264.5037 0044205 204.9474 154.9075 6.38664636191189
ETS-2
1 09852U 77014A 95172.34476946 -.00000052 00000-0 10000-3 0 308
2 09852 12.7518 37.0769 0004338 55.3757 304.6198 1.00019740 14022
GOES 2
1 10061U 77048A 95177.49711439 .00000048 00000-0 10000-3 0 5465
2 10061 11.8299 41.2665 0010939 122.4495 112.6219 1.00270210 10863
IUE
1 10637U 78012A 95174.96503868 -.00000303 00000-0 00000+0 0 1433
2 10637 35.2130 88.8866 1329672 46.9385 72.1202 1.00326852 16336
GPS BI-01
1 10684U 78020A 95180.88212408 -.00000029 00000-0 10000-3 0 3688
2 10684 64.8599 34.3090 0061374 164.0219 196.2157 1.98069206112416
```

```
GPS BI-02
1 10893U 78047A 95181.17783823 -.00000006 00000-0 10000-3 0 1713
2 10893 63.3163 272.3325 0222569 14.3254 346.3481 2.01627442125694
GOES 3
1 10953U 78062A 95177.48496104 .00000102 00000-0 10000-3 0 5056
2 10953 10.7959 44.0178 0004529 100.8535 138.3440 1.00319428 15475
SeaSat 1
1 10967U 78064A 95180.92458287 -.00000052 00000-0 27559-4 0 4104
2 10967 107.9945 163.8400 0002665 270.3577 89.7272 14.38042105890664
GPS BI-03
1 11054U 78093A 95171.19480471 -.00000068 00000-0 10000-3 0 3336
2 11054 63.0398 270.8780 0045336 178.3917 181.6378 1.93505264121633
Nimbus 7
1 11080U 78098A 95179.67459311 -.00000075 00000-0 -30285-4 0 5115
2 11080 99.0003 53.1835 0008405 197.4792 162.6075 13.83708647842147
GPS BI-04
1 11141U 78112A 95179.73345535 -.00000030 00000-0 10000-3 0 9823
2 11141 64.8509 36.2070 0048561 27.1734 333.1576 1.92894797 11048
GPS BI-05
1 11690U 80011A 95174.86974424 -.00000050 00000-0 10000-3 0 9234
2 11690 65.1972 36.1087 0143773 197.5344 162.0199 2.00564700126991
GPS BI-06
1 11783U 80032A 95174.57236080 -.00000048 00000-0 10000-3 0 853
2 11783 62.4568 265.7504 0218977 29.6497 331.6304 2.03456709111518
GOES 5
1 12472U 81049A 95172.58666847 -.00000293 00000-0 10000-3 0 8631
2 12472 7.5367 53.9301 0007696 24.7758 335.1466 1.00273505 9479
Cosmos 1383
1 13301U 82066A 95178.66299665 .00000009 00000-0 -75881-5 0 4156
2 13301 82.9297 34.4727 0027773 136.3998 223.9349 13.68066037648762
LandSat 4
1 13367U 82072A 95179.56970906 .00000563 00000-0 13478-3 0 7136
2 13367 98.1246 235.1592 0006660 154.8004 205.3521 14.57153562688873
DMSP B5D2-1
1 13736U 82118A 95181.02229309 .00000028 00000-0 30024-4 0 7936
2 13736 98.6293 10.0269 0008734 344.5955 15.4955 14.25740167650742
IRAS
1 13777U 83004A 95180.54707100 -.00000044 00000-0 -24746-6 0 32
2 13777 98.9659 8.5618 0013378 356.8284 3.2791 13.99237699303915
Cosmos 1447
1 13916U 83021A 95179.22932125 .00000012 00000-0 -34500-5 0 5123
2 13916 82.9448 93.5865 0039682 61.6458 298.8690 13.74326494614984
TDRS 1
1 13969U 83026B 95177.53721024 -.00000007 00000-0 10000-3 0 4302
2 13969 8.3966 47.2564 0001968 101.5895 122.6230 1.00723295 17804
GOES 6
1 14050U 83041A 95180.28390843 -.00000048 00000-0 10000-3 0 4224
2 14050 6.3713 57.1179 0005818 10.9810 196.9534 1.00324759102644
OSCAR 10
1 14129U 83058B 95178.43693645 .00000139 00000-0 10000-3 0 3600
```

```
2 14129 26.4607 261.0892 5998757 288.5034 17.8772 2.05880941 62548
LandSat 5
1 14780U 84021A 95178.16352225 .00000048 00000-0 20435-4 0 2736
2 14780 98.1098 234.3103 0004584 162.7631 197.3724 14.57159584602088
UoSat 2
1 14781U 84021B 95178.53668414 .00000132 00000-0 30049-4 0 8088
2 14781 97.7826 180.5883 0012154 143.5728 216.6306 14.69355725605426
GPS BI-09
1 15039U 84059A 95179.08141898 -.00000034 00000-0 10000-3 0 3440
2 15039 64.5071 30.6077 0082076 17.8575 342.4850 1.92302166 80602
Cosmos 1574
1 15055U 84062A 95178.42445376 .00000063 00000-0 51357-4 0 7139
2 15055 82.9565 148.3205 0025829 251.6578 108.1767 13.73623705552140
GPS BI-10
1 15271U 84097A 95180.03056294 .00000000 00000-0 10000-3 0 182
2 15271 62.1428 265.8806 0155190 353.8849 6.0018 2.00599824 78163
Cosmos 1602
1 15331U 84105A 95181.16995205 .00000193 00000-0 19818-4 0 4003
2 15331 82.5341 83.7444 0022066 37.4754 322.8002 14.84636217580590
NOAA 9
1 15427U 84123A 95180.90921461 .00000075 00000-0 63765-4 0 3067
2 15427 98.9992 239.7137 0014018 231.7831 128.2078 14.13714807543712
GPS BI-11
1 16129U 85093A 95177.31435566 -.00000036 00000-0 10000-3 0 6616
2 16129 65.1762 33.7937 0154534 86.7583 275.0865 1.89368086 15164
Mir
1 16609U 86017A 95180.77965038 .00002979 00000-0 47258-4 0 1036
2 16609 51.6494 94.6597 0004908 133.4070 226.7332 15.56986519534891
SPOT 1
1 16613U 86019A 95180.79427683 .00000090 00000-0 62356-4 0 8275
2 16613 98.6491 251.8655 0000572 75.3877 284.7367 14.20061776170154
Cosmos 1766
1 16881U 86055A 95179.38263436 .00000155 00000-0 15823-4 0 3150
2 16881 82.5188 143.2576 0021302 67.5511 292.7952 14.83634810481231
EGP
1 16908U 86061A 95178.22308054 -.00000083 00000-0 10000-3 0 97
2 16908 50.0121 11.3886 0011191 186.3558 173.7134 12.44412322 72089
NOAA 10
1 16969U 86073A 95180.93811764 .00000089 00000-0 56036-4 0 2148
2 16969 98.5064 183.4315 0012779 309.9491 50.0561 14.24944355456295
MOS-1
1 17527U 87018A 95180.84787808 .00000151 00000-0 14439-3 0 2207
2 17527 98.9883 245.6822 0000729 36.6644 323.4568 13.94923261425591
GOES 7
1 17561U 87022A 95179.29657896 .00000087 00000-0 10000-3 0 4457
2 17561 2.3514 72.2785 0003176 329.8453 204.7374 1.00268417 13740
Kvant-1
1 17845U 87030A 95180.90812885 -.00167007 00000-0 -23027-2 0 2966
2 17845 51.6457 94.0179 0005302 136.4444 224.4708 15.57063852534855
DMSP B5D2-3
```

```
1 18123U 87053A 95180.92920585 .00000033 00000-0 39373-4 0 458
2 18123 98.7784 11.8871 0013659 179.0761 181.0441 14.15409433414520
RS-10/11
1 18129U 87054A 95179.71722584 .00000032 00000-0 18339-4 0 794
2 18129 82.9251 50.5504 0013378 60.3811 299.8672 13.72353696401553
Meteor 2-16
1 18312U 87068A 95180.23673670 .00000036 00000-0 18803-4 0 4078
2 18312 82.5507 272.8044 0012984 127.3277 232.9075 13.84058626397217
Meteor 2-17
1 18820U 88005A 95180.92633262 .00000033 00000-0 15763-4 0 6579
2 18820 82.5388 328.1094 0015586 195.5029 164.5654 13.84740379374638
DMSP B5D2-4
1 18822U 88006A 95181.11104867 .00000002 00000-0 19417-4 0 107
2 18822 98.4043 24.6578 0005722 326.5733 33.5084 14.23157515384358
Glonass 34
1 19163U 88043A 95175.07331038 -.00000049 00000-0 10000-3 0 9971
2 19163 65.1300 97.9311 0007133 157.8591 202.1741 2.13102590 54589
Glonass 36
1 19165U 88043C 95180.76088396 -.00000000 00000-0 10000-3 0 3994
2 19165 65.1141 97.7005 0003600 332.5598 27.4349 2.13102098 55324
METEOSAT 3
1 19215U 88051A 95177.40390898 -.00000275 00000-0 10000-3 0 1384
2 19215 2.5267 69.7748 0001631 52.7172 228.5939 1.00273976 13667
AO-13
1 19216U 88051B 95178.98399080 -.00000271 00000-0 10000-4 0 534
2 19216 57.5320 179.3228 7302384 12.4583 358.6397 2.09724829 22395
OKEAN 1
1 19274U 88056A 95180.22492400 .00000211 00000-0 23331-4 0 155
2 19274 82.5138 242.8733 0018439 205.5607 154.4692 14.82350251376931
Meteor 3-2
1 19336U 88064A 95178.69216994 .00000051 00000-0 10000-3 0 4045
2 19336 82.5432 57.9885 0018370 45.7298 314.5329 13.16973553332686
Glonass 39
1 19503U 88085C 95175.62723507 -.00000062 00000-0 10000-3 0 2936
2 19503 65.6865 336.7866 0007295 153.9311 206.0978 2.13101813 52707
NOAA 11
1 19531U 88089A 95180.90773310 .00000030 00000-0 41330-4 0 1142
2 19531 99.1948 184.6030 0011831 147.3923 212.7981 14.13055612348559
TDRS 2
1 19548U 88091B 95177.64123251 -.00000192 00000-0 10000-3 0 1300
2 19548 1.8258 73.8837 0019907 278.7417 237.7744 1.00274957 11956
Glonass 40
1 19749U 89001A 95178.95048018 -.00000018 00000-0 10000-3 0 5061
2 19749 65.0786 97.3534 0007798 263.7578 96.1589 2.13101317 50286
Glonass 41
1 19750U 89001B 95179.94459850 -.00000008 00000-0 10000-3 0 4218
2 19750 65.0999 97.3829 0006421 245.5158 114.4370 2.13101742 50324
GPS BII-01
1 19802U 89013A 95180.14989666 .00000003 00000-0 10000-3 0 654
2 19802 55.1973 124.7388 0024791 186.4293 173.5133 2.00549935 46618
```

```
Akebono
1 19822U 89016A 95179.43008166 .00008752 00000-0 42903-3 0 5275
2 19822 75.0809 328.6621 3779973 12.4752 354.8090 7.86433070138703
Meteor 2-18
1 19851U 89018A 95179.48691203 .00000028 00000-0 11991-4 0 4051
2 19851 82.5199 203.8903 0012510 250.8928 109.0880 13.84391591319753
MOP-1
1 19876U 89020B 95170.93175630 .00000089 00000-0 00000+0 0 1220
2 19876 1.2362 72.0978 0002055 326.8147 216.6446 1.00420782 3043
TDRS 3
1 19883U 89021B 95177.00000000 -.00000266 00000-0 00000+0 0 915
2 19883 0.0133 94.4782 0003022 54.4790 83.8018 1.00269215195535
GPS BII-02
1 20061U 89044A 95176.50492196 -.00000090 00000-0 10000-3 0 836
2 20061 54.4292 301.1396 0144849 214.3627 144.6996 2.00563240 44284
Nadezhda 1
1 20103U 89050A 95180.91989740 .00000053 00000-0 40107-4 0 4379
2 20103 82.9576 9.2007 0037176 319.8726 39.9685 13.73854487300174
GPS BII-03
1 20185U 89064A 95176.34498587 -.00000019 00000-0 10000-3 0 1042
2 20185 55.0138 125.4258 0015566 294.0779 65.7101 2.00573958 42856
GMS 4
1 20217U 89070A 95180.37062295 -.00000347 00000-0 10000-3 0 2074
2 20217 1.0656 76.5294 0009499 84.7083 19.7360 1.00141739 21876
INTERCOSMOS 24
1 20261U 89080A 95178.90144403 .00000138 00000-0 33075-4 0 4204
2 20261 82.5935 137.6450 1242996 129.4603 242.3298 12.47254688261612
GPS BII-04
1 20302U 89085A 95176.37877007 .00000016 00000-0 10000-3 0 738
2 20302 53.3771 241.1654 0012333 193.2346 166.8145 2.00556295 41659
Meteor 3-3
1 20305U 89086A 95180.53120624 .00000044 00000-0 10000-3 0 3410
2 20305 82.5398 9.0949 0007480 96.4216 263.7862 13.04423952272092
COBE
1 20322U 89089A 95180.55565943 -.00000144 00000-0 -63873-4 0 1329
2 20322 98.9600 196.4127 0008467 305.3700 54.6677 14.03445624287326
Kvant-2
1 20335U 89093A 95180.90812885 -.00167007 00000-0 -23027-2 0 3078
2 20335 51.6457 94.0179 0005302 136.4444 224.4708 15.57063852318066
GPS BII-05
1 20361U 89097A 95176.88990175 -.00000063 00000-0 00000+0 0 9450
2 20361 55.7734 67.4349 0079068 121.7434 239.0714 2.00562840 31142
SPOT 2
1 20436U 90005A 95179.79344211 -.00000044 00000-0 00000+0 0 9461
2 20436 98.7360 253.7333 0000901 86.4956 273.6323 14.20022232281548
UO-14
1 20437U 90005B 95179.76846556 -.00000011 00000-0 12629-4 0 1076
2 20437 98.5664 263.9518 0011105 160.1829 199.9785 14.29890307283403
UO-15
1 20438U 90005C 95179.74235681 -.00000024 00000-0 75333-5 0 9047
```

```
2 20438 98.5652 262.4272 0009916 164.4475 195.7014 14.29208803283293
PACSAT
1 20439U 90005D 95180.71943124 .00000010 00000-0 20901-4 0 9061
2 20439 98.5784 266.5732 0011162 158.5003 201.6648 14.29944590283552
DO-17
1 20440U 90005E 95180.70668654 -.00000005 00000-0 14940-4 0 9065
2 20440 98.5803 267.0293 0011296 157.1955 202.9738 14.30085563283577
WO-18
1 20441U 90005F 95179.77963319 .00000019 00000-0 24390-4 0 9106
2 20441 98.5800 266.0871 0011835 160.7925 199.3705 14.30057065283447
LO-19
1 20442U 90005G 95179.73165894 -.00000002 00000-0 16071-4 0 9060
2 20442 98.5813 266.4036 0011973 160.6792 199.4849 14.30159429283451
GPS BII-06
1 20452U 90008A 95179.27708081 .00000056 00000-0 10000-3 0 473
2 20452 54.0321 181.2267 0059362 85.6230 275.0861 2.00575437 39695
MOS-1B
1 20478U 90013A 95180.67864978 .00000091 00000-0 10000-3 0 7983
2 20478 98.9941 249.8353 0001617 37.8977 322.2297 13.94928383195274
DEBUT
1 20479U 90013B 95179.78491395 .00000009 00000-0 94266-4 0 9059
2 20479 99.0719 266.3810 0539740 206.5574 150.6921 12.83333192252448
FO-20
1 20480U 90013C 95179.71419730 -.00000039 00000-0 -11980-4 0 8020
2 20480 99.0722 266.1729 0540129 207.1310 150.0606 12.83230704252426
MOS-1B R/B
1 20491U 90013D 95178.39554276 -.00000102 00000-0 -13191-3 0 1445
2 20491 99.0435 319.5256 0470258 47.7725 316.2324 13.02972066255523
LACE
1 20496U 90015A 95178.85419906 .00000363 00000-0 19021-4 0 5511
2 20496 43.1003 70.2022 0011141 275.5079 84.4506 15.34610848299210
Nadezhda 2
1 20508U 90017A 95180.88723892 .00000034 00000-0 20252-4 0 4360
2 20508 82.9523 143.7997 0042847 269.9231 89.7014 13.73495004267395
OKEAN 2
1 20510U 90018A 95177.12263424 .00000166 00000-0 19499-4 0 4140
2 20510 82.5244 197.5311 0020719 48.9288 311.3707 14.78500667286912
GPS BII-07
1 20533U 90025A 95179.69066743 -.00000066 00000-0 10000-3 0 685
2 20533 54.8223 301.6050 0066133 89.9328 270.8591 2.00563054 38471
PegSat
1 20546U 90028A 95178.45511220 .00003516 00000-0 73139-4 0 8166
2 20546 94.1127 150.0580 0063556 299.0106 60.4788 15.43639253290065
HST
1 20580U 90037B 95180.74694933 .00000440 00000-0 28453-4 0 6780
2 20580 28.4692 330.1942 0006873 70.8291 289.3042 14.90896858 85785
MACSAT 2
1 20608U 90043B 95179.48125014 .00000176 00000-0 27728-4 0 1062
2 20608 89.9259 176.3929 0104071 214.9468 144.4895 14.64842426274362
Glonass 44
```

```
1 20619U 90045A 95177.44203349 -.00000065 00000-0 10000-3 0 2005
2 20619 65.2755 336.1483 0024318 209.2513 150.6195 2.13102564 39708
Glonass 45
1 20620U 90045B 95178.49937057 -.00000062 00000-0 10000-3 0 2088
2 20620 65.3048 336.1112 0008070 48.5484 311.5481 2.13102513 39769
Glonass 46
1 20621U 90045C 95177.62725996 -.00000064 00000-0 10000-3 0 8055
2 20621 65.3200 336.2041 0013690 194.1203 165.8385 2.13101609 39749
Kristall
1 20635U 90048A 95180.90812885 -.00167007 00000-0 -23027-2 0 980
2 20635 51.6457 94.0179 0005302 136.4444 224.4708 15.57063852534801
ROSAT
1 20638U 90049A 95180.82687439 -.00000263 00000-0 17507-5 0 4713
2 20638 52.9896 90.1351 0014210 133.5672 226.6462 15.07199213279020
Meteor 2-19
1 20670U 90057A 95178.25122336 .00000025 00000-0 86738-5 0 9040
2 20670 82.5440 270.5610 0015549 168.8318 191.3191 13.84161244252503
CRRES
1 20712U 90065A 95180.09481208 .00000103 00000-0 29860-3 0 1137
2 20712 18.0368 34.2391 7187145 112.5669 333.9374 2.35426551 34760
GPS BII-08
1 20724U 90068A 95176.02204395 -.00000023 00000-0 10000-3 0 9137
2 20724 54.8452 123.0512 0117295 173.8452 186.2509 2.00559743 34265
Feng Yun1-2
1 20788U 90081A 95180.31878073 .00000350 00000-0 25987-3 0 4226
2 20788 98.8160 192.9373 0016811 41.5925 318.6513 14.01367559246534
Meteor 2-20
1 20826U 90086A 95179.57007562 .00000053 00000-0 34058-4 0 9165
2 20826 82.5257 206.4974 0015302 73.9929 286.2915 13.83609950239800
GPS BII-09
1 20830U 90088A 95179.05817720 -.00000045 00000-0 10000-3 0 9229
2 20830 55.7173 65.3199 0067099 99.4068 261.4099 2.00572441 34961
GPS BIIA-10
1 20959U 90103A 95179.96738411 .00000001 00000-0 10000-3 0 8857
2 20959 55.0342 124.8851 0096385 231.1177 127.9955 2.00554201 33573
DMSP B5D2-5
1 20978U 90105A 95180.55496150 .00000097 00000-0 50186-4 0 2464
2 20978 98.6391 248.7494 0079641 132.4317 228.3638 14.32558416239083
Glonass 47
1 21006U 90110A 95178.12236125 -.00000028 00000-0 10000-3 0 7715
2 21006 65.0541 96.7254 0059104 188.3031 171.6050 2.13102840 35423
Glonass 48
1 21007U 90110B 95178.78022711 -.00000020 00000-0 10000-3 0 9020
2 21007 65.0832 96.7766 0034080 179.1866 180.8316 2.13101258 35424
Glonass 49
1 21008U 90110C 95181.01742686 .00000001 00000-0 00000+0 0 935
2 21008 65.0538 96.6569 0010054 279.1436 80.7751 2.13099343 35463
AO-21
1 21087U 91006A 95179.15071511 .00000094 00000-0 82657-4 0 6088
2 21087 82.9393 224.4538 0036392 114.3293 246.1668 13.74556937221231
```

```
RS-12/13
1 21089U 91007A 95180.14622884 .00000017 00000-0 19768-5 0 8112
2 21089 82.9239 91.9155 0029983 136.3894 223.9641 13.74058356220418
MOP-2
1 21140U 91015B 95180.21221225 -.00000006 00000-0 00000+0 0 553
2 21140 0.3298 90.2214 0002660 39.2255 223.5808 1.00273027 18054
Nadezhda 3
1 21152U 91019A 95180.85715663 .00000038 00000-0 24549-4 0 1277
2 21152 82.9245 47.5003 0040597 245.1070 114.5865 13.73520323215249
Glonass 50
1 21216U 91025A 95177.67170660 -.00000065 00000-0 10000-3 0 4161
2 21216 65.0417 335.8042 0009713 185.3263 174.6461 2.13102785 32924
Glonass 51
1 21217U 91025B 95177.74054028 -.00000065 00000-0 10000-3 0 8275
2 21217 65.0312 335.8015 0010075 236.1769 123.7249 2.13101532 32915
Glonass 52
1 21218U 91025C 95178.32185638 -.00000064 00000-0 10000-3 0 2995
2 21218 65.0424 335.7674 0014622 54.8447 305.2935 2.13102170 32930
GRO
1 21225U 91027B 95180.88839443 .00001313 00000-0 23324-4 0 2754
2 21225 28.4599 126.5439 0003396 168.0566 192.0121 15.42742746115290
Meteor 3-4
1 21232U 91030A 95178.23520499 .00000050 00000-0 10000-3 0 8142
2 21232 82.5403 264.4321 0013551 335.7399 24.3060 13.16467718200708
NOAA 12
1 21263U 91032A 95180.91865399 .00000144 00000-0 83554-4 0 5413
2 21263 98.5853 204.6575 0011733 219.0694 140.9637 14.22534593214239
OKEAN 3
1 21397U 91039A 95178.85067592 .00000192 00000-0 24254-4 0 1148
2 21397 82.5239 109.0468 0024034 111.1167 249.2606 14.76380556218939
GPS BIIA-11
1 21552U 91047A 95180.73144481 -.00000037 00000-0 10000-6 0 8695
2 21552 56.0105 62.9602 0063512 242.7130 116.6822 2.00565522 29188
ERS-1
1 21574U 91050A 95180.20670842 .00000040 00000-0 30930-4 0 1665
2 21574 98.5502 254.3598 0001186 67.2672 292.8637 14.32251290206770
UO-22
1 21575U 91050B 95179.21859781 .00000028 00000-0 23775-4 0 6127
2 21575 98.3935 250.2662 0006723 249.5770 110.4692 14.36980771207080
ORBCOMM-X
1 21576U 91050C 95180.21644815 .00000050 00000-0 31719-4 0 7077
2 21576 98.3922 249.6439 0002918 262.2256 97.8593 14.36389028207136
TUBSAT-A
1 21577U 91050D 95180.21171757 -.00000007 00000-0 12321-4 0 6067
2 21577 98.3910 250.1653 0005529 250.6976 109.3610 14.36486875207160
SARA
1 21578U 91050E 95178.74636472 .00000199 00000-0 78382-4 0 8065
2 21578 98.4115 254.2198 0003889 247.5564 112.5210 14.39023340207218
TDRS 4
1 21639U 91054B 95178.47533896 .00000085 00000-0 00000+0 0 9087
```

```
2 21639 0.0690 104.6599 0004286 319.7126 207.6505 1.00277300108320
Meteor 3-5
1 21655U 91056A 95178.62472519 .00000051 00000-0 10000-3 0 8120
2 21655 82.5525 211.5785 0013041 345.1329 14.9406 13.16839180185876
UARS
1 21701U 91063B 95180.16271974 -.00000205 00000-0 31035-5 0 6835
2 21701 56.9837 88.6283 0005251 93.7360 266.4273 14.96400286207365
DMSP B5D2-6
1 21798U 91082A 95180.92106280 .00000144 00000-0 99695-4 0 8954
2 21798 98.9604 192.6992 0012912 144.4746 215.7300 14.13900349185004
Glonass 53
1 21853U 92005A 95179.94152484 -.00000008 00000-0 10000-3 0 177
2 21853 65.0192 96.3576 0006896 184.8876 175.1374 2.13102061 26575
Glonass 54
1 21854U 92005B 95179.29271913 -.00000015 00000-0 00000+0 0 1539
2 21854 65.0109 96.3764 0016628 14.2382 345.8239 2.13104088 26549
Glonass 55
1 21855U 92005C 95180.76451374 -.00000001 00000-0 00000+0 0 1451
2 21855 65.0062 96.3292 0006795 209.7718 150.2126 2.13102290 26560
JERS-1
1 21867U 92007A 95181.26357423 .00000365 00000-0 35313-4 0 6189
2 21867 97.7162 257.9351 0001240 45.4159 314.7162 14.98628239185005
GPS BIIA-12
1 21890U 92009A 95180.69946647 .00000025 00000-0 10000-3 0 6723
2 21890 53.9242 241.2041 0059214 183.3062 176.7409 2.00575146 24555
GPS BIIA-13
1 21930U 92019A 95176.41502069 -.00000076 00000-0 10000-3 0 6435
2 21930 55.6722 2.9069 0040634 173.2515 186.8510 2.00566821 23397
EUVE
1 21987U 92031A 95179.82987603 .00000716 00000-0 23552-4 0 4648
2 21987 28.4330 44.7114 0010013 135.1909 224.9485 15.19324834169722
SAMPEX
1 22012U 92038A 95179.25058424 -.00000008 00000-0 -28400-5 0 6413
2 22012 81.6728 134.0201 0116647 251.3625 107.4881 14.91388851162322
GPS BIIA-14
1 22014U 92039A 95177.95350022 .00000064 00000-0 10000-3 0 5649
2 22014 54.8540 182.8032 0090656 313.1349 46.1451 2.00572646 15268
Glonass 56
1 22056U 92047A 95180.66408102 -.00000053 00000-0 00000+0 0 558
2 22056 64.8746 335.8123 0003514 268.9959 90.9564 2.13103322 22653
Glonass 57
1 22057U 92047B 95180.95932792 -.00000051 00000-0 00000+0 0 545
2 22057 64.8846 335.8278 0006366 327.9858 31.9718 2.13102666 22632
Glonass 58
1 22058U 92047C 95178.55319696 -.00000063 00000-0 10000-3 0 246
2 22058 64.8847 335.9187 0008493 271.3961 88.5077 2.13102950 22636
TOPEX
1 22076U 92052A 95177.33542058 -.00000061 00000-0 00000+0 0 8877
2 22076 66.0396 233.8699 0007848 265.8719 94.1400 12.80929319134419
KO-23
```

```
1 22077U 92052B 95180.56456730 -.00000037 00000-0 10000-3 0 5031
2 22077 66.0789 209.8500 0006463 196.3931 163.6879 12.86291797135327
S80/T
1 22078U 92052C 95178.54617762 -.00000037 00000-0 10000-3 0 5008
2 22078 66.0826 212.9628 0007178 184.4052 175.6901 12.86576167135148
GPS BIIA-15
1 22108U 92058A 95179.40865363 .00000026 00000-0 00000+0 0 5817
2 22108 54.1587 242.0535 0112532 151.8981 208.8049 2.00567851 20471
FREJA
1 22161U 92064A 95176.79654589 -.00000166 00000-0 -21415-4 0 5240
2 22161 62.9935 66.9304 0811461 347.6083 10.5958 13.21839333131186
LAGEOS II
1 22195U 92070B 95177.70125581 -.00000009 00000-0 10000-3 0 4129
2 22195 52.6450 216.9721 0138339 280.7692 77.7318 6.47294314 63194
GPS BIIA-16
1 22231U 92079A 95179.09245844 .00000059 00000-0 10000-3 0 5606
2 22231 54.6079 183.8615 0024011 285.5742 74.1846 2.00564915 19042
GPS BIIA-17
1 22275U 92089A 95179.24426605 .00000058 00000-0 10000-3 0 5674
2 22275 54.6363 181.4412 0052344 245.9610 113.5123 2.00561699 18455
TDRS 5
1 22314U 93003B 95180.05618673 -.00000280 00000-0 10000-3 0 5290
2 22314 1.8940 71.9480 0001467 32.5215 146.1597 1.00260229 9038
GPS BIIA-18
1 22446U 93007A 95178.32053458 -.00000077 00000-0 10000-3 0 5655
2 22446 54.4334 301.9122 0080635 352.5251 7.3620 2.00580341 17421
Glonass 59
1 22512U 93010A 95179.94289771 -.00000008 00000-0 10000-3 0 7118
2 22512 65.0241 96.2110 0008013 196.9245 163.0667 2.13101990 18148
Glonass 60
1 22513U 93010B 95178.00511228 -.00000029 00000-0 00000+0 0 7758
2 22513 65.0085 96.2934 0006314 201.5295 158.4504 2.13102771 18291
Glonass 61
1 22514U 93010C 95179.23713709 -.00000015 00000-0 00000+0 0 7725
2 22514 65.0302 96.2330 0010143 191.6997 168.2925 2.13102769 18324
ASTRO-D
1 22521U 93011A 95180.94641880 .00000590 00000-0 35447-4 0 4186
2 22521 31.1058 156.3962 0057115 264.8471 94.5660 15.02303137129293
UFO F1
1 22563U 93015A 95180.30779182 -.00000237 00000-0 00000+0 0 4252
2 22563 25.9734 294.1439 0003592 236.5112 175.2049 0.99252250 12589
GPS BIIA-19
1 22581U 93017A 95177.46350392 -.00000077 00000-0 10000-3 0 4410
2 22581 55.2218 2.4354 0057966 36.6298 323.7951 2.00575534 16466
ARSENE
1 22654U 93031B 95171.92678343 -.00000141 00000-0 10000-3 0 3175
2 22654 2.5855 84.2126 2894042 213.3309 124.0485 1.42202229 6441
GPS BIIA-20
1 22657U 93032A 95173.60506536 -.00000081 00000-0 10000-3 0 4781
2 22657 55.2407 2.4368 0072852 213.9264 145.6164 2.00565853 11712
```

```
RADCAL
1 22698U 93041A 95177.80272962 .00000041 00000-0 11933-4 0 4103
2 22698 89.5408 290.0054 0093670 47.7590 313.1492 14.21347803103808
GPS BIIA-21
1 22700U 93042A 95176.56437614 .00000015 00000-0 10000-3 0 4358
2 22700 54.3216 242.8894 0063013 41.0826 319.4988 2.00564919 14570
NOAA 13
1 22739U 93050A 95180.83992378 -.00000015 00000-0 16757-4 0 8347
2 22739 98.9951 129.6962 0010451 134.5043 225.7022 14.10936035 97224
GPS BIIA-22
1 22779U 93054A 95180.13856527 -.00000063 00000-0 10000-3 0 4885
2 22779 54.5758 301.8368 0019829 245.3599 114.4464 2.00570782 13401
Meteor 2-21
1 22782U 93055A 95177.32482797 .00000062 00000-0 43490-4 0 4115
2 22782 82.5481 269.9422 0020718 259.2981 100.5842 13.83034023 91804
UFO F2
1 22787U 93056A 95180.80449080 -.00000056 00000-0 00000+0 0 4700
2 22787 4.4925 325.2111 0003320 107.6737 205.4069 1.00273812 5281
SPOT 3
1 22823U 93061A 95177.22710429 .00000059 00000-0 48215-4 0 4502
2 22823 98.7377 251.2291 0001291 67.1663 292.9651 14.20023116 90579
STELLA
1 22824U 93061B 95177.65882846 .00000026 00000-0 28672-4 0 3983
2 22824 98.6193 253.6135 0006082 186.9047 173.2046 14.27102389 91080
AO-27
1 22825U 93061C 95177.70170491 -.00000005 00000-0 15679-4 0 4001
2 22825 98.6164 253.9800 0007910 190.9728 169.1278 14.27665704 91124
IO-26
1 22826U 93061D 95177.23443690 .00000018 00000-0 24819-4 0 3990
2 22826 98.6175 253.6178 0008418 194.3468 165.7464 14.27773734 91060
HEATHSAT
1 22827U 93061E 95177.74503763 .00000002 00000-0 18346-4 0 4605
2 22827 98.6147 254.0562 0008779 177.9382 182.1836 14.27896962 91148
ITAMSAT
1 22828U 93061F 95177.22886794 .00000004 00000-0 19043-4 0 3771
2 22828 98.6132 253.6484 0009879 177.7271 182.3953 14.28103734 59165
PO-28
1 22829U 93061G 95177.24062613 .00000007 00000-0 20549-4 0 3912
2 22829 98.6139 253.6940 0009834 177.9948 182.1273 14.28083097 91083
KO-25
1 22830U 93061H 95178.70249643 -.00000016 00000-0 10565-4 0 4106
2 22830 98.5133 248.2192 0011777 150.5444 209.6397 14.28091972 91290
GPS BIIA-23
1 22877U 93068A 95173.71559779 -.00000087 00000-0 10000-3 0 2901
2 22877 55.4417 63.5941 0080254 310.7987 48.5151 2.00549216 12169
METEOSAT 6
1 22912U 93073B 95180.77256951 -.00000081 00000-0 00000+0 0 3323
2 22912 0.7861 277.9874 0000752 133.2947 134.5707 1.00259640 4319
HST Array
1 22920U 90037C 95179.52099090 .00003308 00000-0 23851-3 0 3405
```

```
2 22920 28.4743 297.5237 0003816 305.1106 54.9098 15.01281679 86014
Meteor 3-6
1 22969U 94003A 95180.88805360 .00000051 00000-0 10000-3 0 1784
2 22969 82.5570 149.7697 0017097 43.2304 317.0158 13.16729668 68558
TUBSAT-B
1 22970U 94003B 95179.93739257 .00000051 00000-0 10000-3 0 1691
2 22970 82.5573 150.3790 0017366 44.8601 315.3920 13.16825407 68434
GPS BIIA-24
1 23027U 94016A 95180.76997702 -.00000069 00000-0 10000-3 0 2256
2 23027 55.0692 4.1729 0063879 196.0383 163.7811 2.00557459 9619
Glonass 62
1 23043U 94021A 95178.84600290 -.00000062 00000-0 00000+0 0 2190
2 23043 64.7621 336.2919 0006061 174.7130 185.2886 2.13103085 9436
Glonass 63
1 23044U 94021B 95180.60572338 -.00000053 00000-0 00000+0 0 1963
2 23044 64.7509 336.2327 0028979 201.1599 158.7198 2.13103223 9470
Glonass 64
1 23045U 94021C 95180.78199108 -.00000052 00000-0 00000+0 0 2053
2 23045 64.7394 336.2368 0010900 37.8634 322.2105 2.13102682 9471
GOES 8
1 23051U 94022A 95180.19787666 -.00000252 00000-0 10000-3 0 3359
2 23051 0.0432 74.2898 0003300 58.3100 140.4834 1.00281827 11817
MSTI 2
1 23101U 94028A 95180.57491742 .00003533 00000-0 63223-4 0 2090
2 23101 97.0991 13.6330 0011258 187.2416 172.8672 15.50589704 64441
STRV-1A
1 23125U 94034B 95178.39262755 .00000655 00000-0 36112-3 0 1727
2 23125 7.4755 27.0003 7259986 128.0266 321.8991 2.29947147 7887
STRV-1B
1 23126U 94034C 95180.32681430 .00000253 00000-0 22413-3 0 1586
2 23126 7.4915 26.4417 7264486 129.2344 320.6224 2.29587799 7978
Nadezhda 4
1 23179U 94041A 95178.88745800 .00000026 00000-0 10731-4 0 1110
2 23179 82.9466 139.9343 0038029 37.4415 322.9369 13.75669180 47941
Glonass 65
1 23203U 94050A 95179.04267871 .00000076 00000-0 00000+0 0 1606
2 23203 64.7986 216.0464 0006743 160.9779 199.1315 2.13101848 6838
Glonass 66
1 23204U 94050B 95180.68451602 .00000070 00000-0 00000+0 0 1688
2 23204 64.7846 216.0293 0015141 339.7450 20.2757 2.13102314 6864
Glonass 67
1 23205U 94050C 95179.62889348 .00000073 00000-0 00000+0 0 1563
2 23205 64.7896 216.0471 0003159 279.1413 80.9079 2.13102310 6844
DMSP B5D2-7
1 23233U 94057A 95180.86288977 .00000050 00000-0 50858-4 0 3962
2 23233 98.8784 238.8394 0013567 99.8114 260.4594 14.12616424 42940
OKEAN 1-7
1 23317U 94066A 95177.57131772 .00000154 00000-0 19940-4 0 755
2 23317 82.5418 27.0682 0026132 155.5153 204.7304 14.73942213 38007
ELEKTRO
```

```
1 23327U 94069A 95179.45607060 -.00000093 00000-0 10000-3 0 778
2 23327 0.7581 260.6797 0006564 182.4557 72.7436 1.00267979 2440
RESURS 1-3
1 23342U 94074 A 95180.75655870 .00000134 00000-0 22609-4 0 1458
2 23342 098.0140 240.1934 0000761 073.3234 286.8660 14.69748672034891
Glonass 68
1 23396U 94076A 95180.41072282 -.00000004 00000-0 00000+0 0 1174
2 23396 64.9470 96.2859 0029392 191.7298 168.2213 2.13102657 4707
Glonass 69
1 23397U 94076B 95179.64766311 -.00000011 00000-0 00000+0 0 1180
2 23397 64.9383 96.3271 0013789 322.4714 37.4496 2.13102438 4683
Glonass 70
1 23398U 94076C 95180.93887959 .00000000 00000-0 00000+0 0 1274
2 23398 64.9255 96.2636 0003827 293.8874 66.0914 2.13102387 4727
RS-15
1 23439U 94085A 95180.56462563 -.00000039 00000-0 10000-3 0 603
2 23439 64.8186 234.9724 0167773 259.9857 98.2100 11.27524195 20912
NOAA 14
1 23455U 94089A 95180.86097872 .00000074 00000-0 64978-4 0 2272
2 23455 98.9048 123.2775 0009484 152.4583 207.7093 14.11519086 25606
ODERACS II A
1 23471U 95004C 95179.10655644 .00021012 00000-0 95554-4 0 1447
2 23471 51.6480 78.7579 0013985 135.1877 225.0314 15.83696961 22908
ODERACS II B
1 23472U 95004D 95177.99714425 .00059305 12537-4 17734-3 0 1481
2 23472 51.6427 79.4757 0012089 145.2943 214.8881 15.92604435 22793
Glonass 71
1 23511U 95009A 95179.13958209 -.00000061 00000-0 00000+0 0 632
2 23511 64.7651 336.5586 0004848 330.1291 29.8398 2.13102379 2405
Glonass 72
1 23512U 95009B 95178.96376157 -.00000062 00000-0 00000+0 0 674
2 23512 64.7743 336.5741 0012802 194.7447 165.2139 2.13102913 2409
Glonass 73
1 23513U 95009C 95177.14518228 -.00000066 00000-0 00000+0 0 664
2 23513 64.7759 336.6176 0005642 203.5014 156.4754 2.13102725 2364
Soyuz TM-21
1 23519U 95010A 95178.98250945 -.00026181 00000-0 -35061-3 0 1199
2 23519 51.6483 103.6597 0005293 125.7906 234.4353 15.56943629 16516
SFU
1 23521U 95011A 95180.83476363 .00003858 00000-0 12622-3 0 746
2 23521 28.4589 348.1261 0019840 359.9688 0.0841 15.28533853 15873
GMS 5
1 23522U 95011B 95179.28197238 -.00000282 00000-0 00000+0 0 365
2 23522 0.8775 296.5741 0001609 209.3886 11.5268 1.00271433 890
DMSP B5D2-8
1 23533U 95015A 95180.94831305 .00000036 00000-0 43048-4 0 1244
2 23533 98.8329 183.1516 0007417 347.9112 12.1880 14.12691281 13759
Microlab 1
1 23547U 95017C 95179.22885722 .00000093 00000-0 43654-4 0 315
2 23547 69.9797 273.6948 0013659 312.4533 47.5448 14.45370362 12374
```

```
OFEQ 3
1 23549U 95018A 95179.88511926 .00016765 00000-0 47848-3 0 627
2 23549 143.3718 241.6765 0255931 52.4356 309.9394 15.07076226 12739
GFZ-1
1 23558U 86017JE 95180.15948202 .00001921 00000-0 29626-4 0 374
2 23558 51.6510 96.5175 0005794 341.7938 18.2847 15.59981620534701
ERS-2
1 23560U 95021A 95181.13687966 .00000027 00000-0 26210-4 0 864
2 23560 98.5502 255.2873 0001326 60.5728 299.5588 14.32250952 10032
Spektr
1 23579U 95024A 95180.90812885 -.00167007 00000-0 -23027-2 0 585
2 23579 51.6457 94.0179 0005302 136.4444 224.4708 15.57063852 6377
GOES 9
1 23581U 95025A 95180.21138281 -.00000178 00000-0 00000+0 0 345
2 23581 0.2428 251.9863 0001490 90.2265 280.1181 1.00269735 373
UFO F5
1 23589U 95027A 95177.78151475 .00000028 00000-0 00000+0 0 278
2 23589 5.0562 322.4691 0171517 145.8501 275.7911 1.00226021 321
1995027B
1 23590U 95027B 95176.37514547 .00005883 00000-0 17569-2 0 171
2 23590 26.9294 281.4455 6627194 194.3069 129.3857 3.13159689 751
1995014C
1 23591U 95014C 95152.16822844 .28896463 58209-5 21345-2 0 23
2 23591 67.1021 179.9664 0056543 106.9455 254.8135 16.31995263 11324
1995014D
1 23592U 95014D 95152.16875618 .33333659 57213-5 48100-2 0 22
2 23592 67.1218 179.9437 0053312 111.3520 250.2493 16.29697784 11326
1995011H
1 23593U 95011H 95171.00699134 .00320668 00000-0 49716-2 0 44
2 23593 28.4749 49.3488 0014917 286.7714 73.5945 15.51676276 14421
1995015D
1 23594U 95015D 95180.87262691 .00000628 00000-0 36149-3 0 79
2 23594 98.8271 183.0414 0001645 331.4302 28.6780 14.12829154 3947
1995015E
1 23595U 95015E 95176.97833741 .00000540 00000-0 31393-3 0 64
2 23595 98.8303 179.2259 0009259 8.4168 351.7164 14.12806096 13192
Cosmos 2313
1 23596U 95028A 95181.22574027 .00003637 00000-0 64596-4 0 558
2 23596 65.0407 287.4072 0009832 274.8307 85.1722 15.52029462 3400
1995028B
1 23597U 95028B 95159.68438728 .34405963 86767-5 32676-3 0 64
2 23597 65.0057 359.9697 0116834 54.7033 306.5078 16.32836446 84
DBS 3
1 23598U 95029A 95177.44564147 -.00000053 00000-0 00000+0 0 210
2 23598 0.0058 271.3407 0002419 222.5177 189.5640 1.00273392 143
1995029B
1 23599U 95029B 95179.88109959 .00019611 00000-0 23606-2 0 216
2 23599 7.2199 72.6796 7112293 195.3498 119.5063 2.51451590 4639
STS 71
1 23600U 95030A 95181.05208333 -.00000501 00000-0 00000+0 0 117
```

```
2 23600 51.6485 93.3043 0004918 142.6081 305.8138 15.57117374 355
1995031A
1 23601U 95031A 95180.94036364 .00431621 57540-5 14288-3 0 55
2 23601 67.1268 175.1671 0130741 93.1488 268.4630 16.07826406 190
1995031B
1 23602U 95031B 95181.06264292 .01552322 58011-5 43559-3 0 75
2 23602 67.1293 174.7815 0117574 95.1597 266.2920 16.11999483 218
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1388. shuttle repeaters in the UK

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: "V.Tandy" <asx008@coventry.ac.uk>
Message-ID: <Pine.ULT.3.91.950630164824.3465B-100000@rowan>
Source record: 24645

I have a good scanner, but only the simple telescopic aerial that came with it. As you can tell I am very much a beginner but I am interested in listening to the shuttle communications. Are there any repeaters in the United Kingdom which I might receive, I am right in the center of the country. Does the shuttle pass anywhere near the UK at any time so that I might get them directly?

I would be interested in any comments

Thanks

Vic

1389. Packet to internet gateway

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: edward.wagner@torii.COM
Message-ID: <9506301135.0GAFE00@torii.com>
Source record: 24646

If anyone wants the 1994 packet to internet list please write
Edward.wagner@Torii.com. I will let the public know when i get the new one.

Edward Wagner KC5MWY
Edward.Wagner@Torii.com

1390. Re: Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: drted@ix.netcom.com
Message-ID: <3t1dok$dqm@ixnews4.ix.netcom.com>
Source record: 24647

In <9506301502.AA20748@fusrs3b.culham.aea.orgn.uk> neill.taylor@ukaea.ORG.UK (Neill Taylor) writes:
>
>tkelso@afit.af.mil (TS Kelso) wrote:
>>Mir
>>1 16609U 86017A 95178.66157061 .00002044 00000-0 34587-4 0 1023
>>2 16609 51.6485 105.2627 0004953 121.1692 238.9758 15.56968809534561
>>STS 71
>>1 23600U 95030A 95178.96715941 -.00003388 10714-4 00000+0 0 35
>>2 23600 51.6422 103.9096 0070572 183.6826 3.6349 15.75974500 26
>
>OK, so why are these different?
>
>Neill G4HLX
>---
>neill.taylor@ukaea.org.uk
>ntaylor@rmplc.co.uk
>g4hlx@g4hlx.ampr.org
>
>
>--
>Dr. Neill Taylor UKAEA Government Division, Fusion
> Culham, Abingdon, Oxfordshire OX14 3DB, UK.
>Internet (work): neill.taylor@ukaea.org.uk
> (home): ntaylor@rmplc.co.uk
>Tel: +44 1235 463348 FAX: +44 1235 463435
>--
>
They appear different for a couple of reasons. The one that I am sure of is that they are calculated with date codes some 7 hours different. The one that I am less sure of is that the Mir orbits are started from a north passing of the equator and the Shuttle orbits are started from a north passing of KSC latitude. The joy of KEPs is that they end up in the same place.
--
Bye... Ted..
Deep in the Heart of the Armpits of Houston, Texas...

1391. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: iap@babylon.win-uk.net
Message-ID: <51@babylon.win-uk.net>
Source record: 24648

In article <3svd2v$1u4v@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU (c002@Lehigh.EDU) writes:
>In article <3sp81f$50b@agis.ag.net>, n2ete@ag.net (Jim Laughlan) writes:
>>In article <3snmak$19gi@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:
>>>
>>>are the GOES sat's tx freq 137.xx or 1691mhz?
>>>
>>>
>>
>>In the 136 and 1600 MHz region.
>
>
>ok, now i am TOTALLY confused!!!!!
>
Hopefully I can clear your confusion....

As I understand it the Geostationary WXSAT's transmit WEFAX (AM
fax) and PDUS (digital data) at S-band freqs only.

The 137 MHz bit comes into the picture because most amateur WXSAT
ers use a downconverter from S-band to VHF 137MHz to receive the
WEFAX data (which is exactly the same format as the NOAA polar
orbiters) they can then decode the picture in the same manner as
the polar orbiters (which transmit APT at 137MHz) without the cost
of an S-band receiver.

hope this helps

regards Ian

Ian Pusey
Brighton
United Kingdom
(44) 1273 416129
iap@babylon.win-uk.net
RIG Member
SAS Member (Sussex Arcaeological Society)

1392. Re: Ham-Space Digest V95

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: vernons@kol.COM
Message-ID: <9506301512.D2992Yt@kol.com>
Source record: 24649

Has anyone compiled a frequency list for the amateur satellites recently?
The latest I've been able to come across was put together back in 1993,
so if anyone has a later one please post it. I'm sure I'm not the only
one that needs an update every few years or so! :)
tnx in advance.
73 de WA4YJX
vernons@kol.com

... I adjusted the brightness, but the msgs are still dumb.
___ Blue Wave/QWK v2.12

1393. Anyone willing to loan an alt/az rotator to Hudson schools for a few days?

Newsgroup: rec.radio.amateur.space
Date: 1995-06-30 00:00:00 UTC
From: "Carl D. Howe" <chowe@bbnplanet.com>
Message-ID: <3t1ql6$cdn@mercury.near.net>
Source record: 24650

Hi all,

My radio club (the Acton Boxboro Amateur Radio Club) is assisting a school in our area (the Hudson Forest St. School) in contacting STS-71. This school was selected as one of the five schools to make shuttle contacts on this mission, and the students there are very excited about it. As you may or may not know, the co-pilot of Atlantis went to school in Hudson, MA, and this is the opportunity a lifetime for many of the students at this school to talk to him.

We've had bought and planned to use an eggbeater 2 m antenna to talk to the shuttle (hams in this area have used that type of configuration successfully with the shuttle previously), but NASA has informed us that we must use an alt/azimuth tracking yagi because of the antenna configuration on this mission. We've found an appropriate 14 el yagi, but we don't have an alt/azimuth rotator (for Oscar 13, you can use armstrong rotation quite effectively!).

Does anyone in the western Boston suburbs have a working alt/azimuth rotator (preferrably with IBM PC control box) available that they'd be willing to loan us for a few days? The mission is scheduled for 5 July, and unless we can upgrade the antenna configuration to the yagi, the sched for the kids in Hudson may get scrubbed.

If anyone would be willing to help us out, please contact Gordon Dirk (KA1DWX) at (508) 263 1066, or me, Carl Howe (WG1V) at chowe@bbnplanet.com or phone me at (508) 897 4723.

Thanks in advance and 73,
Carl Howe, WG1V
Club Secretary
Acton Boxboro Amateur Radio Club

1394. help with Epson printer

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: sven-arne.adolfsson@reimers.se
Message-ID: <950701122220115@reimers.se>
Source record: 24651

Hello,
Inm need some help with the switch to a EPSON MX 80 FT
TERMINAL PRINTER SERIAL NR.515654
Have you any manual for this printer and can help me with the switch so
the printer can work with a 486 PC in parallel mode.

Thanks for yourns help.
Sven-Arne Adolfsson
---
* QMPro 1.51 * E-Mail sven-arne.adolfsson@reimers.se

---
* QMPro 1.51 * E-Mail sven-arne.adolfsson@reimers.se

1395. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3t403q$71kd@ns2-1.CC.Lehigh.EDU>
Source record: 24652

>I've heard that it's often possible to see Mir as it comes over the
>horizon in early mornings. It must follow then that once Atlantis is
>coupled with the Mir station, it would be possible to see both craft.
>
>Can anyone tell me how I might go about 'finding' the craft in the sky, if
>in fact it's even possible. I'm located in Toronto, ON.
>
>Thanks much.

well, unless you have a good telescope, and a tracker, all you will see is a
bright point of light shooting across the sky. even still, it's a lovely
sight!!

DAVid
|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1396. Anybody hear STS71 on 145.84?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: n2lak@news.dorsai.org
Message-ID: <DB1ww3.J4@dorsai.org>
Source record: 24653

Haven't heard a thing yet - maybe I'm going deaf......
As of 1900 UTC 7/1/95.

Thanks,
Dave Hines - N2LAK

1397. Shuttle/Mir Visible Tonight! (Saturday July 1st)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: garym@alsys.com
Message-ID: <DB1t29.B1B@thomsoft.com>
Source record: 24654
Cross-posted to: sdnet.general,sdnet.events,cts.misc,rec.radio.amateur.space

The Shuttle Atlantis docked with the Mir Space Station will be visible to the naked eye in the San Diego area tonight (Saturday, July 1st) at about 9:14 PM in the Northwest sky. Last nights visible pass was easily seen and tonights visible pass should last longer and be even better.

When/Where

The Shuttle/Mir will come over the Northwest horizon at 9:11 PM PDT tonight. However, it will not be visible until it reaches an elevation (angle above the horizon) of about 20 degrees (depending upon your viewing location) which will occur at about 9:14 PM. It will reach peak elevation of 47 degrees at about 9:16 PM in the Northern (NNE) sky. Then it will descend towards the East and disappear into the Earth's shadow at about 9:17:40 PM. It will continue to descend in darkness, visible only to telescopes, until it crosses the Southeast horizon at 9:21 PM.

How to Look

During this pass of the Shuttle/Mir, they will be in sunlight while we are in darkness. This gives us a brightly lit satellite and makes it possible for us to see it. As they pass overhead they cross into the Earth's shadow and will fade out from view.

Start your search with the Big Dipper (Ursa Major) in the Northwest sky. If you make an imaginary line from the end of the Big Dipper (where it pours from) to the horizon, the Shuttle/Mir will first be visible about halfway up, and a little to the right of that line.

The Shuttle/Mir will look like a bright star moving across the sky. Sometimes you see Airplanes in the sky, these have colored and/or flashing lights on them. Satellites shine with a steady white light like a star. Tonight the Shuttle/Mir combination may be as bright as one of the planets like Venus or Jupiter.

The best place to view is one that gives you a clear view of the sky with no lights around. Go to a nearby park or the beach away from city lights if you live in the city. Binoculars can be used, but find it with the naked eye first. It moves across the sky too fast for telescopes to be used.

The Numbers

Time PDT			Az	El	Range	Height	Satellite	
MM	DD	YY	HHMM:SS	Deg	Deg	Km	Km	Visibility	Comments
07	01	95	2110:51	319	0	2291	393.9	Illuminated	Horizon Crossing
07	01	95	2112:54	325	10	1461	393.7	Illuminated	Visible to dark area

07 01 95 2114:00 333 19 1039 393.6 Illuminated Visible to most all
07 01 95 2115:00 348 32 707 393.5 Illuminated Can't miss it!
07 01 95 2116:00 36 47 535 393.4 Illuminated Peak elevation
07 01 95 2117:00 90 35 662 393.4 Illuminated
07 01 95 2117:39 104 24 856 393.3 Illuminated Passing into Shadow
07 01 95 2117:42 105 24 873 393.3 In shadow
07 01 95 2121:15 123 0 2264 393.2 In shadow

Tracking Data

If you have satellite tracking software on your personal computer, the
following is the latest Keplerian element set used for these computations.

STS-71
1 23600U 95030A 95182.50264494 .00004894 10256-9 65841-4 0 107
2 23600 51.6481 86.0427 0003608 153.2774 152.1378 15.57206380 588

# # #
--
Gary Morris Internet: garym@thomsoft.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128

1398. ARLK029 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk029.1995@ampr.org>
Source record: 24655
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK029
ARLK029 Keplerian data

ZCZC SK54
QST de W1AW
Keplerian Bulletin 29 ARLK029
From ARRL Headquarters
Newington, CT July 1, 1995
To all radio amateurs

SB KEP ARL ARLK029
ARLK029 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM
STS-71
1 23600U 95030A 95181.05208333 -.00000501 00000-0 00000+0 0 117
2 23600 51.6485 93.3043 0004918 142.6081 305.8138 15.57117374 355
AO-10
1 14129U 83058B 95178.43693645 .00000139 00000-0 10000-3 0 3600
2 14129 26.4607 261.0892 5998757 288.5034 17.8772 2.05880941 62548
RS-10/11
1 18129U 87054A 95175.70726171 .00000037 00000-0 24124-4 0 788
2 18129 82.9251 53.5142 0013397 70.1404 290.1189 13.72353643401001
UO-11
1 14781U 84021B 95178.53668414 .00000132 00000-0 30049-4 0 8088
2 14781 97.7826 180.5883 0012154 143.5728 216.6306 14.69355725605426

RS-12/13
1 21089U 91007A 95176.14122222 .00000049 00000-0 35907-4 0 8104
2 21089 82.9241 94.8852 0029618 147.4206 212.8777 13.74058635219866
AO-13
1 19216U 88051B 95178.98399080 -.00000271 00000-0 10000-4 0 534
2 19216 57.5320 179.3228 7302384 12.4583 358.6397 2.09724829 22395
UO-14
1 20437U 90005B 95175.22005865 .00000003 00000-0 18079-4 0 1067
2 20437 98.5663 259.4766 0010879 173.7284 186.4028 14.29890151282754
RS-15
1 23439U 94085A 95180.56462563 -.00000039 00000-0 10000-3 0 603
2 23439 64.8186 234.9724 0167773 259.9857 98.2100 11.27524195 20912
```

```
AO-16
1 20439U 90005D 95180.71943124 .00000010 00000-0 20901-4 0 9061
2 20439 98.5784 266.5732 0011162 158.5003 201.6648 14.29944590283552
DO-17
1 20440U 90005E 95180.70668654 -.00000005 00000-0 14940-4 0 9065
2 20440 98.5803 267.0293 0011296 157.1955 202.9738 14.30085563283577
WO-18
1 20441U 90005F 95175.72152835 -.00000001 00000-0 16453-4 0 9091
2 20441 98.5801 262.0878 0011778 172.8370 187.2990 14.30056433282860
LO-19
1 20442U 90005G 95175.25406913 .00000042 00000-0 33068-4 0 9050
2 20442 98.5816 261.9900 0011784 174.3584 185.7721 14.30159490282819
FO-20
1 20480U 90013C 95175.26990383 -.00000002 00000-0 71533-4 0 8012
2 20480 99.0721 262.5558 0539961 217.1975 139.0549 12.83230938251853
AO-21
1 21087U 91006A 95179.15071511 .00000094 00000-0 82657-4 0 6088
2 21087 82.9393 224.4538 0036392 114.3293 246.1668 13.74556937221231
UO-22
1 21575U 91050B 95179.21859781 .00000028 00000-0 23775-4 0 6127
2 21575 98.3935 250.2662 0006723 249.5770 110.4692 14.36980771207080
KO-23
1 22077U 92052B 95180.56456730 -.00000037 00000-0 10000-3 0 5031
2 22077 66.0789 209.8500 0006463 196.3931 163.6879 12.86291797135327
KO-25
1 22828U 93061F 95177.22886794 .00000004 00000-0 19043-4 0 3771
2 22828 98.6132 253.6484 0009879 177.7271 182.3953 14.28103734 59165
IO-26
1 22826U 93061D 95177.23443690 .00000018 00000-0 24819-4 0 3990
2 22826 98.6175 253.6178 0008418 194.3468 165.7464 14.27773734 91060
AO-27
1 22825U 93061C 95177.70170491 -.00000005 00000-0 15679-4 0 4001
2 22825 98.6164 253.9800 0007910 190.9728 169.1278 14.27665704 91124
PO-28
1 22829U 93061G 95177.24062613 .00000007 00000-0 20549-4 0 3912
2 22829 98.6139 253.6940 0009834 177.9948 182.1273 14.28083097 91083
Mir
1 16609U 86017A 95181.22888050 .00000239 00000-0 10000-4 0 1059
2 16609 51.6468 92.4190 0004690 135.0869 225.0531 15.57127908534960

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
July 8, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1399. Re: Anybody hear STS71 on 145.84?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: mklee@actrix.gen.nz
Message-ID: <DB264x.F53@actrix.gen.nz>
Source record: 24656

In article <DB1ww3.J4@dorsai.org>, n2lak@news.dorsai.org (Dave Hines) says:
>
>Haven't heard a thing yet - maybe I'm going deaf......
>As of 1900 UTC 7/1/95.

According to an earlier article on the newsgroup:

Quote:
Most of the SAREX activities are planned for after the Shuttle
separates from Mir on July 1. The following Keplerian element set,
JSC-008a, can be used to track the shuttle after the separation.
Unquote.

The July 1 date was based on the earlier scheduled June 23 launch. So
adjust the date accordingly.

Regards

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

1400. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: landisj@nad.com
Message-ID: <1995Jul1.194147.314@nad.com>
Source record: 24657

In article <3t403q$71kd@ns2-1.CC.Lehigh.EDU>, c002@Lehigh.EDU writes:
>>I've heard that it's often possible to see Mir as it comes over the
>>horizon in early mornings. It must follow then that once Atlantis is
>>coupled with the Mir station, it would be possible to see both craft.
>>
>>Can anyone tell me how I might go about 'finding' the craft in the sky, if
>>in fact it's even possible. I'm located in Toronto, ON.
>>
>>Thanks much.
>
> well, unless you have a good telescope, and a tracker, all you will see is a
> bright point of light shooting across the sky. even still, it's a lovely
> sight!!
>
> DAVid

I hear we're going to get an "eyeball" tonight (Sat) in the mid Atlantic states.
Check in on the local news. I think I remember hearing somewhere between 9 and
10PM local. But Davids right, you'll just see a fast moving "star".
Joe - AA3GN
--
Joe Landis - Systems and Network Manager - North American Drager - Telford, PA
landisj@nad.com

1401. shuttle repeaters in the

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: ron.hauger@warpdrv.com
Message-ID: <95070119400387@warpdrv.com>
Source record: 24658

On 06-30-95 ASX008@COVENTRY.AC.UK wrote to ALL...

A > I have a good scanner, but only the simple telescopic aerial that came
A > with it. As you can tell I am very much a beginner but I am interested
A > in
A > listening to the shuttle communications. Are there any repeaters in

You can see it if you get a satellite dish.

RON.HAUGER@WARPDRV.COM*KC4KNA*WATCHER OF THE SKIES*
VBARC*AMSAT*RTTY*PACKET*SWL*ATV*TVRO*EXTRATERRESTRIAL

---
* OFFLINE 1.58

1402. RS 10 contacts wanted.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: bjarts@stthomas.edu
Message-ID: <1995Jul1.203740.1@milo>
Source record: 24659

I will be on RS 10/11 near the end of July. I will be in EN37 in Hibbing, Minnesota using my own call WT0N, I will also be in the UHF contest. So I hope to work some of you then.

1403. Re: Ham-Space Digest V95 #176

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: pierre@server.FIldir.unimi.IT
Message-ID: <1407549622-100571@fildir.unimi.it>
Source record: 24660

Any shuttle repeaters in the the North East side of Italy ?

And if not...

Can somebody eplain me why is it impossible to receive the VHF voice
frequency straight to a regular VHF RTX? If I am not wrong, somebody did...

Please help !

- Pierpaolo -

1404. Re: Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: "Daniel R. Adamo" <adamod@phoenix.net>
Message-ID: <3t2bpf$9p4@gryphon.phoenix.net>
Source record: 24661

Subject: Re: Two-Line Orbital Element Set: Space Shuttle
From: Neill Taylor, neill.taylor@ukaea.ORG.UK
Date: 30 Jun 95 15:02:18 GMT
In article <9506301502.AA20748@fusrs3b.culham.aea.orgn.uk> Neill Taylor,
neill.taylor@ukaea.ORG.UK writes:
>tkelso@afit.af.mil (TS Kelso) wrote:
>>Mir
>>1 16609U 86017A 95178.66157061 .00002044 00000-0 34587-4 0 1023
>>2 16609 51.6485 105.2627 0004953 121.1692 238.9758 15.56968809534561
>>STS 71
>>1 23600U 95030A 95178.96715941 -.00003388 10714-4 00000+0 0 35
>>2 23600 51.6422 103.9096 0070572 183.6826 3.6349 15.75974500 26
>
>OK, so why are these different?
>

Mir and Atlantis had different TLEs at this time (late 27 June UTC)
because their rendezvous was still in progress. The mean motion and
eccentricity differences equate to heights of apogee and perigee (Ha x
Hp) of 218.2 x 208.6 nm for Mir; 210.5 x 159.4 nm for Atlantis. Over the
next 30 hours or so, Atlantis raised her orbit with no less than 3 major
burns and a buncha course corrections. She was barely off the pad and in
orbit when the above TLE was posted for Orbit 2.

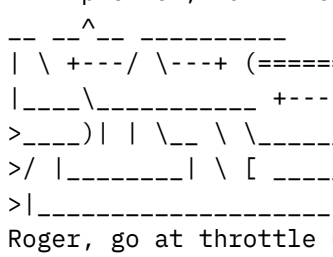
1405. Re: Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3t2ft5$meb@paperboy.ids.net>
Source record: 24662

In article <9506301502.AA20748@fusrs3b.culham.aea.orgn.uk> Neill Taylor,
neill.taylor@ukaea.ORG.UK writes:
>tkelso@afit.af.mil (TS Kelso) wrote:
>>Mir
>>1 16609U 86017A 95178.66157061 .00002044 00000-0 34587-4 0 1023
>>2 16609 51.6485 105.2627 0004953 121.1692 238.9758 15.56968809534561
>>STS 71
>>1 23600U 95030A 95178.96715941 -.00003388 10714-4 00000+0 0 35
>>2 23600 51.6422 103.9096 0070572 183.6826 3.6349 15.75974500 26
>
>OK, so why are these different?

Shhh! You just revealed the secret that NASA's been trying to hide -
that the docking didn't actually happen and they're actually faking the
entire thing in a warehouse in Nevada.

How do I know? A space alien told me!

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1406. Re: Need Interface/decoder for NOAA Polar orbiters on 137 MHz..

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: mklee@actrix.gen.nz
Message-ID: <DB0rvK.Hx9@actrix.gen.nz>
Source record: 24663

In article <3ssgd4$qb2@detroit.freenet.org>, aa164@detroit.freenet.org (Eric Bader) says:
>
>
> I'd like to build a demodulator to interface my 45Khz Bandwidth receiver
>to my IBM for fax reception. Any help would be appreciated... Thanks.
>

I started NOAA/Meteor APT reception from a kitset demodulator attached to a handhled scanner. It worked find but does not have the bells and whistles that others may have. It is very simple to construct. Comes with the required software. You would also need an appropriate VHF pre-amp.

The kitset was featured in Electronics Australia in three parts June, July and August 1992. It was designed and sold directly by Tom Moffat (VK7TM). He has subsequently modified his software to receive geostationary pictures too. He was, in 1992, selling them for Australian $99 (plus postage outside Australia and New Zealand). He does not sell the pre-amp though.

You may like to write to him to find out the present price. His address is

Tom Moffat
High-Tech Tasmania
39 Pillinger Drive
Fern Tree
Tasmania 7054
Australia

For your information, his third article featured the Lindenblad antenna constructed out of 300 Ohms ribbon TV cables. It is very easy to construct and very cheap.
I am still using this antenna - very effective and economical.

Contact me if you have any further queries.

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

1407. Re: NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: mklee@actrix.gen.nz
Message-ID: <DB0s0n.I3y@actrix.gen.nz>
Source record: 24714

In article <mikecox.2.0012BEE3@iaccess.za>, mikecox@iaccess.za (Michael John Cox) says:
>
>Hi folks
>
>Could any one tell me were to find out which Noaa satellites are off air or on
>air as need them for setting up my decoder

On air are NOAA 9 and 14 on 137.625 MHz and NOAA 12 on 137.500 MHz.

The Meteor 2-21 and 3-5 are also on on 137.850 MHz. Met 3-5 will be turned off
in a few days' time.

Regards

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

1408. STSORBIT Plus FTP Site

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: mklee@actrix.gen.nz
Message-ID: <DB0snJ.Iqz@actrix.gen.nz>
Source record: 24715

Someone once asked for the FTP site with STSOrbit Plus. Here is one:

ftp: spacelink.msfc.nasa.gov

directory: Instructional.Manual/Software/IBM.PC/Satellite.Tracking/STSOrbit.Plus

The directory has five files. Get them all.

Regards

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

1409. ARTOB launch on 07-02-95

Newsgroup: rec.radio.amateur.space
Date: 1995-07-01 00:00:00 UTC
From: welp@uni-muenster.de
Message-ID: <3t246s$gmm@majestix.uni-muenster.de>
Source record: 24716

The Nienberge Amateur Radio Group (N46 of DARC) will launch an ARTOB this sunday.

Location: Sch&#65533;ppinger Berg (NW Germany) JO32PC
Date: Sunday, 07-02-95
Time: 12:00 UTC (Launch)
Drifting direction: probably to W/SW

The balloon:
Call sign: DL0ART/am
QRGs: 145.200 MHz: data and call sign in cw;
also downlink when switched to repeater mode
29 MHz: uplink when switched to repeater mode; if so,
the exact frequency will be broadcasted on 145.200
Mode: FM
ground teams: talk back on DB0EG (R71),
later on DB0PD (R84)

This will probably be a 2 or 3 h flight.

Any response and or reception reports will be highly appreciated. You may use the talk back frequencies for (short) reports (coordinator is DL3YBQ), or send a QSL card to DL9QJ via the buro. Any participation in using the repeater (if working) is also welcome, but please: use your ham spirit...

The N46-ARTOB team is looking forward to all responses, suggestions and especially reports.

I am aware that this information will only concern to hams living in the northern part of Germany or in the Netherlands, but maybe the balloon's sigs will be heard in even more distant places...
Please forward this message to any ham who might be interested!

For more information, please contact Oliver, DL9QJ (see below).

I'm sorry that this message is posted only abt 40 h before the launch, but that is the time when we decide about it.

Best 73, Oliver

[Oliver Welp, DL9QJ, also N3NSF
welp@uni-muenster.de
Tel./Fax: +49-2533-7312]

1410. Re: Anybody hear STS71 on 145.84?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-02 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3t50nh$iq7@over.mhv.net>
Source record: 24717

Dave Hines (n2lak@news.dorsai.org) wrote:
: Haven't heard a thing yet - maybe I'm going deaf......
: As of 1900 UTC 7/1/95.

: Thanks,
: Dave Hines - N2LAK

You won't hear anything until after they undock according to Nasa info.
Mir has been very quite as well.

Tom - KB2SMS

1411. Re: Anyone willing to loan an alt/az rotator to Hudson schools for a few days?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-02 00:00:00 UTC
From: marchant@netcom.com
Message-ID: <marchantDB3BC1.EC4@netcom.com>
Source record: 24718

SAREX is sponsored by NASA, ARRL, and AMSAT, with AMSAT taking responsibility for making sure that selected schools are technically ready for their contact with the astronauts. There are about 10 volunteers that are assigned as technical mentors to follow the progress of the school preparations. I'm the AMSAT appointed mentor for the Forest Avenue School. The new antenna equipment is being installed at the school now, but I wanted to explain to people why an omni-directional antenna is inadequate for school SAREX contacts.

As of STS-45, about half of school contacts "succeeded" on the first attempt 8(Success is defined as asking a single question and getting an intelligible reply. This is an incredible disappointment for the students involved who often spend months preparing for a contact. Because the majority of these missed contacts were due to operations errors or a marginal station at the school, AMSAT established the technical mentor program, established a telebridge network of amateur ground stations to allow SAREX contacts by schools with meager technical resources, and mandated OSCAR class ground stations at schools that would attempt direct contacts. With these changes the initial contact success rate has gone up to better than 90%. (There is usually one school per mission that has to reschedule a contact.)

Amateurs have trained ears, and we can pick an answer out when the average "civilian" can't even tell a voice is there. Add the noises inherent with a public address system and a crowd and you have a situation where you need a VERY clear signal. An omni-directional antenna is fine for the average random-QSO SAREX contact, but it is totally inadequate for a primary station. Omni-directional antennas serve as a fine backup, where if your primary station fails, a crummy voice signal is better than none!

Will Marchant
kc6rol@amsat.org
--

marchant@netcom.com

1412. Re: Shuttle/Mir Visible Tonight! (Saturday July 1st)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-02 00:00:00 UTC
From: hjd3@cts.com
Message-ID: <hjd3.193.2FF6D1B6@cts.com>
Source record: 24719
Cross-posted to: sdnet.general,sdnet.events,cts.misc,rec.radio.amateur.space

In article <DB1t29.B1B@thomsoft.com> garym@alsys.com (Gary Morris @ignite) writes:

>The Shuttle Atlantis docked with the Mir Space Station will be visible to the
>naked eye in the San Diego area tonight (Saturday, July 1st) at about 9:14 PM
>in the Northwest sky. Last nights visible pass was easily seen and tonights
>visible pass should last longer and be even better.

Gary, thanks for the info. I gathered a group of my friends before we went out
for the evening and we had a great time watching it! Will it be visible again?

Hugh J. Donagher, III hjd3@cts.com

". . . and then the day came when the pain risk it took to remain tight in
a bud was more painful than the risk it took to blossom." --A. Nin.

1413. Western New York High Altitude Balloon

Newsgroup: rec.radio.amateur.space
Date: 1995-07-02 00:00:00 UTC
From: au156@yfn.ysu.edu
Message-ID: <3t73bi$h6e@news.ysu.edu>
Source record: 24720

WESTERN NEW YORK ATV HIGH ALTITUDE BALLOON

The ATV Group of Western New York will launch its second high-altitude helium balloon on Sunday, July 9, at 9 AM EDT. The launch will be conducted at the Batavia Hamfest in Alexander, New York (approx. 30 miles east of Buffalo and just south of Batavia).

Live ATV will be transmitted on 439.25 Mhz, with a video overlay displaying WA2CXW and altitude, temperature, and other information. Morse code beacon on 2 meters.

Amateurs monitoring the balloon's signals are invited to check into the voice net on 7.290 MHz (or just a little lower) starting at 8:30 AM EDT. No scrub date set at the time of this writing (7/2/95).

Location: Western New York
Date/Time: July 9/ 9:00 AM EDT
ATV: 439.25 MHz (articulated mirror camera)
Morse Beacon: 144.340 MHz (1 watt)
HF Voice Net: just below 7.290 Mhz at 8:30 AM EDT
Launch director: Roger Garbacz, WA2CXW

posted by Hank Riley, N1LTV

Please email for further info
or to submit news of upcoming balloon launches
for distribution on the Net.

h1riley@umassd.edu
au156@yfn.ysu.edu

1414. Re: Amateur Radio Astronomy

Newsgroup: rec.radio.amateur.space
Date: 1995-07-02 00:00:00 UTC
From: wietlispac@aol.com
Message-ID: <3t7m63$as5@newsbf02.news.aol.com>
Source record: 24721

SARA is great!

To join contact:
Hal Braschwitz
3623 West 139th Street
Clevland, OH 44111

I believe the dues are still $20?

Good Luck
Tim

1415. Comment 07/02/95 11:53pm

Newsgroup: rec.radio.amateur.space
Date: 1995-07-02 00:00:00 UTC
From: Ken.Ernandes@227.woodybbs.com
Message-ID: <69b_9507040015@woodybbs.com>
Source record: 24722

Joe -

The message for the tailgaters zips by much too fast for me to be able to read. Unless I'm doing something uniquely wrong, I'd imagine that others may be missing this as well.

A group of us does amateur satellite demos for public relations and as emergency communications practice. These usually take place one Saturday per month at the Huntington Town Hall. These events are co-sponsored by the Larkfield Amateur Radio Club and the Town of Huntington.

Would it be possible to get a short announcement whenever we have such an event upcoming?

Also, during Shuttle missions, Ham-It-Up is a great source for current and accurate orbital data. I wonder how many users are aware of this. Would it be appropriate to also announce the best and greatest info available in area #25?

73, Ken N2WWD
--
| Fidonet: Ken Ernandes 1:2619/227
| Internet: Ken.Ernandes@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

1416. 1995 ARRL DCC (Announcement)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: gjones@tcet.unt.edu
Message-ID: <3t89m5$555@hermes.acs.unt.edu>
Source record: 24723

Press Release: June 1, 1995
1995 ARRL Digital Communications Conference
September 8-10th, 1995
Arlington, Texas (minutes from DFW airport)

Permission is granted to reprint any or all parts of this press release.

Full text is available on the Internet:
FTP: ftp.tapr.org WWW: hhtp://www.tapr.org/tapr E-Mail: tapr@tapr.org
---

It's that time again! Time to make your travel plans and put the finishing touches on your work for the upcoming 14th Annual ARRL Digital Communications Conference.

The ARRL Digital Communications Conference is an international forum for radio amateurs in digital communications, networking, and related technologies to meet, publish their work, and present new ideas and techniques for discussion. Presenters and attendees will have the opportunity to exchange ideas and learn about recent hardware and software advances, theories, experimental results, and practical applications. The Digital Communications Conference is not just for the digital elite, but for digitally-orientated amateurs of all levels of experience.

The 1995 Digital Communications Conference will be held on September 8-10th, 1995 in Arlington, Texas. Arlington is just minutes away from the Dallas/Ft. Worth International Airport, which is located in the middle of the country, and airfares have never been cheaper for this conveniently-located conference.

Not only is the Digital Communications Conference technically stimulating, it is a weekend of fun for all who have more than a casual interest in any of the ham digital communications modes. This includes BBS operators, networkers, DX-Cluster Sysops, software writers, modem designers, and digital satellite communications enthusiasts. The Digital Communications Conference is for all levels of digital operators -- a must conference to attend to get active on a national level. Now, more than ever, amateur radio needs this great meeting of the minds, since it is important that we demonstrate a continued need for the rich frequency allocations we now have by pushing forward and documenting our achievements. The ARRL Digital Communications Conference is one of the few ways to record our accomplishments and challenge each other to do more.

What can you expect during the 14th annual Digital Communications Conference ?

* A full day of papers and breakouts on Saturday for the beginner to the advanced amateur digital enthusiast.

* Two workshops, one on APRS on Friday and one on making use of the new PCS (Personal Communications Service) technology on Sunday.

* A Texas-sized banquet with a Special Guest Speaker.

* SIGs (Special Interest Groups) on Saturday following the banquet.

* Informal get-togethers throughout the weekend.

* A meeting facility that is perfect for this type of meeting.

* Vendor area and informal engineering discussions.

* Scores of nearby restaurants and entertainment (Six Flags Over Texas, The Ballpark at Arlington, Wet 'n Wild, golf).

* An event at which the most important new developments in amateur digital communications are announced.

* Digital 'movers and shakers' from all over the world in attendance.

* Plenty of Texas hospitality!

In addition to the presentation of papers on Saturday, two workshops will be held during the conference. On Friday, Keith Sproul, WU2Z, will hold a workshop on APRS packet-location software. Keith is the Chair of the TAPR APRS Special Interest Group, developer of the Macintosh version of APRS, and a leader in the area of APRS technology. This is a unique opportunity to gain insight into this fast growing new digital aspect of amateur operations that combines computers, packet radio, and GPS (Global Positioning Satellites). On Sunday, Dewayne Hendricks, WD8DZP, will conduct a workshop focusing on a survey of Personal Communications Systems and their applications and use in the Amateur Radio Service. Dewayne is an expert in the area of commercial wireless systems; his company WarpSpeed Imagineering, focuses on wireless Internet. This workshop presents an opportunity to learn how Personal Communications Technology (handheld and small business wireless systems) can be used in the amateur service.

The 1995 Digital Communications Conference is co-hosted by Tucson Amateur Packet Radio (TAPR) and the Texas Packet Radio Society (TPRS). TAPR has been active as an international amateur research and development organization since 1981 and was responsible for development of the TNC-2 and other amateur kits and publications. TAPR currently has more than 2500 members, worldwide. TAPR continues to provide leadership in digital amateur radio activities by supporting Special Interest Groups, conferences/meetings, publications, and research and development projects. TPRS has been active as an organization since 1984 and has been responsible for the development of the TexNet network in Texas, Oklahoma, Arkansas, and Missouri. TPRS membership now tops 500 members.

Anyone interested in digital communications is invited to submit a paper for publication in the Conference Proceedings. Presentation at the Conference is not required for publication. If you know of someone who is doing great things with digital communications, be sure to personally tell them about this! Papers are due by July 21, 1995, and should be submitted

to Maty Weinberg, ARRL, 225 Main Street, Newington, CT 06111 or via the Internet to mweinberg@arrl.org. Please contact Maty for detailed format requirements.

If you have attended a Digital Communications Conference in the past, just remember back to how much fun it was discussing the latest developments into the wee hours! If you have never been, then make your plans now to attend and find out how much fun the Digital Communications Conference can be.

There are few activities where the importance of your participation can be so much fun and important! What a great way to share and renew your enthusiasm for digital amateur radio! Getting together with colleagues from all over the world and bringing each other up to date on your latest work. All this, and more, for an unforgettable weekend of ham radio and digital communications. Make your travel and lodging arrangements now. We hope to see you at the ARRL Digital Communications Conference on September 8-10!

Full information on the conference and hotel information can be obtained by contacting Tucson Amateur Packet Radio, 8987-309 E. Tanque Verde Road, Tucson, AZ 85749-9399. Phone: (817) 383-0000. Fax: (817) 566-2544. Internet: TAPR@TAPR.ORG

Sincerely,
Greg Jones, WD5IVD Q President, Tucson Amateur Packet Radio
Dave Wolf, WO5H Q President, Texas Packet Radio Society

Note: If you need handouts or flyers for meetings, contact TAPR about getting what you need!

Hotel Information

Conference presentations, meetings, and workshops, will be held at the La Quinta Inn and Conference Center, 825 N Watson Road, Arlington, Tx, (800) 531-5900, (817) 640-4142, Fax (817) 649-7864, intersection of I-30 and Texas 360. Rooms rates are $53/single, $58/double, $63/triple, and $85+ for suites. When making reservations with the hotel, be sure to indicate you are attending the conference. Six Flags (larger than Disney Land), the Texas Rangers, and several other attractions are within a few miles of the hotel. If you are planning to stay at the hotel, it is highly recommended that you book your room prior to August 25th, 1995 -- a block of 100 rooms is reserved for Friday and Saturday. The hotel provides transportation to and from D/FW International Airport. You should contact the hotel to arrange airport transportation.

Registration

Contact the TAPR office by Phone, Fax, or e-mail (Internet: tapr@tapr.org) to pre-register or for additional meeting information. MasterCard and VISA accepted.

Digital Communications Conference
==========
- Pre-Registration (before August 21st) $30.00 *

- Late Registration or at door $35.00 *

* - Conference Registration includes:
Conference Proceedings, Sessions, Meetings, and Lunch.

- Saturday Evening Dinner $17.00 **

** - Dinner, Speaker, Prize Drawing (Limited Space)

Workshops
==========
APRS Workshop, Friday, 4pm - 7pm. Conducted by Keith Sproul, WU2Z

- Pre-Registration (before August 21st) $10.00

- Late Registration or at door $15.00

PCS Workshop, Sunday, 9:00am - 1:00pm. Dewayne Hendricks, WA8DZP
Survey of Personal Communications Systems (PCS) Technologies and their
application and use in the Amateur Radio Service

- Pre-Registration (before August 21st) $10.00

- Late Registration or at door $15.00

Contact TAPR to register for the DCC.
Tucson Amateur Packet Radio, 8987-309 E. Tanque Verde Road, Tucson, AZ
85749-9399. Phone: (817) 383-0000. Fax: (817) 566-2544.
Internet: TAPR@TAPR.ORG

1417. RS15 Contacts Wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: Keith Laaks <laakswk@telkom04.telkom.co.za>
Message-ID: <3t8ace$8d8@grovel.iafrica.com>
Source record: 24724

I am looking for contacts with Europe, Western Australia, South America, Indian Ocean, etc. on RS15.

I am available from 15:00 - 21:00 GMT weekdays and anytime Weekends.

QTH, Pretoria, South Africa.

Please email me if you would like to try.

Remember, the window from Europe is pretty small, perhaps 4 minutes or so, but it is possible.
I have had quite a few contacts with Italian stations.

My equipment, RX 3 element beam on 29 Mhz. TX 12 dbd Yagi + 150 Watts.

73's de ZS6TW.

1418. AMSAT Houston Net Rebroadcast

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: Gerald Schmitt <ggs@aerie.lanl.gov>
Message-ID: <3t9p12$3go@newshost.lanl.gov>
Source record: 24725

Hi,

Thanks for the look. A couple of students locally are interested in
trying to convert SAXEX/AMSAT downlinks from some of the geosync birds
rebroadcast locally I understand that this is done both for SAREX
and the Houston Tuesday night net. The students' school advisor has
asked me to help. I am not clear which birds carry these broadcasts
or what frequencies are involved. It strikes me that if the frequencies
are right one of the old C band block converters could be homebrewed
into a source for their efforts. Any help will be greatly appreciated.

73 de Jerry

1419. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: Chris Oesterling <chris@angus.mystery.com>
Message-ID: <u6XN8c1w165w@angus.mystery.com>
Source record: 24726

c002@Lehigh.EDU writes:

> In article <3sp81f$50b@agis.ag.net>, n2ete@ag.net (Jim Laughlan) writes:
> >In article <3snmak$19gi@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:
> >>
> >>are the GOES sat's tx freq 137.xx or 1691mhz?
> >>
> >>
> >
> >In the 136 and 1600 MHz region.
>
>
> ok, now i am TOTALLY confused!!!!!
>
> david

1691 MHz is the output freq for the WEFAX product. Which is fairly simple
to receive, all you need is one or two loop Yags and a down converter.
Most down converters will bring the 1691 MHz signal down to 137.50 MHz
(which is one of 4 common output freqs of polar satellites so the same
receiver can be used on both.) Hope this helps. - Chris

--
Chris Oesterling (chris@angus.mystery.com)
Mystery Spot BBS, Royal Oak, MI --?--

1420. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.804812804@dolphin>
Source record: 24727

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
Mir
1 16609U 86017A 95184.18095677 .00023042 00000-0 31629-3 0 1115
2 16609 51.6466 77.6354 0003413 168.7962 191.3097 15.57219735535428
STS 71
1 23600U 95030A 95184.25000000 -.00000500 00000-0 00000+0 0 189
2 23600 51.6450 77.2916 0003376 168.5024 218.9053 15.57204727 852
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1421. Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.804813177@dolphin>
Source record: 24728

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated several times weekly. Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated weekly) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1422. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3ta4ca$10k3@ns4-1.CC.Lehigh.EDU>
Source record: 24729

>1691 MHz is the output freq for the WEFAX product. Which is fairly simple
>to receive, all you need is one or two loop Yags and a down converter.
>Most down converters will bring the 1691 MHz signal down to 137.50 MHz
>(which is one of 4 common output freqs of polar satellites so the same
>receiver can be used on both.) Hope this helps. - Chris
>

gotcha, thanks

DAvid

|---|
David Roseman	c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet
------My AWSOME home page :) http://www.lehigh.edu/~c002/c002.html-----

1423. Qsl Info

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: ncondar@kaiwan009.kaiwan.com
Message-ID: <3ta9tr$3jn@kaiwan009.kaiwan.com>
Source record: 24730

I am looking for the qsl info of Dr.Norm Thagard and also for Vladimir Dezhurov, the astronauts of R0MIR.
73 de Nick KD3QY

1424. Comment 07/02/95 11:53pm

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: Joseph.Isbell@227.woodybbs.com
Message-ID: <69c_9507040015@woodybbs.com>
Source record: 24731

-> Joe -
->
-> The message for the tailgaters zips by much too fast for me to be
-> able to read. Unless I'm doing something uniquely wrong, I'd
-> imagine that others may be missing this as well.

I will check it out!

-> A group of us does amateur satellite demos for public relations and
-> as emergency communications practice. These usually take place one
-> Saturday per month at the Huntington Town Hall. These events are
-> co-sponsored by the Larkfield Amateur Radio Club and the Town of
-> Huntington.
->
-> Would it be possible to get a short announcement whenever we have
-> such an event upcoming?

Most Definitely.. give me all the details!

-> Also, during Shuttle missions, Ham-It-Up is a great source for
-> current and accurate orbital data. I wonder how many users are
-> aware of this. Would it be appropriate to also announce the best and
-> greatest info available in area #25?

Sure... but won't get to it probably until tommorrow.

73 Joe
--
| Fidonet: Joseph Isbell 1:2619/227
| Internet: Joseph.Isbell@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

1425. WX Sat Decoding Software for Macintosh?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-03 00:00:00 UTC
From: blanton@ni.net
Message-ID: <blanton-0307952206180001@xband.ni.net>
Source record: 24732

The newer Macintosh computers come with a built-in microphone jack which connects to a 8-bit analog-to-digital converter operating at 22 kHz. It should (theoretically) be possible to feed a receiver's output directly into the computer's microphone input and to decode and display weather satellite pictures entirely by means of signal processing software, without requiring any dedicated demodulation hardware. Has anyone written software to do this?

Lee Blanton, WA8YBT/6
blanton@ni.net

1426. Re: WX Sat Decoding Software for Macintosh?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-04 00:00:00 UTC
From: WIESMANN@iap.unibe.ch
Message-ID: <3tbctd$etu@aragorn.unibe.ch>
Source record: 24733

In article <blanton-0307952206180001@xband.ni.net>, blanton@ni.net (J. L. Blanton) writes:
>The newer Macintosh computers come with a built-in microphone jack which
>connects to a 8-bit analog-to-digital converter operating at 22 kHz. It
>should (theoretically) be possible to feed a receiver's output directly
>into the computer's microphone input and to decode and display weather
>satellite pictures entirely by means of signal processing software,
>without requiring any dedicated demodulation hardware.

there is such a software called radfax, can be found on umich and info-mac
mirrors. i had a look at it but not enough time to use it. let me know about
your success...

73 Andreas Wiesmann HB9GAV

--
Andreas Wiesmann Packet: hb9gav@hb9pd.che.eu
Institute of Applied Physics E-Mail: wiesmann@iap.unibe.ch
University of Bern
Sidlerstrasse 5 Voice: +41 31 631 45 90
CH-3012 Bern Fax: +41 31 631 37 65

1427. Re: Astronomy!

Newsgroup: rec.radio.amateur.space
Date: 1995-07-04 00:00:00 UTC
From: wietlispac@aol.com
Message-ID: <3tbici$7de@newsbf02.news.aol.com>
Source record: 24734

For general astronomy try this:

Subscribe via E-mail
majordomo@mindspring.com
Put "subscribe astro" in body of message

Good Luck
Tim N9RO

1428. Re: Anybody hear STS71 on 145.84?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-04 00:00:00 UTC
From: rafaels@zimmer.CSUFresno.EDU
Message-ID: <DB73yA.JLL@CSUFresno.EDU>
Source record: 24735

In article <3tak6c$38f@newsbf02.news.aol.com> kilrae@aol.com (Kilrae) writes:
>I'm listening to STS71, actually Mission Control Houston, up here right
>now. I'm in Northeastern Ohio, it's 7/4/95 at 1:30 AM, and they are on
>147.33.

This AOLers are funny! :-) What you were listening to was NASA Select probably being retransmitted by the Goddard Amateur Radio Club (in Maryland). The original posting asked if anybody had made a contact with the STS-71 directly. To my recollection nobody has done it yet since the hams in the shuttle have been very busy while attached to MIR and have not had time to play radio.

Regards,

Rafael (KE6JSR)

PS: Don't take to seriously the AOL mini-flame! :-)

1429. space shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-04 00:00:00 UTC
From: wizard@iadfw.net
Message-ID: <3taim4$t46@news.iadfw.net>
Source record: 24736

I have your standard desktop digital Radio Shack Scanner. Is there anyone that rebroadcasts shuttle/base transmissions, and what frequencies are they on? Please email me a reply, I do not read newsgroups very much. Thanks

wizard@iadfw.net

1430. Re: Anybody hear STS71 on 145.84?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-04 00:00:00 UTC
From: kilrae@aol.com
Message-ID: <3tak6c$38f@newsbf02.news.aol.com>
Source record: 24737

I'm listening to STS71, actually Mission Control Houston, up here right now. I'm in Northeastern Ohio, it's 7/4/95 at 1:30 AM, and they are on 147.33.

1431. Re: WX Sat Decoding Software for Macintosh?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-04 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3tasah$8hr@news.onramp.net>
Source record: 24738

>>Has anyone written software to do this?

Yep

RadFax 0.9 is somewhat incomplete and may have bugs, it is capable of receive
weather faximile messages via the sound input port of Macintosh computers.
Basically you connect your Mac to a shortwave radio and tune in to weather fax
station. You set the reception speed and desired resolution and start receiving.

I'm not sure if I'm going to add the features that I still feel are missing, but
if I get enough shareware payments, I will do so. In any case, anyone who send
me a shareware payment of $25 (cash prefered, but I guess there might be a way
for me to cash checks too) will receive a disk with the full source code for the
program. You will need at least Think C 5.0 and TCL to compile the program.

Shareware payments should be sent to:

Juri Munkki
Ehrensvï¿½rdintie 20B8
SF00150 Helsinki, Finland

P.S. If you don't know what all this is about, you probably don't need the
program. I don't have the time to write a proper manual right now, so you'll
just have to experiment with the settings. My internet address is jmunkki@hut.fi.

1432. Re: NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-04 00:00:00 UTC
From: wizard@iadfw.net
Message-ID: <3tbsql$988@news.iadfw.net>
Source record: 24739

mklee@actrix.gen.nz (Mun-Kong Lee) wrote:

>On air are NOAA 9 and 14 on 137.625 MHz and NOAA 12 on 137.500 MHz.

>The Meteor 2-21 and 3-5 are also on on 137.850 MHz. Met 3-5 will be turned off
>in a few days' time.

What do these sattelites broadcast?

1433. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-05 00:00:00 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <3te58g$bau@kocrsv08.delcoelect.com>
Source record: 24740

> ...all you will see is a bright point of light shooting across the sky...
^^^^^^^^^^^^^^^^

> ...Davids right, you'll just see a fast moving "star"....
^^^^

Come on, folks. It's not "just" a moving point of light. That's only what it LOOKS like. What I "see" is much more than that. Think about it for a few moments -- when you see Mir/Atlantis with your own eyes, how do you FEEL? Don't discourage people who want to experience the same thing.

= === === === = = = === === === === = = === = = = === = = === =

Alan Anderson | Ignorance can be fixed,
(I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.

1434. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-05 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3teea7$oec@over.mhv.net>
Source record: 24741

Alan Anderson (aranders@kosepc01.delcoelect.com) wrote:
: > ...all you will see is a bright point of light shooting across the sky...
: ^^^^^^^^^^^^^^^^
: > ...Davids right, you'll just see a fast moving "star"....
: ^^^^
: Come on, folks. It's not "just" a moving point of light. That's only what
: it LOOKS like. What I "see" is much more than that. Think about it for a
: few moments -- when you see Mir/Atlantis with your own eyes, how do you FEEL?
: Don't discourage people who want to experience the same thing.

: = === === === = = = === === === === = = === = = = === = = === =
: Alan Anderson | Ignorance can be fixed,
: (I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.

Well it sends chills up MY spine when I see the shuttle or Mir, but
seeing them flyover TOGETHER....well that's just AMAZING to me! Never get
enough of it!

Tom Randall

1435. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-05 00:00:00 UTC
From: price@jove.acs.unt.edu
Message-ID: <3teu6d$3tt@hermes.acs.unt.edu>
Source record: 24742

> Well it sends chills up MY spine when I see the shuttle or Mir, but
> seeing them flyover TOGETHER....well that's just AMAZING to me! Never get
> enough of it!

Hell yah! I took my girlfriend to this place on top of a hill near a lake
and we fed the ducks until it was time. Then, just after sunset, there it
was in all it's tiny but brilliant glory. We loved it! Real romantic!

The next night I was at a party and we were all drinking and I took
everyone out at the right time and showed them it also. It is a GREAT way
to turn people onto the space program who normally wouldn't give a shit.

Aaron Price http://www-lan.unt.edu/cc1/home/price/www/
University of North Texas "Keep spreading love and widening the bandwidth"

1436. Re: space shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-05 00:00:00 UTC
From: wday@dfw.net
Message-ID: <wday-0507950043010001@fw15.dfw.net>
Source record: 24743

In article <3taim4$t46@news.iadfw.net>, wizard@iadfw.net (Wizard) wrote:

> I have your standard desktop digital Radio Shack Scanner. Is there
> anyone that rebroadcasts shuttle/base transmissions, and what
> frequencies are they on? Please email me a reply, I do not read
> newsgroups very much. Thanks
>
> wizard@iadfw.net

The problem is that you don't say where you are in this great big wide world of ours, "Wiz"...

So, assuming you're in the Dallas-Fort Worth area (since I see you're the 'Wizard" of Internet America DFW), try the 445.000 re-broadcaster at the University of Texas @ Arlington, if it's within your reception range.

And, next time... feed us more information so we're not guessing at how to answer your question, ok?

Wayne KF5ZC

Wayne Day KF5ZC Fort Worth,Texas,USA |
CompuServe: 76703,376 Internet: 76703.376@CompuServe.Com | ,__o
or Internet: wday@dfw.net |--_<,
Member: Bicycle Mobile Hams of America (*)/'(*)
For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net
---

1437. Question on Sat's

Newsgroup: rec.radio.amateur.space
Date: 1995-07-05 00:00:00 UTC
From: Greg <gpacho1@gl.umbc.edu>
Message-ID: <Pine.SGI.3.91.950705025334.23924A-100000@umbc8.umbc.edu>
Source record: 24744

Are there any Birds up there that are 2m ssb up and 10m down?
if so what are the freqs.
-G

1438. Satellite Antenna Ques.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-05 00:00:00 UTC
From: n9yjz@earth.execpc.com
Message-ID: <3teup3$7lm@homer.alpha.net>
Source record: 24745

I recently came upon a TS-790 at a very good price, (2m/440 base rig) and have quickly jumped into the mainstream of VHF/UHF operating. I now need to set up a good VHF/UHF antenna system that has good terrestrial performance along with satellite performance as well. I know already that for truly good sat performance I'll need an az/el rotator...no big deal... but what kind of antennas should I use to get good performance on both types of communication, both ground and sat? Can I get away w/ a circularly polarized antenna for terrestrial contacts, or can I get away with a SSB beam for sat contacts? Is there an antenna that is good at doing both? Thanks to all who choose to reply...your response is very much appreciated. 73!!

Joe Moschella, N9YJZ
Brookfield, WI 53005

1439. Satellite reception

Newsgroup: rec.radio.amateur.space
Date: 1995-07-05 00:00:00 UTC
From: gregemm@aol.com
Message-ID: <3tfdk0$6t6@newsbf02.news.aol.com>
Source record: 24746

I am interested in recieving images from satellites. What
software/hardware do I need? Is it possible to make an interface to
connect my computer to my scanner to recieve data? If so, do you have
plans/schematics for this? Any help on this subject would be greatly
appreciated. Please E-Mail responses. Thank You.

1440. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: rivero@netcom.com
Message-ID: <riveroDBAuso.56L@netcom.com>
Source record: 24747

In article <3teu6d$3tt@hermes.acs.unt.edu> price@jove.acs.unt.edu (Price Charles) writes:
>> Well it sends chills up MY spine when I see the shuttle or Mir, but
>> seeing them flyover TOGETHER....well that's just AMAZING to me! Never get
>> enough of it!
>
> Hell yah! I took my girlfriend to this place on top of a hill near a lake
>and we fed the ducks until it was time. Then, just after sunset, there it
>was in all it's tiny but brilliant glory. We loved it! Real romantic!
>
> The next night I was at a party and we were all drinking and I took
>everyone out at the right time and showed them it also. It is a GREAT way
>to turn people onto the space program who normally wouldn't give a shit.
>==
>Aaron Price http://www-lan.unt.edu/cc1/home/price/www/
>University of North Texas "Keep spreading love and widening the bandwidth"
>==

We were moored at Isthmus Cove at Catalina Island and passed the word to
the other boats moored for the July Fourth weekend. Had everyone watching
and those with radio rigs were listneing on the 448.5 repeater frequency.
Got a QSL during the trip.

We converted a lot of disinterested people into enthusiasts and didn't
have to use our own money to do it! :)

--
========== T H E A N I M A T I O N P L A N T A T I O N ===========
| Michael F. Rivero - rivero@netcom.com - 16 years in the business |
| Award Winning Digital Effects for TV & Feature Films - 818-763-2800 |
| RECENT: Coneheads, Son of Pink Panther, Brainscan, Stargate |
| ftp site is at ftp.netcom.com in /pub/ri/rivero |
==

1441. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3tgup5$15nm@ns4-1.CC.Lehigh.EDU>
Source record: 24748

In article <3te58g$bau@kocrsv08.delcoelect.com>, aranders@kosepc01.delcoelect.co
m (Alan Anderson) writes:
>> ...all you will see is a bright point of light shooting across the sky...
> ^^^^^^^^^^^^^^^^
>> ...Davids right, you'll just see a fast moving "star"....
> ^^^^
>Come on, folks. It's not "just" a moving point of light. That's only what
>it LOOKS like. What I "see" is much more than that. Think about it for a
>few moments -- when you see Mir/Atlantis with your own eyes, how do you FEEL?
>Don't discourage people who want to experience the same thing.

yes, it IS all you see is a light, i never said that it is not nice to see!
<eeerrr....didn't i also sat that it is also a beutiful sight??>

DAvid

|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1442. Careful on the uplink and downlink frequencies.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: rivero@netcom.com
Message-ID: <riveroDBB61y.HnC@netcom.com>
Source record: 24749

Please be advised that the SAREX uses different frequencies for uplink
and downlink. On this last pass over Los Angeles,
someone nearby was trying to contact the shuttle on the shuttle's
downlink frequency. Not only did the shuttle not hear them, but they wreaked
it for everyone else.

--
========== T H E A N I M A T I O N P L A N T A T I O N ==========
| Michael F. Rivero - rivero@netcom.com - 16 years in the business |
| Award Winning Digital Effects for TV & Feature Films - 818-763-2800 |
| RECENT: Coneheads, Son of Pink Panther, Brainscan, Stargate |
| ftp site is at ftp.netcom.com in /pub/ri/rivero |
==========

1443. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: jcox@znet.augusta.ga.us
Message-ID: <3tfjjp$m5p@ns.sunbelt.net>
Source record: 24750

My wife and I had a good sighting on the Tuesday evening pass. Although it was quite hazy, she spotted Atlantis first, and I picked out MIR in hot pursuit. Great feeling!

She's not that much of a space type, but she was really blown away by it.

"I spotted it first!!"

John C. Cox, WD4PKZ/AFA2TS
110 Rosemary Dr.
Aiken, SC 29803-7326
jcox@znet.augusta.ga.us

1444. Address for MIR QSL?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: rivero@netcom.com
Message-ID: <riveroDB9xAH.JM9@netcom.com>
Source record: 24751

Does anyone have the address to send a Mir QSL for confirmation?

Thanks.

--
========== T H E A N I M A T I O N P L A N T A T I O N ==========
| Michael F. Rivero - rivero@netcom.com - 16 years in the business |
| Award Winning Digital Effects for TV & Feature Films - 818-763-2800 |
| RECENT: Coneheads, Son of Pink Panther, Brainscan, Stargate |
| ftp site is at ftp.netcom.com in /pub/ri/rivero |
==========

1445. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.805006727@dolphin>
Source record: 24752

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
Mir
1 16609U 86017A 95186.17049170 .00048426 00000-0 65871-3 0 1213
2 16609 51.6460 67.6726 0003011 184.1726 175.9186 15.57079834535733
STS 71
1 23600U 95030A 95185.93750000 -.00000506 00000-0 00000+0 0 251
2 23600 51.6485 68.8401 0005787 176.2743 317.8727 15.57704408 1115
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1446. Re: Satellite Antenna Ques.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: n2oto@aol.com
Message-ID: <3thqq7$9sr@newsbf02.news.aol.com>
Source record: 24753

*can I get away with a SSB beam for sat contacts?

You bet! This is the best way! I have used K1FO yagis for 144 and 432
for 3 years now. I would never use a c.p. yagi!!!!!!!

Rupert N2OTO FN30 Member AMSAT, NorthEast Weak Signal Group

1447. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: jfornash@aol.com
Message-ID: <3ti6ub$dso@newsbf02.news.aol.com>
Source record: 24754

Re the July 4 passing...after sighting Atlantis and Mir, about 2 minutes later a third point of light traversed the same trajectory. I somehow doubt it was the Soyuz craft, but did anyone else see it?

1448. Comment 07/06/95 7:54pm

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: Ken.Ernandes@227.woodybbs.com
Message-ID: <ac7_9507071150@woodybbs.com>
Source record: 24755

Joe -

The Larkfield Amateur Radio Club will be having an Amateur Satellite Communications demonstration on Saturday, July 15 at the Huntington Town Hall, Route 25A, Huntington, NY. Setup will begin at 08:30 and the demonstration will continue until the early afternoon.

This activity serves as Emergency Communications training for the Huntington ARES/RACES unit as well as a public demonstration of satellite communications techniques. Anyone interested in Satellite Communications is encouraged to attend.

For information, contact Ken Ernandes, N2WWD
--
| Fidonet: Ken Ernandes 1:2619/227
| Internet: Ken.Ernandes@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

1449. Comment 07/06/95 8:00pm

Newsgroup: rec.radio.amateur.space
Date: 1995-07-06 00:00:00 UTC
From: Ken.Ernandes@227.woodybbs.com
Message-ID: <ac8_9507071150@woodybbs.com>
Source record: 24756

Joe -

Could we post a congratulatory memo.

Ham-It-Up would like to congratulate Professor Fred Winter, N2OXU,
Suffolk County Community College on the occasion of a successful SAREX
School Contact with STS-71. The contact took place on July 6, 1995 at
11:37 EDT. Approximately 15 students asked questions of Space Shuttle
Atlantis Commander "Hoot" Gibson, an alumnus of Suffolk Community
College.
--
| Fidonet: Ken Ernandes 1:2619/227
| Internet: Ken.Ernandes@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

1450. world map

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: rargyle@cc.weber.edu
Message-ID: <7JUL199513081553@cc.weber.edu>
Source record: 24664
Cross-posted to: comp.os.msdos.programmer,rec.radio.amateur.space

Where can I get the code or binary for a world map for
a freeware (althogh donations to Amsat accepted) program I'm writing
(in C and asm), displayable in modes 12, 10, 6, and Hercules.
I'd like one with equal spacing betweeen parallels of latitude,
including the polar regions, centered on the prime meridian. The
magnetic poles and south Atlantic are the areas I'll plotting most
points on.

please cc me by email, the netserver is acting strangely recently.

Bob Argyle rargyle@cc.weber.edu

1451. Re: Any sarex contacts yet?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: greg@core.rose.hp.com
Message-ID: <DBD66M.5uH@icon.rose.hp.com>
Source record: 24665

Thomas Randall (Thomas.Randall@bbs.mhv.net) wrote:
:
: So far I haven't heard ANY sarex activity. Anyone else hear any? anyone
: make a contact?
:
: I guess that's about it for this mission since they come down tomorrow.
:

Well, the night after the docking I'm pretty sure I heard someone trying to get the shuttle's rig on the air. Something like "I don't think it's transmitting" (ironic, huh?). This was on the 145.840 downlink. I tried getting back to them on 144.45, but no answer.

A day later I heard Ellen KB5SIX making contacts from Mir on 145.550. No luck for me, but there were definitely others getting in. The Shuttle was quiet during that time.

All other passes were either quiet or during a time I wasn't near the radio.

Rats.

Greg KO6TH

1452. Re: Satellite Antenna Ques.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: n2oto@aol.com
Message-ID: <3tkbj7$1nc@newsbf02.news.aol.com>
Source record: 24666

>I recently came upon a TS-790 at a very good price, (2m/440 base rig) and have quickly jumped into the mainstream of VHF/UHF operating. I now need to set up a good VHF/UHF antenna system that has good terrestrial performance along with satellite performance as well. I know already that for truly good sat performance I'll need an az/el rotator...no big deal... but what kind of antennas should I use to get good performance on both types of communication, both ground and sat? Can I get away w/ a circularly polarized antenna for terrestrial contacts, or can I get away with a SSB beam for sat contacts? Is there an antenna that is good at doing both? Thanks to all who choose to reply...your response is very much appreciated. 73!! Joe Moschella, N9YJZ Brookfield, WI 53005

A true CP yagi is difficult to design. A true CP antenna on a satellite (especially on large wavelengths) is difficult to design. Those that are out there are not perfect CP. Most of the time a satellite's antenna is not pointed at you. So you'll never receive a clean cp wavefront. Go with a horizontal yagi and if you really want to go nuts, set it up so you can rotate 360 degrees in polarization, because you will at times get a better signal not in the horizontal or vertical, but somewhere in between! All non FM yagis work well, M2 yagis seem to be the favorite today. Stay away from yagis with a gamma match.

PS Why even consider a vertical yagi for FM repeaters? You'll spend less time on repeaters once you wet your mouth wet with Meteor scatter, Aurora, E skip, Tropo...ducting, and playing king of the mountain or grid :-)

Rupert N2OTO

1453. 10 GHz and Moonbounce?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: n2oto@aol.com
Message-ID: <3tke5l$2gm@newsbf02.news.aol.com>
Source record: 24667

Anyone out there have an anthology of 10 GHz EME stations?
I really have the hots to set up a station here in NYC (ie nine foot
dish). Anyone have any ideas?

Rupert E. Lubkemeier FN30 AMSAT, NorthEast Weak Signal, B,D
I'm always interested in meteor skeds on B! Email me N2OTO@aol.com

1454. ARLS010 SAREX helps NASA

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls010.1995@ampr.org>
Source record: 24668
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS010
ARLS010 SAREX helps NASA

ZCZC AS89
QST de W1AW
Space Bulletin 010 ARLS010
From ARRL Headquarters
Newington, CT July 7, 1995
To all radio amateurs

SB SPACE ARL ARLS010
ARLS010 SAREX helps NASA

The Space Shuttle Atlantis landed in Florida on Friday, July 7, at 1454 UTC. The landing ends the STS-71 mission, which included a historic docking with Space Station Mir on June 29.

Mission Specialist Ellen S. Baker, KB5SIX, and Pilot Charlie Precourt, KB5YSQ, conducted Shuttle Amateur Radio EXperiment (SAREX) activities using the shuttle's VHF radio. Early reports indicate that the astronauts made successful contacts with five student groups who had prearranged contacts, and made numerous random voice contacts with individual amateurs.

In keeping with the experimental nature of SAREX, volunteers around the world also supported numerous tests to help NASA. The crew made a number of contacts with amateurs using the Shuttle-Mir VHF radio to test the operational configuration of the radio hardware and antenna. The radio will be used to facilitate at least six more planned Mir docking missions.

SAREX reports and QSLs may be sent to ARRL EAD, STS-71 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-71, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card.

The Sacred Hearts Academy Radio Club in Honolulu, Hawaii has volunteered to manage the cards for this mission.

The next mission supporting SAREX activity is STS-70, scheduled for launch next week, on July 13. Listen to W1AW for operating details and frequencies.
NNNN
/EX

1455. Any sarex contacts yet?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3ti1n3$ar2@over.mhv.net>
Source record: 24757

So far I haven't heard ANY sarex activity. Anyone else hear any? anyone make a contact?

I guess that's about it for this mission since they come down tomorrow.

Tom

1456. Re: Satellite Antenna Ques.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3tikub$sev@maureen.teleport.com>
Source record: 24758

In article <3teup3$7lm@homer.alpha.net>, n9yjz@earth.execpc.com said...

>but what kind of antennas should I use to get good performance on both
>types of communication, both ground and sat? Can I get away w/ a circularly
>polarized antenna for terrestrial contacts, or can I get away with a SSB
>beam for sat contacts?

You'll no doubt hear that you can use less expensive linearly (horizontal or vertical) polarised antennas for satellites. This is quite true, however there are a couple of points to consider beyond the cost factor (which is what drives people to the linear antennas)...

1. Circular antennas can work with linear signals of any sort quite well. This means that a c/p antenna can be used for vertically polarised mobile and repeaters as well as sats. Try using a vertically polarised antenna with a weak horizontal ssb signal! Or, at that, a horizontal antenna for far away repeaters.

2. DX signals (terrestrial) are likely to arrive in most any polarisation, vertical, horizontal, or whatever in between. A c/p antenna will get them all quite well.

So, the c/p antennas may cost more, but they do a ->very<- good job all around. They will have about 3db less gain on a linear polarised signal, but if you start with a good one with about 15 db plus gain, this is not such a big deal.

Above all, don't go cheap. You get what you pay for. I've seen the cheap ones get completely fouled in the rain and snow, while the good ones keep on ticking.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1457. Re: Satellite Antenna Ques.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: zlau@mgate.arrl.org
Message-ID: <3tjfnp$9uj@mgate.arrl.org>
Source record: 24759

William Roth (n7ryw@teleport.com) wrote:
: In article <3teup3$7lm@homer.alpha.net>, n9yjz@earth.execpc.com said...

: >but what kind of antennas should I use to get good performance on both
: >types of communication, both ground and sat? Can I get away w/ a circularly
: >polarized antenna for terrestrial contacts, or can I get away with a SSB
: >beam for sat contacts?

A disadvantage of circularly polarized antennas is that to work other
c/p stations on both direct and bounce paths you need to be able to
switch between RHCP and LHCP. Bounce paths can work very well when you
both see a large reflector, such as a mountain range.

The antennas on the satellite also make a difference. If they are
truely circularly polarized and properly oriented, there is merely
a 3 dB loss that can be made up by using a bigger linear array.
But, many satellites aren't this elaborate, so you get fades that
are often worse if you use the bigger linear array. Hopefully,
Phase 3D will make linear arrays more popular.

If you have local noise problems, you might be better off with a
linear array--especially if you use one of the designs optimized
for EME arrays. I suspect these antennas have much cleaner patterns,
which ought to increase the useful satellite time you have available.

On the other hand, if you just need 10 to 15i dB of gain on
435/1.2/2.4 I think a helix works quite well. But, if you want
more gain to extend your troposcatter range, linear yagis make
more sense. Your actual troposcatter range is also a big factor.
The curve flattens out, so that extra investment is often more
useful to a station with a range of 150 miles, as opposed to 30
miles.

--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

1458. SatTrak help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: mfn@astral.magic.ca
Message-ID: <mfn-0707951409420001@pm2pool20.magic.ca>
Source record: 24760

Greetings,

I've just recently D/L'd an evaluation copy of SatTrak (Mac) and am attempting to use it. I have however encountered a problem.
Under "site info", along with site longitude, latitude and elevation, the program asks for something called "mininum satellite elevation" in degrees. Can anyone tell me what its asking for?

Thanks.

Michael

--
Michael F. Nunan
"the future belongs to those who see it coming!"

1459. Re: STS-71 sighting??

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: landisj@nad.com
Message-ID: <1995Jul7.104201.318@nad.com>
Source record: 24761

In article <3te58g$bau@kocrsv08.delcoelect.com>, aranders@kosepc01.delcoelect.com (Alan Anderson) writes:

>> ...all you will see is a bright point of light shooting across the sky...
> ^^^^^^^^^^^^^^^^
>> ...Davids right, you'll just see a fast moving "star"....
> ^^^^
> Come on, folks. It's not "just" a moving point of light. That's only what
> it LOOKS like. What I "see" is much more than that. Think about it for a
> few moments -- when you see Mir/Atlantis with your own eyes, how do you FEEL?
> Don't discourage people who want to experience the same thing.
>
> = === === === = = = === === === === = = === = = = === = = === =
> Alan Anderson | Ignorance can be fixed,
> (I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.
>

Sheesh, give me a break! So I wasn't at my poetic best that day.
Joe - AA3GN
--
Joe Landis - Systems and Network Manager - North American Drager - Telford, PA
landisj@nad.com

1460. Re: Careful on the uplink and downlink frequencies.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: Ken Wood <ken@chesh.demon.co.uk>
Message-ID: <456176537wnr@chesh.demon.co.uk>
Source record: 24762

In article: <riveroDBB61y.HnC@netcom.com> rivero@netcom.com (Michael Rivero) writes:

> Please be advised that the SAREX uses different frequencies for uplink
> and downlink. On this last pass over Los Angeles,
> someone nearby was trying to contact the shuttle on the shuttle's
> downlink frequency. Not only did the shuttle not hear them, but they
> wreaked
> it for everyone else.

Although I'm sure they have been well publicised, it might be a good idea to quote them for everyone's benefit. I'm afraid I don't have them myself. I guess it might be a bit late for this mission though.

Ken Wood email : ken@chesh.demon.co.uk
Northwich 100531.227@compuserve.com
Cheshire UK ax25 : g3wcs@gb7oar.#16.gbr.eu

1461. STS-65 QSLs

Newsgroup: rec.radio.amateur.space
Date: 1995-07-07 00:00:00 UTC
From: sufana@ceco.ceco.com
Message-ID: <DBCwoE.AI6@ceco.ceco.com>
Source record: 24763

As of 7/6/95, all STS-65 QSLs that we have received have been shipped out. We are expecting a few more from the ARRL, but that will not take us long to release.

We are looking for any of the SAREX school contacts to send their QSLs in. To date, we have only heard from about half of the schools. So please let us know.

Our club appreciates everyone's patience for waiting for their STS-65 QSLs.

73s,

Charlie Sufana AJ9N Lake County Amateur Radio Club (Indiana)
STS-65 QSL Manager

Internet sufana@ceco.ceco.com
Prodigy JTJF69A

1462. Re: STSORBIT Plus FTP Site

Newsgroup: rec.radio.amateur.space
Date: 1995-07-08 00:00:00 UTC
From: n2ete@ag.net
Message-ID: <3tks52$cb7@agis.ag.net>
Source record: 24669

In article <DB0snJ.Iqz@actrix.gen.nz>, mklee@actrix.gen.nz (Mun-Kong Lee) says:
>
>Someone once asked for the FTP site with STSOrbit Plus. Here is one:
>
>ftp: spacelink.msfc.nasa.gov
>
>directory: Instructional.Manual/Software/IBM.PC/Satellite.Tracking/STSOrbit.Plus
>
>The directory has five files. Get them all.
>
>

You can also get it at ftp.amsat.org.

1463. ARTOB Launch 07-02-95

Newsgroup: rec.radio.amateur.space
Date: 1995-07-08 00:00:00 UTC
From: Oliver Welp <welp@uni-muenster.de>
Message-ID: <3tme9j$1q8e@majestix.uni-muenster.de>
Source record: 24670

[Please, spread this message to you favorite PR mailbox/BBS,...]

The Nienberge Amateur Radio Group (NW Germany) launched an ARTOB on
sunday, 07-02-95. This is what we did:

Balloon:
call sign: DL0ART/am
QRGs/mod.: 145.200 MHz FM data and call sign (CW) (beacon)
(six tone sigs have been transmitted after the call sign:
two serve as a reference, the others show altitude, balloon and
outside temperature, batterie voltage)
29 MHz remote control
power: 2.5 watts
antennas: turnstile - 2 m
lambda/4 vertical - 10 m
weight: balloon: 1320 g
rig: 1340 g
-> totals 2660 g
diameter balloon: 7.5 ft
gas: hydrogen
lift when launched: abt 200 g

The launch on 07-02-95:
(UTC)
11:15 arrival of the team at launching site Schoeppinger Berg (NW Germany),
JO32PC
11:18 aviation weather data:
ground wind 100 deg / 3 knots
upper wind 130 deg / 6 knots
QNH 1008
no clouds below 5000 ft
11:25 infalting of the balloon
(...)
11:52 turning on transmitter
(...)
12:17 launch
12:20 altitude: 1895 ft
12:21 altitude: 2110 ft
12:22 altitude: 2460 ft
12:23 valve opened (30 s) by control team (DF1QE, Armin)
12:28 -same-
from
12:30 five ARDF teams give QTE information every 10 min. to DF coordinator
Joachim, DL3YBQ. Talk back via repeater DB0EG.
12:34 valve opened (30 s)

12:36 valve opened:
12:39 rate of climb is abt zero; the valve should be closed. The control team is in a village at that time, and somehow the remote control fails (thuogh using 150 W on 10 m). The valve stays opened another two min. till (finally) the control team succeeds with their commands. The balloon now sinks by 120 ft/min.
12:40 greatest altitude: 6200 ft
13:00 altitude: 3660 ft
13:05 altitude: 2785 ft
13:08 altitude: 2085 ft
The DF teams are informed and move to the expected landing site
13:16(?) balloon lands near Metelen JO32OF
13:33 First DF teams DF1QE (Armin), DL3YBO (Ludger) and DL9QJ (Oliver) reach the balloon. All equipment is fully operational (even the teams, hi), the balloon stands (!) in a little grove and is easy to recover.

conclusion:
The sigs from the balloon have been (accidentally) re-transmitted by DB0WA, repeater in Aachen (JO30BT). We got a few more reception reports, but we still would appreciate more!

The planned flight on constant flight level did (because of the remote control failure) not happen. The batterie was almost exhausted (much to fast), because of a defect cell.
The beacon power was too high, maybe a couple hundreds mW would have done.
The DF teams need directions from the coordinator where to go.

Besides that, this launch is considered to be a success, especially the (most of the time, hi) controlled landing procedure looks promising. Now the operation time is not limited by a bursting of the balloon in high altitude. It is found easy to recover all the (not yet) valuable rig.

Another launch will be performed on one the next weekends using almost the same rig. After that, data transmissing will be changed to a PR like protocol, using a (8051 or so) micro controller. A repeater 2 m / 70 cm is planned, also adding a CCD camera for ATV or FAX/SSTV.

A big thank you to anybody participating, especially to Armin (DF1QE) who did most of the technics.

Any suggestions and response are welcome (address see below). We'll announce the next launch (always on a sunday) 48 h in advance.

Best 73, Oliver

[Oliver Welp, DL9QJ, also N3NSF
Gustav-Freytag-Str.11, D-48161 Muenster, Germany
n3nsf@amsat.org, welp@uni-muenster.de
Tel./Fax: +49-2533-7312]

1464. Sat station help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-08 00:00:00 UTC
From: afn13094@freenet.ufl.edu
Message-ID: <3tmig3$ri4@huron.eel.ufl.edu>
Source record: 24671

I got my first sat station set up and I have a few questions. The harness that comes off the antennas has a so239, I'm looking for a preamp and have noticed that they come with N or BNC connectors. How should I work this? I know nothing about hardline and N connectors. Do they make N connector to fit RG213 or 9913? Or do they make a pl259 male to N female adaptor? Would this adapter cause significant loss? My radio to feed point length is about 30 feet. Thanks for any help, Patrick KC4VKG afn13094@freenet.ufl.edu

1465. Two-Line Orbital Element Sets (TLE634)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-08 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.805169932@dolphin>
Source record: 24672

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 14,400 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #634 -
Alouette 1
1 00424U 62049A 95179.76034576 .00000020 00000-0 13027-4 0 1160
2 00424 80.4654 273.4562 0022469 223.8493 136.0871 13.67843942633883
ATS 1
1 02608U 66110A 95185.18274218 .00000043 00000-0 10000-3 0 9374
2 02608 14.6392 356.5104 0010461 61.5963 298.5694 1.00331325 21362
ATS 3
1 03029U 67111A 95187.22925972 -.00000115 00000-0 10000-3 0 3769
2 03029 14.8339 3.4897 0008302 267.2009 350.1914 1.00273161101280
Cosmos 398
1 04966U 71016A 95187.91880675 .00188552 92297-5 15523-3 0 9266
2 04966 51.4197 136.0323 0559127 159.9230 202.3974 15.03051296828153
Starlette
1 07646U 75010A 95186.78115480 -.00000063 00000-0 62955-4 0 8988
2 07646 49.8285 79.6330 0206400 163.1185 197.6705 13.82189534 30918
LAGEOS
1 08820U 76039A 95187.85052456 -.00000002 00000-0 10000-3 0 1199
2 08820 109.8500 267.3516 0044191 203.1197 156.7530 6.38664865191713
ETS-2
1 09852U 77014A 95182.34244889 -.00000105 00000-0 10000-3 0 318
2 09852 12.7680 36.9576 0004713 54.9069 305.1704 1.00021371 14127
GOES 2
1 10061U 77048A 95187.58654155 .00000050 00000-0 10000-3 0 5505
2 10061 11.8422 41.1371 0010842 122.8167 154.5010 1.00273431 10960
IUE
1 10637U 78012A 95183.16636583 -.00000248 00000-0 00000+0 0 1456
2 10637 35.2285 88.7516 1329979 47.1811 154.2235 1.00327595 16417
GPS BI-01
1 10684U 78020A 95180.88212408 -.00000029 00000-0 10000-3 0 3688
2 10684 64.8599 34.3090 0061374 164.0219 196.2157 1.98069206112416
```

```
GPS BI-02
1 10893U 78047A 95186.13747550 -.00000013 00000-0 10000-3 0 1720
2 10893 63.3154 272.1734 0222831 14.3600 346.3056 2.01627077125796
GOES 3
1 10953U 78062A 95186.48891539 .00000110 00000-0 10000-3 0 5078
2 10953 10.8112 43.9064 0004503 100.9260 150.2758 1.00323335 15564
SeaSat 1
1 10967U 78064A 95184.95921188 -.00000062 00000-0 24179-4 0 4113
2 10967 107.9964 172.1891 0002701 271.5429 88.5408 14.38042455891243
GPS BI-03
1 11054U 78093A 95182.56404069 -.00000004 00000-0 10000-3 0 3349
2 11054 63.0341 270.5442 0045404 178.4228 181.6697 1.93505295121857
Nimbus 7
1 11080U 78098A 95179.67459311 -.00000075 00000-0 -30285-4 0 5115
2 11080 99.0003 53.1835 0008405 197.4792 162.6075 13.83708647842147
GPS BI-04
1 11141U 78112A 95179.73345535 -.00000030 00000-0 10000-3 0 9823
2 11141 64.8509 36.2070 0048561 27.1734 333.1576 1.92894797 11048
GPS BI-05
1 11690U 80011A 95186.33743066 -.00000021 00000-0 10000-3 0 9244
2 11690 65.2049 35.7692 0144399 198.1215 161.5813 2.00564961127226
GPS BI-06
1 11783U 80032A 95183.41942965 .00000001 00000-0 10000-3 0 861
2 11783 62.4526 265.4530 0219080 29.6021 331.6874 2.03456690111697
GOES 5
1 12472U 81049A 95184.55398701 -.00000280 00000-0 10000-3 0 8650
2 12472 7.5597 53.8130 0007861 27.8269 332.1913 1.00269081 9599
Cosmos 1383
1 13301U 82066A 95187.07374328 .00000037 00000-0 25142-4 0 4177
2 13301 82.9289 28.3031 0028505 114.1383 246.2754 13.68066561649917
LandSat 4
1 13367U 82072A 95186.64249234 .00000024 00000-0 15305-4 0 7163
2 13367 98.1256 242.0608 0007162 133.6555 226.5239 14.57152381689907
DMSP B5D2-1
1 13736U 82118A 95186.98748865 .00000027 00000-0 29735-4 0 7979
2 13736 98.6292 15.8976 0008350 326.9776 33.0879 14.25741086651594
IRAS
1 13777U 83004A 95187.55472901 -.00000238 00000-0 -13414-3 0 108
2 13777 98.9663 15.4209 0013185 336.3030 23.7523 13.99234142304899
Cosmos 1447
1 13916U 83021A 95187.74735317 .00000060 00000-0 46715-4 0 5147
2 13916 82.9451 87.2883 0039430 38.9355 321.4623 13.74327203616151
TDRS 1
1 13969U 83026B 95186.60134297 .00000084 00000-0 10000-3 0 4326
2 13969 8.4154 47.1605 0002772 95.4451 175.6302 1.00724920 17895
GOES 6
1 14050U 83041A 95187.32546391 -.00000057 00000-0 10000-3 0 4249
2 14050 6.3828 57.0427 0005544 8.2913 222.9773 1.00325698102712
OSCAR 10
1 14129U 83058B 95187.17862798 -.00000256 00000-0 10000-3 0 3610
```

```
2 14129 26.4655 259.6639 5999261 290.9317 17.0423 2.05882170 62726
LandSat 5
1 14780U 84021A 95187.63962372 .00000036 00000-0 17746-4 0 2769
2 14780 98.1111 243.5402 0005163 134.0861 226.0762 14.57160621603468
UoSat 2
1 14781U 84021B 95187.52565577 .00000075 00000-0 20407-4 0 8109
2 14781 97.7825 189.1545 0012743 116.7046 243.5464 14.69357484606748
GPS BI-09
1 15039U 84059A 95179.08141898 -.00000034 00000-0 10000-3 0 3440
2 15039 64.5071 30.6077 0082076 17.8575 342.4850 1.92302166 80602
Cosmos 1574
1 15055U 84062A 95186.87404038 .00000015 00000-0 -19777-6 0 7159
2 15055 82.9570 142.0909 0025956 227.2444 132.6526 13.73623618553307
GPS BI-10
1 15271U 84097A 95186.01259222 -.00000004 00000-0 10000-3 0 200
2 15271 62.1371 265.6800 0155162 353.9482 5.9256 2.00599129 78288
Cosmos 1602
1 15331U 84105A 95185.21383356 .00000256 00000-0 27268-4 0 4010
2 15331 82.5341 79.9566 0021836 25.2986 334.9293 14.84638244581193
NOAA 9
1 15427U 84123A 95187.63283853 .00000092 00000-0 72474-4 0 3145
2 15427 98.9944 246.4741 0014129 211.2382 148.7951 14.13716365544665
GPS BI-11
1 16129U 85093A 95184.70739314 -.00000027 00000-0 10000-3 0 6637
2 16129 65.1826 33.5979 0154802 86.8376 275.0105 1.89368116 15305
Mir
1 16609U 86017A 95187.90339167 .00000240 00000-0 10000-4 0 1243
2 16609 51.6480 58.9974 0002438 200.4682 159.6148 15.57047036536005
SPOT 1
1 16613U 86019A 95187.69928480 .00000090 00000-0 62356-4 0 8294
2 16613 98.6494 258.6153 0000839 77.0945 283.0325 14.20062895171134
Cosmos 1766
1 16881U 86055A 95187.88051678 .00000181 00000-0 18923-4 0 3172
2 16881 82.5194 135.2970 0021092 41.7793 318.5012 14.83637458482493
EGP
1 16908U 86061A 95186.49537341 -.00000083 00000-0 10000-3 0 111
2 16908 50.0113 345.9554 0011383 207.5035 152.5198 12.44412361 73110
NOAA 10
1 16969U 86073A 95187.74927259 .00000051 00000-0 39912-4 0 2212
2 16969 98.5094 190.0391 0012375 289.5976 70.3859 14.24945328457263
MOS-1
1 17527U 87018A 95185.22326645 .00000024 00000-0 49724-4 0 2218
2 17527 98.9887 249.9461 0000557 45.8752 314.2451 13.94923333426200
GOES 7
1 17561U 87022A 95187.42460625 .00000088 00000-0 10000-3 0 4566
2 17561 2.3640 72.2014 0003340 324.6810 264.0470 1.00271888 13829
Kvant-1
1 17845U 87030A 95187.83921262 -.00034768 00000-0 -46744-3 0 3066
2 17845 51.6479 59.3198 0002782 198.2264 161.8493 15.57011129535934
DMSP B5D2-3
```

```
1 18123U 87053A 95187.71550503 .00000006 00000-0 25272-4 0 522
2 18123 98.7783 18.5665 0014034 159.2800 200.8946 14.15409929415482
RS-10/11
1 18129U 87054A 95179.71722584 .00000032 00000-0 18339-4 0 794
2 18129 82.9251 50.5504 0013378 60.3811 299.8672 13.72353696401553
Meteor 2-16
1 18312U 87068A 95180.23673670 .00000036 00000-0 18803-4 0 4078
2 18312 82.5507 272.8044 0012984 127.3277 232.9075 13.84058626397217
Meteor 2-17
1 18820U 88005A 95187.86296210 .00000004 00000-0 -10068-4 0 6636
2 18820 82.5389 322.5907 0015956 174.9685 185.1642 13.84740106375590
DMSP B5D2-4
1 18822U 88006A 95187.57922992 -.00000013 00000-0 12806-4 0 153
2 18822 98.4039 30.8319 0005441 305.7634 54.3038 14.23158138385276
Glonass 34
1 19163U 88043A 95186.80481629 -.00000008 00000-0 10000-3 0 9993
2 19163 65.1412 97.5401 0007579 158.2850 201.7760 2.13102586 54835
Glonass 36
1 19165U 88043C 95185.92276800 -.00000001 00000-0 10000-3 0 4000
2 19165 65.1164 97.5269 0003949 327.7200 32.3064 2.13102139 55438
METEOSAT 3
1 19215U 88051A 95185.61412413 -.00000271 00000-0 10000-3 0 1403
2 19215 2.5497 69.9822 0002015 49.9011 314.9711 1.00270772 13753
AO-13
1 19216U 88051B 95185.18261337 .00000281 00000-0 10000-4 0 560
2 19216 57.5496 178.1999 7303467 12.9920 358.5344 2.09719742 22528
OKEAN 1
1 19274U 88056A 95180.22492400 .00000211 00000-0 23331-4 0 155
2 19274 82.5138 242.8733 0018439 205.5607 154.4692 14.82350251376931
Meteor 3-2
1 19336U 88064A 95187.12502347 .00000051 00000-0 10000-3 0 4065
2 19336 82.5412 52.0196 0018314 25.9568 334.2471 13.16973629333797
Glonass 39
1 19503U 88085C 95181.72764894 -.00000044 00000-0 10000-3 0 2949
2 19503 65.6887 336.5847 0007623 154.0712 205.9611 2.13101852 52839
NOAA 11
1 19531U 88089A 95187.77608425 -.00000001 00000-0 24634-4 0 1224
2 19531 99.1959 191.6575 0012301 128.8391 231.3886 14.13055964349528
TDRS 2
1 19548U 88091B 95177.64123251 -.00000192 00000-0 10000-3 0 1300
2 19548 1.8258 73.8837 0019907 278.7417 237.7744 1.00274957 11956
Glonass 40
1 19749U 89001A 95186.92797726 -.00000010 00000-0 10000-3 0 5088
2 19749 65.0808 97.0853 0007275 264.6054 95.3410 2.13101316 50453
Glonass 41
1 19750U 89001B 95183.69870333 .00000009 00000-0 10000-3 0 4229
2 19750 65.1002 97.2574 0007059 243.9497 116.0369 2.13101782 50401
GPS BII-01
1 19802U 89013A 95187.13048135 .00000020 00000-0 10000-3 0 678
2 19802 55.2004 124.4624 0024761 186.6323 173.3374 2.00550406 46752
```

```
Akebono
1 19822U 89016A 95186.93247001 .00009622 00000-0 46962-3 0 5312
2 19822 75.0891 324.3579 3779435 6.8878 357.1580 7.86577623139296
Meteor 2-18
1 19851U 89018A 95183.53429018 .00000055 00000-0 35682-4 0 4069
2 19851 82.5194 200.6628 0012526 238.6163 121.3774 13.84392082320318
MOP-1
1 19876U 89020B 95170.93175630 .00000089 00000-0 00000+0 0 1220
2 19876 1.2362 72.0978 0002055 326.8147 216.6446 1.00420782 3043
TDRS 3
1 19883U 89021B 95187.05897660 -.00000264 00000-0 00000+0 0 959
2 19883 0.1088 79.6832 0001362 32.7994 151.3053 1.00268141195634
GPS BII-02
1 20061U 89044A 95185.47937447 -.00000052 00000-0 10000-3 0 866
2 20061 54.4189 300.7688 0145804 214.2171 144.8666 2.00563390 44465
Nadezhda 1
1 20103U 89050A 95187.76579880 .00000030 00000-0 15686-4 0 4446
2 20103 82.9577 4.1502 0036687 300.2076 59.5448 13.73854529301114
GPS BII-03
1 20185U 89064A 95187.81187772 .00000014 00000-0 10000-3 0 1074
2 20185 54.9996 124.9872 0015063 295.9015 63.9516 2.00572926 43087
GMS 4
1 20217U 89070A 95186.59682940 -.00000354 00000-0 10000-3 0 2101
2 20217 1.0741 76.4070 0009575 83.5200 105.6708 1.00138703 21930
INTERCOSMOS 24
1 20261U 89080A 95187.24444185 .00000201 00000-0 52056-4 0 4224
2 20261 82.5932 132.3198 1243217 110.4985 263.3796 12.47256641262652
GPS BII-04
1 20302U 89085A 95187.34779744 .00000038 00000-0 10000-3 0 785
2 20302 53.3631 240.6970 0014023 174.5428 185.5665 2.00557437 41878
Meteor 3-3
1 20305U 89086A 95186.51392432 .00000044 00000-0 10000-3 0 3456
2 20305 82.5461 4.9636 0008091 101.5129 258.6990 13.04427841272872
COBE
1 20322U 89089A 95184.04898202 .00000064 00000-0 69003-4 0 1335
2 20322 98.9597 199.8535 0008472 294.8216 65.2074 14.03447587287814
Kvant-2
1 20335U 89093A 95187.83921262 -.00034768 00000-0 -46744-3 0 3166
2 20335 51.6479 59.3198 0002782 198.2264 161.8493 15.57011129319145
GPS BII-05
1 20361U 89097A 95186.86156540 -.00000041 00000-0 00000+0 0 9488
2 20361 55.7828 67.0369 0111694 106.5981 253.7995 2.00562583 31344
SPOT 2
1 20436U 90005A 95186.20539704 -.00000044 00000-0 00000+0 0 9480
2 20436 98.7356 260.0612 0000685 92.3347 267.7908 14.20022719282457
UO-14
1 20437U 90005B 95184.17692024 .00000018 00000-0 23880-4 0 1084
2 20437 98.5667 268.2902 0011341 147.0956 213.0937 14.29890716284039
UO-15
1 20438U 90005C 95179.74235681 -.00000024 00000-0 75333-5 0 9047
```

```
2 20438 98.5652 262.4272 0009916 164.4475 195.7014 14.29208803283293
PACSAT
1 20439U 90005D 95185.19769064 .00000011 00000-0 21132-4 0 9076
2 20439 98.5786 270.9863 0011448 145.2673 214.9260 14.29944930284197
DO-17
1 20440U 90005E 95184.76470776 .00000028 00000-0 27739-4 0 9076
2 20440 98.5802 271.0293 0011319 145.2768 214.9153 14.30086298284152
WO-18
1 20441U 90005F 95184.18757376 .00000018 00000-0 23918-4 0 9116
2 20441 98.5800 270.4320 0011992 147.6014 212.5906 14.30057452284073
LO-19
1 20442U 90005G 95183.78947253 -.00000010 00000-0 13070-4 0 9073
2 20442 98.5812 270.4042 0012502 148.6268 211.5663 14.30159597284036
GPS BII-06
1 20452U 90008A 95187.25379365 .00000100 00000-0 10000-3 0 514
2 20452 54.0302 180.8943 0058314 86.6287 274.0457 2.00574891 39850
MOS-1B
1 20478U 90013A 95187.70795466 .00000091 00000-0 10000-3 0 8014
2 20478 98.9944 256.6887 0001307 78.9036 281.2272 13.94926963196251
DEBUT
1 20479U 90013B 95179.78491395 .00000009 00000-0 94266-4 0 9059
2 20479 99.0719 266.3810 0539740 206.5574 150.6921 12.83333192252448
FO-20
1 20480U 90013C 95183.76865953 -.00000071 00000-0 -86396-4 0 8032
2 20480 99.0722 269.4739 0540186 197.9372 160.1992 12.83230407252947
MOS-1B R/B
1 20491U 90013D 95185.99704050 .00000506 00000-0 10152-2 0 1478
2 20491 99.0447 325.9094 0470283 30.0106 332.7103 13.02981760256512
LACE
1 20496U 90015A 95187.83606968 .00001443 00000-0 50438-4 0 5545
2 20496 43.1027 19.0056 0011030 328.2500 31.7667 15.34640629300593
Nadezhda 2
1 20508U 90017A 95187.80780229 .00000016 00000-0 16608-5 0 4435
2 20508 82.9537 138.6969 0042861 250.1488 109.5047 13.73494913268345
OKEAN 2
1 20510U 90018A 95186.05606143 .00000168 00000-0 19852-4 0 4168
2 20510 82.5238 189.2316 0020139 21.7289 338.4766 14.78503473288234
GPS BII-07
1 20533U 90025A 95184.67642185 -.00000050 00000-0 10000-3 0 716
2 20533 54.8145 301.4052 0062022 89.6059 271.1992 2.00564137 38578
PegSat
1 20546U 90028A 95187.85473635 .00003826 00000-0 79392-4 0 8191
2 20546 94.1128 155.3816 0063012 261.4925 97.9184 15.43721664291519
HST
1 20580U 90037B 95186.97266096 .00000387 00000-0 23161-4 0 6800
2 20580 28.4698 290.1894 0006298 131.3744 228.7384 14.90899541 86711
MACSAT 2
1 20608U 90043B 95187.88373048 .00000144 00000-0 22053-4 0 1080
2 20608 89.9260 176.3181 0104999 185.3421 174.6686 14.64844702275591
Glonass 44
```

```
1 20619U 90045A 95181.66537139 -.00000046 00000-0 10000-3 0 2011
2 20619 65.2745 336.0051 0024402 209.1422 150.7207 2.13102557 39795
Glonass 45
1 20620U 90045B 95183.66120609 -.00000035 00000-0 10000-3 0 2091
2 20620 65.2957 335.9270 0009151 56.7000 303.3646 2.13102579 39871
Glonass 46
1 20621U 90045C 95186.54325468 -.00000031 00000-0 10000-3 0 8072
2 20621 65.3067 335.8918 0012919 191.4521 168.5290 2.13101704 39936
Kristall
1 20635U 90048A 95187.83921262 -.00034768 00000-0 -46744-3 0 1079
2 20635 51.6479 59.3198 0002782 198.2264 161.8493 15.57011129535889
ROSAT
1 20638U 90049A 95180.82687439 -.00000263 00000-0 17507-5 0 4713
2 20638 52.9896 90.1351 0014210 133.5672 226.6462 15.07199213279020
Meteor 2-19
1 20670U 90057A 95186.70877296 .00000031 00000-0 14383-4 0 9066
2 20670 82.5459 263.8461 0016218 144.9943 215.2289 13.84161459253676
CRRES
1 20712U 90065A 95187.73578460 .00000176 00000-0 31010-3 0 1165
2 20712 18.0427 31.1408 7188563 118.2828 329.9614 2.35432262 34944
GPS BII-08
1 20724U 90068A 95181.00796023 .00000009 00000-0 10000-3 0 9149
2 20724 54.8403 122.8590 0117865 173.7052 186.4185 2.00559703 34361
Feng Yun1-2
1 20788U 90081A 95187.88697011 .00000338 00000-0 25202-3 0 4288
2 20788 98.8174 200.2509 0016786 21.8011 338.3850 14.01373194247593
Meteor 2-20
1 20826U 90086A 95179.57007562 .00000053 00000-0 34058-4 0 9165
2 20826 82.5257 206.4974 0015302 73.9929 286.2915 13.83609950239800
GPS BII-09
1 20830U 90088A 95179.05817720 -.00000045 00000-0 10000-3 0 9229
2 20830 55.7173 65.3199 0067099 99.4068 261.4099 2.00572441 34961
GPS BIIA-10
1 20959U 90103A 95184.95343309 .00000033 00000-0 10000-3 0 8877
2 20959 55.0337 124.6719 0097644 230.3325 128.7960 2.00553758 33675
DMSP B5D2-5
1 20978U 90105A 95187.67918729 .00000148 00000-0 68214-4 0 2531
2 20978 98.6394 255.8498 0080128 111.6883 249.2856 14.32561156240102
Glonass 47
1 21006U 90110A 95186.09975112 -.00000004 00000-0 10000-3 0 7754
2 21006 65.0630 96.4595 0059640 188.6162 171.3155 2.13102878 35592
Glonass 48
1 21007U 90110B 95185.81918770 -.00000002 00000-0 10000-3 0 9043
2 21007 65.0930 96.5401 0032889 177.3755 182.6737 2.13101445 35570
Glonass 49
1 21008U 90110C 95181.01742686 .00000001 00000-0 00000+0 0 935
2 21008 65.0538 96.6569 0010054 279.1436 80.7751 2.13099343 35463
AO-21
1 21087U 91006A 95185.55640110 .00000094 00000-0 82657-4 0 6109
2 21087 82.9411 219.7207 0036308 95.9554 264.5737 13.74557053222112
```

```
RS-12/13
1 21089U 91007A 95180.14622884 .00000017 00000-0 19768-5 0 8112
2 21089 82.9239 91.9155 0029983 136.3894 223.9641 13.74058356220418
MOP-2
1 21140U 91015B 95187.43664963 -.00000005 00000-0 00000+0 0 700
2 21140 0.3467 89.2683 0003085 27.5239 324.1863 1.00273962 18130
Nadezhda 3
1 21152U 91019A 95187.77760059 .00000036 00000-0 23107-4 0 1349
2 21152 82.9237 42.3731 0040687 225.3505 134.4332 13.73520699216195
Glonass 50
1 21216U 91025A 95185.64918062 -.00000031 00000-0 10000-3 0 4199
2 21216 65.0353 335.5310 0009034 186.0533 173.9341 2.13102731 33091
Glonass 51
1 21217U 91025B 95184.31022478 -.00000033 00000-0 10000-3 0 8286
2 21217 65.0133 335.5838 0009289 240.9130 118.9840 2.13101488 33055
Glonass 52
1 21218U 91025C 95183.48368744 -.00000036 00000-0 10000-3 0 3012
2 21218 65.0398 335.5886 0020409 80.9953 279.2078 2.13101560 33048
GRO
1 21225U 91027B 95187.87458174 .00001657 00000-0 30900-4 0 2779
2 21225 28.4607 77.9147 0003292 242.5015 117.5219 15.42767680116371
Meteor 3-4
1 21232U 91030A 95186.67129557 .00000050 00000-0 10000-3 0 8161
2 21232 82.5405 258.4691 0012792 314.5882 45.4182 13.16468012201811
NOAA 12
1 21263U 91032A 95187.74133789 .00000154 00000-0 87972-4 0 5499
2 21263 98.5853 211.3045 0012306 197.0300 163.0462 14.22537205215205
OKEAN 3
1 21397U 91039A 95187.79694397 .00000186 00000-0 23391-4 0 1166
2 21397 82.5246 100.7672 0024578 83.8261 276.5738 14.76383422220257
GPS BIIA-11
1 21552U 91047A 95185.21864436 -.00000039 00000-0 10000-6 0 8706
2 21552 56.0167 62.7825 0063895 242.7594 116.6490 2.00565611 29279
ERS-1
1 21574U 91050A 95186.63386761 .00000154 00000-0 73372-4 0 1722
2 21574 98.5506 260.6983 0001595 95.1487 264.9879 14.32245758207692
UO-22
1 21575U 91050B 95183.74458617 .00000041 00000-0 28327-4 0 6137
2 21575 98.3932 254.6798 0006711 234.7407 125.3152 14.36981487207738
ORBCOMM-X
1 21576U 91050C 95184.67464060 .00000009 00000-0 17825-4 0 7080
2 21576 98.3918 253.9856 0002856 243.7315 116.3575 14.36389282207772
TUBSAT-A
1 21577U 91050D 95184.73926058 .00000011 00000-0 18347-4 0 6079
2 21577 98.3910 254.5764 0005466 234.5707 125.4970 14.36487384207810
SARA
1 21578U 91050E 95187.71595530 .00000204 00000-0 79986-4 0 8081
2 21578 98.4114 263.0157 0003990 215.3340 144.7580 14.39027760208508
TDRS 4
1 21639U 91054B 95186.62075961 .00000088 00000-0 00000+0 0 9103
```

```
2 21639 0.0403 93.4204 0003346 341.8095 257.2598 1.00278744108402
Meteor 3-5
1 21655U 91056A 95187.13441463 .00000051 00000-0 10000-3 0 8142
2 21655 82.5518 205.5676 0012387 323.4927 36.5346 13.16839731186994
UARS
1 21701U 91063B 95184.77226656 -.00000162 00000-0 69273-5 0 6841
2 21701 56.9837 70.1593 0005355 94.4425 265.7222 14.96401378208056
DMSP B5D2-6
1 21798U 91082A 95187.71457222 .00000131 00000-0 92976-4 0 9023
2 21798 98.9607 199.5079 0013326 125.8880 234.3531 14.13902379185964
Glonass 53
1 21853U 92005A 95186.98038134 -.00000011 00000-0 10000-3 0 202
2 21853 65.0276 96.1185 0008116 178.0704 181.9829 2.13103891 26723
Glonass 54
1 21854U 92005B 95187.73936043 -.00000016 00000-0 00000+0 0 1552
2 21854 65.0084 96.0904 0016819 15.3924 344.6875 2.13103844 26722
Glonass 55
1 21855U 92005C 95184.98786674 .00000003 00000-0 00000+0 0 1476
2 21855 65.0069 96.1863 0006773 209.4109 150.5856 2.13102273 26650
JERS-1
1 21867U 92007A 95187.74018141 .00000282 00000-0 28409-4 0 6220
2 21867 97.7156 264.3404 0000790 61.8183 298.3119 14.98631949185974
GPS BIIA-12
1 21890U 92009A 95185.18639585 .00000027 00000-0 10000-3 0 6735
2 21890 53.9225 241.0174 0059376 183.6485 176.3872 2.00574907 24646
GPS BIIA-13
1 21930U 92019A 95187.38365534 -.00000048 00000-0 10000-3 0 6469
2 21930 55.6777 2.4713 0039808 174.1267 185.9337 2.00566213 23610
EUVE
1 21987U 92031A 95183.90246430 .00000896 00000-0 31826-4 0 4651
2 21987 28.4329 17.3495 0010001 177.4280 182.6369 15.19330587170349
SAMPEX
1 22012U 92038A 95187.83847214 .00000150 00000-0 11000-4 0 6434
2 22012 81.6732 124.9560 0116954 222.9174 136.2869 14.91390726163609
GPS BIIA-14
1 22014U 92039A 95187.42610482 .00000103 00000-0 10000-3 0 5678
2 22014 54.8569 182.4211 0090212 313.4347 45.8328 2.00571576 15454
Glonass 56
1 22056U 92047A 95187.70297426 -.00000036 00000-0 00000+0 0 589
2 22056 64.8720 335.5722 0003649 263.1312 96.8326 2.13103209 22808
Glonass 57
1 22057U 92047B 95184.71341698 -.00000032 00000-0 00000+0 0 552
2 22057 64.8828 335.7023 0006354 327.7459 32.2157 2.13102606 22715
Glonass 58
1 22058U 92047C 95183.71504425 -.00000035 00000-0 10000-3 0 256
2 22058 64.8828 335.7395 0008740 266.7440 93.1658 2.13102948 22745
TOPEX
1 22076U 92052A 95185.53339592 -.00000061 00000-0 00000+0 0 8897
2 22076 66.0395 216.8430 0008000 265.5452 94.4652 12.80929570135461
KO-23
```

```
1 22077U 92052B 95185.15185678 -.00000037 00000-0 10000-3 0 5042
2 22077 66.0786 200.2452 0006254 195.5045 164.5780 12.86291864135911
S80/T
1 22078U 92052C 95187.48553009 -.00000037 00000-0 10000-3 0 5026
2 22078 66.0817 194.2357 0006406 182.0103 178.0891 12.86576153136290
GPS BIIA-15
1 22108U 92058A 95179.40865363 .00000026 00000-0 00000+0 0 5817
2 22108 54.1587 242.0535 0112532 151.8981 208.8049 2.00567851 20471
FREJA
1 22161U 92064A 95185.57206169 .00000019 00000-0 51711-4 0 5262
2 22161 62.9924 44.7022 0812365 348.3660 9.9518 13.21841821132346
LAGEOS II
1 22195U 92070B 95186.35104277 -.00000009 00000-0 10000-3 0 4141
2 22195 52.6432 211.5074 0138310 284.5518 73.9739 6.47294180 63752
GPS BIIA-16
1 22231U 92079A 95186.07249252 .00000098 00000-0 10000-3 0 5624
2 22231 54.6086 183.5825 0020682 287.1975 72.5830 2.00564637 19187
GPS BIIA-17
1 22275U 92089A 95186.22435602 .00000099 00000-0 10000-3 0 5739
2 22275 54.6321 181.1623 0052961 244.9633 114.4981 2.00562045 18592
TDRS 5
1 22314U 93003B 95186.39105048 -.00000279 00000-0 10000-3 0 5322
2 22314 1.9154 71.9038 0000996 35.7526 269.5417 1.00258824 9096
GPS BIIA-18
1 22446U 93007A 95187.29429763 -.00000058 00000-0 10000-3 0 5702
2 22446 54.4339 301.5474 0079520 0.3732 359.6310 2.00579494 17601
Glonass 59
1 22512U 93010A 95186.04330113 -.00000004 00000-0 10000-3 0 7132
2 22512 65.0270 96.0049 0008338 193.0007 167.0088 2.13102003 18274
Glonass 60
1 22513U 93010B 95187.85958412 -.00000017 00000-0 00000+0 0 7781
2 22513 65.0160 95.9594 0006251 198.0287 161.9759 2.13102545 18508
Glonass 61
1 22514U 93010C 95185.33752573 .00000001 00000-0 00000+0 0 7741
2 22514 65.0310 96.0263 0010106 190.1045 169.9067 2.13102764 18457
ASTRO-D
1 22521U 93011A 95184.99943900 .00000667 00000-0 41003-4 0 4194
2 22521 31.1056 130.5783 0056839 305.0198 54.5115 15.02307763129900
UFO F1
1 22563U 93015A 95183.55960076 -.00000211 00000-0 00000+0 0 4269
2 22563 25.9637 294.1043 0004408 231.0213 262.6505 0.99251537 12610
GPS BIIA-19
1 22581U 93017A 95187.43456744 -.00000050 00000-0 10000-3 0 4440
2 22581 55.2333 2.0235 0060749 38.2100 322.2427 2.00574646 16668
ARSENE
1 22654U 93031B 95183.17620687 -.00000108 00000-0 10000-3 0 3187
2 22654 2.6139 83.9117 2900118 214.0013 122.9678 1.42203951 6607
GPS BIIA-20
1 22657U 93032A 95187.56526176 -.00000050 00000-0 10000-3 0 4824
2 22657 55.2486 1.8758 0073239 214.2037 145.3547 2.00565226 11993
```

```
RADCAL
1 22698U 93041A 95181.81552873 .00000005 00000-0 -34235-5 0 4114
2 22698 89.5421 289.7986 0093595 34.9173 325.8109 14.21347526104373
GPS BIIA-21
1 22700U 93042A 95183.54437321 .00000022 00000-0 10000-3 0 4380
2 22700 54.3187 242.6728 0038297 341.3402 18.6252 2.00564332 14710
NOAA 13
1 22739U 93050A 95187.86043265 -.00000047 00000-0 -12729-5 0 8396
2 22739 98.9955 136.7252 0010790 115.6105 244.6187 14.10936439 98214
GPS BIIA-22
1 22779U 93054A 95184.62561995 -.00000051 00000-0 10000-3 0 4893
2 22779 54.5687 301.6479 0019897 244.7641 115.0599 2.00571219 13490
Meteor 2-21
1 22782U 93055A 95186.15098637 .00000065 00000-0 46280-4 0 4137
2 22782 82.5486 262.9490 0020604 232.9158 127.0122 13.83034770 93025
UFO F2
1 22787U 93056A 95187.31151528 -.00000057 00000-0 00000+0 0 4756
2 22787 4.4838 325.2618 0002943 115.4875 26.5167 1.00274218 5356
SPOT 3
1 22823U 93061A 95185.54150420 .00000146 00000-0 89124-4 0 4528
2 22823 98.7381 259.4395 0001021 57.0265 303.1011 14.20025163 91756
STELLA
1 22824U 93061B 95186.21249623 -.00000033 00000-0 42839-5 0 4000
2 22824 98.6187 262.0400 0005976 159.2255 200.9150 14.27101723 92308
AO-27
1 22825U 93061C 95186.67249956 .00000018 00000-0 25131-4 0 4029
2 22825 98.6159 262.8237 0008194 162.5769 197.5696 14.27666755 92404
IO-26
1 22826U 93061D 95186.20455677 .00000068 00000-0 45032-4 0 4014
2 22826 98.6173 262.4645 0009064 165.1647 194.9801 14.27774643 92349
HEATHSAT
1 22827U 93061E 95186.71437976 .00000025 00000-0 27677-4 0 4628
2 22827 98.6141 262.8994 0009270 151.0430 209.1261 14.27898275 92425
ITAMSAT
1 22828U 93061F 95186.19691510 -.00000009 00000-0 13796-4 0 3794
2 22828 98.6130 262.4927 0010158 150.6660 209.5097 14.28104541 60448
PO-28
1 22829U 93061G 95186.20880234 .00000033 00000-0 30981-4 0 3937
2 22829 98.6137 262.5396 0010103 150.9951 209.1792 14.28084289 92363
KO-25
1 22830U 93061H 95187.67063139 .00000009 00000-0 20631-4 0 4124
2 22830 98.5134 256.9633 0012169 124.9052 235.3275 14.28092820 92579
GPS BIIA-23
1 22877U 93068A 95173.71559779 -.00000087 00000-0 10000-3 0 2901
2 22877 55.4417 63.5941 0080254 310.7987 48.5151 2.00549216 12169
METEOSAT 6
1 22912U 93073B 95187.21580757 -.00000083 00000-0 00000+0 0 3370
2 22912 0.7684 277.7378 0001138 124.0574 309.7177 1.00260447 4372
HST Array
1 22920U 90037C 95185.57048361 .00004466 00000-0 32592-3 0 3422
```

```
2 22920 28.4700 258.0099 0003827 16.7818 343.2900 15.01332304 86920
Meteor 3-6
1 22969U 94003A 95184.91529175 .00000051 00000-0 10000-3 0 1790
2 22969 82.5596 146.9327 0017126 34.3091 325.9126 13.16730190 69086
TUBSAT-B
1 22970U 94003B 95179.93739257 .00000051 00000-0 10000-3 0 1691
2 22970 82.5573 150.3790 0017366 44.8601 315.3920 13.16825407 68434
GPS BIIA-24
1 23027U 94016A 95186.75312526 -.00000050 00000-0 10000-3 0 2278
2 23027 55.0775 3.9347 0063472 196.8349 162.9788 2.00557575 9739
Glonass 62
1 23043U 94021A 95187.76193210 -.00000036 00000-0 00000+0 0 2225
2 23043 64.7559 335.9833 0006288 176.3425 183.6660 2.13103017 9621
Glonass 63
1 23044U 94021B 95186.70609777 -.00000032 00000-0 00000+0 0 2012
2 23044 64.7518 336.0196 0029231 201.1982 158.6866 2.13102980 9605
Glonass 64
1 23045U 94021C 95187.82089333 -.00000037 00000-0 00000+0 0 2078
2 23045 64.7358 335.9916 0010832 38.1416 321.9405 2.13102744 9627
GOES 8
1 23051U 94022A 95186.17882964 -.00000250 00000-0 10000-3 0 3381
2 23051 0.0586 78.5172 0003354 56.4888 137.2989 1.00279786 11872
MSTI 2
1 23101U 94028A 95184.05973714 .00004732 00000-0 84024-4 0 2107
2 23101 97.0979 17.0683 0011854 173.8711 186.2688 15.50621342 64987
STRV-1A
1 23125U 94034B 95185.34281797 .00001402 00000-0 51209-3 0 1755
2 23125 7.4772 24.2101 7260844 133.6140 315.4810 2.29964616 8040
STRV-1B
1 23126U 94034C 95184.67759539 .00001964 00000-0 64212-3 0 1598
2 23126 7.4965 24.6716 7266713 132.6798 316.7502 2.29611279 8079
Nadezhda 4
1 23179U 94041A 95186.88804919 .00000073 00000-0 59118-4 0 1132
2 23179 82.9465 134.0057 0037732 15.6880 344.5427 13.75669567 49049
Glonass 65
1 23203U 94050A 95186.08153882 .00000089 00000-0 00000+0 0 1620
2 23203 64.7952 215.8092 0006793 161.4212 198.6696 2.13102148 6984
Glonass 66
1 23204U 94050B 95184.90782438 .00000079 00000-0 00000+0 0 1703
2 23204 64.7853 215.8851 0015102 340.1563 19.8483 2.13102380 6950
Glonass 67
1 23205U 94050C 95185.25996690 .00000082 00000-0 00000+0 0 1580
2 23205 64.7911 215.8579 0003399 280.4344 79.5936 2.13102578 6967
DMSP B5D2-7
1 23233U 94057A 95187.66256862 .00000056 00000-0 53895-4 0 4045
2 23233 98.8780 245.5761 0013700 82.1295 278.1426 14.12618381 43904
OKEAN 1-7
1 23317U 94066A 95185.58198439 .00000086 00000-0 96026-5 0 775
2 23317 82.5423 19.6994 0026738 129.6301 230.7263 14.73942977 39185
ELEKTRO
```

```
1 23327U 94069A 95185.26997106 -.00000090 00000-0 10000-3 0 808
2 23327 0.7392 261.1625 0005178 183.3043 10.0861 1.00268211 2500
RESURS 1-3
1 23342U 94074A 95188.04107898 .00000011 00000-0 10000-4 0 1647
2 23342 98.0144 247.3480 0001354 80.4711 279.6634 14.69749248 35968
Glonass 68
1 23396U 94076A 95187.44961942 -.00000014 00000-0 00000+0 0 1197
2 23396 64.9483 96.0471 0029451 191.4563 168.5068 2.13102670 4859
Glonass 69
1 23397U 94076B 95187.15582147 -.00000012 00000-0 00000+0 0 1213
2 23397 64.9404 96.0703 0013623 323.0023 36.9308 2.13102637 4846
Glonass 70
1 23398U 94076C 95186.10075720 -.00000005 00000-0 00000+0 0 1292
2 23398 64.9302 96.0845 0003627 300.4234 59.5703 2.13102352 4830
RS-15
1 23439U 94085A 95185.17670570 -.00000039 00000-0 10000-3 0 615
2 23439 64.8189 227.5144 0167859 259.2399 98.9585 11.27524532 21435
NOAA 14
1 23455U 94089A 95187.59506426 .00000062 00000-0 58757-4 0 2353
2 23455 98.9034 129.9579 0009862 133.8629 226.3367 14.11520003 26557
ODERACS II A
1 23471U 95004C 95186.80388345 .00022292 00000-0 99326-4 0 1502
2 23471 51.6488 38.6558 0014280 166.7313 193.4078 15.84078145 24122
ODERACS II B
1 23472U 95004D 95186.77840944 .00063230 12767-4 17705-3 0 1545
2 23472 51.6415 33.0830 0009285 184.1397 175.9535 15.93839344 24196
Glonass 71
1 23511U 95009A 95186.17848113 -.00000031 00000-0 00000+0 0 655
2 23511 64.7654 336.3143 0004702 328.1581 31.8204 2.13102742 2552
Glonass 72
1 23512U 95009B 95186.47192617 -.00000032 00000-0 00000+0 0 695
2 23512 64.7722 336.3156 0013128 195.3544 164.6173 2.13102993 2567
Glonass 73
1 23513U 95009C 95187.93814219 -.00000037 00000-0 00000+0 0 704
2 23513 64.7700 336.2429 0005987 203.1081 156.8684 2.13102847 2595
Soyuz TM-21
1 23519U 95010A 95187.83921262 -.00034768 00000-0 -46744-3 0 1291
2 23519 51.6479 59.3198 0002782 198.2264 161.8493 15.57011129 17899
SFU
1 23521U 95011A 95185.66628794 .00002669 00000-0 84846-4 0 779
2 23521 28.4613 315.2119 0020079 54.5333 305.7119 15.28550552 16610
GMS 5
1 23522U 95011B 95179.28197238 -.00000282 00000-0 00000+0 0 365
2 23522 0.8775 296.5741 0001609 209.3886 11.5268 1.00271433 890
DMSP B5D2-8
1 23533U 95015A 95187.74763694 .00000062 00000-0 56871-4 0 1319
2 23533 98.8333 189.8565 0007023 329.0846 30.9909 14.12692465 14711
Microlab 1
1 23547U 95017C 95187.25663997 .00000182 00000-0 68904-4 0 331
2 23547 69.9788 255.0691 0014259 301.8889 58.0848 14.45374090 13538
```

```
OFEQ 3
1 23549U 95018A 95187.23839485 .00019019 00000-0 54905-3 0 681
2 23549 143.3735 285.9355 0253246 114.0208 248.7239 15.07377822 13849
GFZ-1
1 23558U 86017JE 95186.88576752 .00002284 00000-0 33983-4 0 393
2 23558 51.6510 62.6919 0006329 9.3478 350.7671 15.60023356535752
ERS-2
1 23560U 95021A 95187.70376421 .00000085 00000-0 47564-4 0 919
2 23560 98.5486 261.7624 0001130 79.5840 280.5468 14.32245458 10972
Spektr
1 23579U 95024A 95187.83921262 -.00034768 00000-0 -46744-3 0 673
2 23579 51.6479 59.3198 0002782 198.2264 161.8493 15.57011129 7456
GOES 9
1 23581U 95025A 95187.22508344 -.00000176 00000-0 00000+0 0 375
2 23581 0.2265 251.2434 0000864 96.7816 286.0887 1.00268950 440
1995015E
1 23595U 95015E 95185.47677448 .00000547 00000-0 31778-3 0 85
2 23595 98.8318 187.6087 0008513 347.7854 12.3128 14.12815695 14391
Cosmos 2313
1 23596U 95028A 95187.92681177 .00000318 00000-0 10000-4 0 729
2 23596 65.0404 264.7669 0010180 276.1280 83.8743 15.52085493 4461
1995028B
1 23597U 95028B 95159.68438728 .34405963 86767-5 32676-3 0 64
2 23597 65.0057 359.9697 0116834 54.7033 306.5078 16.32836446 84
DBS 3
1 23598U 95029A 95187.49559523 -.00000055 00000-0 00000+0 0 243
2 23598 0.1008 281.5878 0005526 306.0099 124.3822 1.00273328 235
1995029B
1 23599U 95029B 95185.82353110 .00020248 00000-0 25048-2 0 273
2 23599 7.2373 70.0196 7109882 200.7650 101.3910 2.51698340 4782
Cosmos 2314
1 23601U 95031A 95187.22375769 .00388605 57539-5 13869-3 0 198
2 23601 67.1287 153.9385 0130181 78.1801 283.3962 16.07223822 1207
1995031B
1 23602U 95031B 95185.12604097 .50703518 63517-5 19757-3 0 302
2 23602 67.1297 160.7071 0016154 110.2574 250.1052 16.57018846 872
1995032A
1 23603U 95032A 95186.84658554 .00012135 00000-0 13259-1 0 47
2 23603 82.9072 357.4086 0029438 278.4813 81.3006 13.72194492 95
1995032B
1 23604U 95032B 95187.86556459 .00000015 00000-0 00000+0 0 66
2 23604 82.9031 356.6521 0022112 265.0279 94.8349 13.73706863 233
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1466. New England 2mtr Beacon

Newsgroup: rec.radio.amateur.space
Date: 1995-07-08 00:00:00 UTC
From: aa679@ccn.cs.dal.ca
Message-ID: <DBDK7I.8vn@cs.dal.ca>
Source record: 24673

Does anyone know the location and freq of any New England or Long Island
2 mtr beacons.

We have a 2 mtr marker beacon out on Sable Island (90 mi off the coast
of Nova Scotia), but I think it is too close. We can get a good sig.
from it, almost any day.

We are planning to try and track some meteors during the Perseids meteor
shower on 12 Aug.

We will be using X band radar, VHF, HF and LF plus a photomultiplier tube.

--
Ralph

SOCIETY FOR AMATEUR SCIENTISTS

Official Site .... http://www.thesphere.com/SAS/

Secondary Site ... http://www.ccn.cs.dal.ca/Science/SAS/sas-home.html

1467. Re: STSORBIT Plus FTP Site

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: mklee@actrix.gen.nz
Message-ID: <DBFtws.Msy@actrix.gen.nz>
Source record: 24674

In article <3tks52$cb7@agis.ag.net>, n2ete@ag.net (Jim Laughlan) says:
>
>In article <DB0snJ.Iqz@actrix.gen.nz>, mklee@actrix.gen.nz (Mun-Kong Lee) says:
>>
>>Someone once asked for the FTP site with STSOrbit Plus. Here is one:
>>
>>ftp: spacelink.msfc.nasa.gov
>>
>>directory: Instructional.Manual/Software/IBM.PC/Satellite.Tracking/STSOrbit.Plus
>>
>>The directory has five files. Get them all.
>>
>>
>
>You can also get it at ftp.amsat.org.

No doubt there are others, too. I did mention that it was _one_ ftp site.

Regards

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

1468. Re: NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: mcneills@landcare.cri.nz
Message-ID: <mcneills.31.001FB6D0@landcare.cri.nz>
Source record: 24675

In article <3tbsql$988@news.iadfw.net> wizard@iadfw.net (Wizard) writes:

>>On air are NOAA 9 and 14 on 137.625 MHz and NOAA 12 on 137.500 MHz.
>>The Meteor 2-21 and 3-5 are also on on 137.850 MHz.
>>Met 3-5 will be turned off in a few days' time.
>
>What do these sattelites broadcast?

These satellites all broadcast Automatic Picture Transmission (APT) imagery. Nominally, this is 4km by 4km resolution. The imagery can be (tolerably) received with a scanner, but a somewhat wider IF filter (say 40kHz) is recommended. The imagery is broadcast in analogue form.

APT provides low data rate wide field (+/- 55 degrees edge to edge) earth viewing transmissions. In the case of the NOAA satellite, APT is derived from two channels of the high resolution AVHRR imagery sensor (AVHRR = Advanced Very High Resolution Radiometer). The transmission format is AM (amplitude modulation) on a 2.4 kHz subcarrier, with two imagery lines per second.

Stephen

Stephen McNeill
Landcare Research New Zealand
Box 38-491
Wellington Mail Centre
New Zealand

Phone: +64-4-5690183
FAX: +64-4-5690181
Internet: mcneills@landcare.cri.nz

1469. Shuttle audio re-transmitting...

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: n5zgt@swcp.com
Message-ID: <3tna9s$rk3@sloth.swcp.com>
Source record: 24676

Hello,
TNX for reading this message.
I am planning on putting up a 2 meter repeater in the Albuquerque, NM area that will re-transmit shuttle audio. But I need a source to get the audio from to begin with. I know I can get it from Spacenet 2 (Where Nasa Select channel comes from), but I have heard that they have press conferences, etc on it. And I do not want that stuff being transmitted in the Amateur bands.
Do you know what a good frequency is (satellite, etc) where I can capture shuttle audio and be able to put it on the air? I need a sorce that is available 24 hours.
Thanks! All help will be appreciated!
PSE E-Mail me at:
n5zgt@swcp.com

Best of 73,
Brian, N5ZGT...

1470. For sale:MICROWAVE AMPS 8-18.5GHz S.C.I.F. WAVE GUIDE ETC...

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <3tpmjm$cb3@ixnews5.ix.netcom.com>
Source record: 24677
Cross-posted to: rec.radio.swap,rec.radio.amateur.space

WAY TOO MUCH TO TYPE CALL 404-925-2779

1471. Personal Service 1-800-559-6557

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: jjhhggff <102372.3065@CompuServe.COM>
Message-ID: <3tp7qp$4rk$5@mhadf.production.compuserve.com>
Source record: 24678
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space

```
Personal Service for Adults Only
Blonde Girls 1-800-559-6557
Black Girls 1-800-559-6558
Two Girls Together 1-800-559-6554
```

1472. Re: Sat station help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: bob@texas.net
Message-ID: <3tp2ib$2v3@empire.texas.net>
Source record: 24679

In article <3tmig3$ri4@huron.eel.ufl.edu>, afn13094@freenet.ufl.edu (Patrick J. McGeehan) says:
>
>I got my first sat station set up and I have a few questions. The
>harness that comes off the antennas has a so239, I'm looking for a preamp
>and have noticed that they come with N or BNC connectors. How should I
>work this? I know nothing about hardline and N connectors. Do they make
>N connector to fit RG213 or 9913? Or do they make a pl259 male to N
>female adaptor? Would this adapter cause significant loss? My radio to
>feed point length is about 30 feet. Thanks for any help, Patrick KC4VKG
>afn13094@freenet.ufl.edu
>

Patrick;
Amphenol connector #82-202-1006 is an N-connector made specifically for Belden 9913--you can get them at AES or HRO. There are PL259 to N adapters as well. I recommend using N connectors on your coax and the adapter--get one with a good teflon dielectric like the ones made by AIM electronics. The ones at Radio Shack are questionable, IMHO. You're likely to have less loss with an N connector and the adapter, because it's next to impossible to get a PL-259 on without a significant impedance change, where an N connector done right is nearly invisible at 2m/70cm on a reflectometer. The other option (a better one) is to replace the connector on the antenna harness with an "N" type.

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

1473. Re: SatTrak help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: Sean Sharkey <sean@g0oanint.demon.co.uk>
Message-ID: <9507090759020046@g0oanint.demon.co.uk>
Source record: 24680

In article <mfn-0707951409420001@pm2pool20.magic.ca>, Michael F. Nunan writes:

> Under "site info", along with site longitude, latitude and
> elevation, the program asks for something called "mininum
> satellite elevation" in degrees. Can anyone tell me what its
> asking for?
>

Michael,

The mininum elevation is a height or distance above your horizon that you want SatTrak to report on, for example, to the south of my QTH I have a large hill so any sat that is less that 3 degrees above my horizon is useless to me as I can't work it do to the hill. I therefore tell my sat software not to report anything to me untill it's at least 3 degrees above the horizon. Your QTH may be better so you might want to set it to 0 degrees.

If you interested in this kind of thing you might also want to have a look at ftp.demon.co.uk /pub/ham/mac lots of other Mac Sat software and stuff like that. You'll also find a programme called OrbiTrack which you might want to try.

Regards,

Sean.

1474. Re: NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: jim@draco.bison.mb.ca
Message-ID: <3tpisl$qo5@draco.bison.mb.ca>
Source record: 24681

Stephen McNeill (mcneills@landcare.cri.nz) wrote:
: In article <3tbsql$988@news.iadfw.net> wizard@iadfw.net (Wizard) writes:

: >>On air are NOAA 9 and 14 on 137.625 MHz and NOAA 12 on 137.500 MHz.
: >>The Meteor 2-21 and 3-5 are also on on 137.850 MHz.
: >>Met 3-5 will be turned off in a few days' time.
: >
: >What do these satelites broadcast?

: These satellites all broadcast Automatic Picture Transmission (APT) imagery.
: Nominally, this is 4km by 4km resolution. The imagery can be (tolerably)
: received with a scanner, but a somewhat wider IF filter (say 40kHz) is
: recommended. The imagery is broadcast in analogue form.

: APT provides low data rate wide field (+/- 55 degrees edge to edge)
: earth viewing transmissions. In the case of the NOAA satellite, APT is
: derived from two channels of the high resolution AVHRR imagery sensor
: (AVHRR = Advanced Very High Resolution Radiometer). The transmission
: format is AM (amplitude modulation) on a 2.4 kHz subcarrier, with two
: imagery lines per second.

In plain English, he's trying to tell you that these satellites take
pictures of clouds using various radar technologies and transmit them on the
2 metre band.

--
Winnipeg MB Canada jim@draco.bison.mb.ca
TEAM OS/2 MIME OK
VE4JAF
Proud to be a non-hyphenated Polish Canadian!

1475. Re: SatTrak help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: blecourt@pi.net
Message-ID: <NEWTNews.10202.805320693.pebbles@pi-user.pi.net>
Source record: 24682

In article <mfn-0707951409420001@pm2pool20.magic.ca>, <mfn@astral.magic.ca>
writes:
> Path:
news.pi.net!news.sara.nl!news.nic.surfnet.nl!howland.reston.ans.net!news-e1a.me
gaweb.com!newstf01.news.aol.com!uunet!in1.uu.net!uunet.ca!news.uunet.ca!news.sy
gma.net!magic-toronto!pm2pool20.magic.ca!user
> From: mfn@astral.magic.ca (Michael F. Nunan)
> Newsgroups: rec.radio.amateur.space
> Subject: SatTrak help
> Date: Fri, 07 Jul 1995 14:09:42 -0500
> Organization: Magic Online Services Toronto Inc.
> Lines: 15
> Message-ID: <mfn-0707951409420001@pm2pool20.magic.ca>
> NNTP-Posting-Host: pm2pool20.magic.ca
>
> Greetings,
>
> I've just recently D/L'd an evaluation copy of SatTrak (Mac) and am
Just buy a real Computer (HI)

> attempting to use it. I have however encountered a problem.
> Under "site info", along with site longitude, latitude and elevation, the
> program asks for something called "mininum satellite elevation" in
> degrees. Can anyone tell me what its asking for?
>
> Thanks.
>
> Michael
>
> --
> Michael F. Nunan
> "the future belongs to those who see it coming!"
>

Just kidding, I don't have any experience with a MAC !!!
There are a lot of trackking programs, as you possibly know, for the PC.
I use the programs traksat version 2.80 and pctrack version 1.1!!
i'm very content with these program's

all the best, Peter de Blecourt.

Adress in Packet Radio : PE1MXV @PI8VAD.ZH2.NLD.EU.

1476. Re: Any sarex contacts yet?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-09 00:00:00 UTC
From: blecourt@pi.net
Message-ID: <NEWTNews.16672.805321371.pebbles@pi-user.pi.net>
Source record: 24683

In article <3ti1n3$ar2@over.mhv.net>, <Thomas.Randall@bbs.mhv.net> writes:
> Path:
news.pi.net!news.sara.nl!news.nic.surfnet.nl!howland.reston.ans.net!news.sprint
link.net!mhv.net!bbs.mhv.net!T. Randall
> From: Thomas.Randall@bbs.mhv.net (Thomas Randall)
> Newsgroups: rec.radio.amateur.space
> Subject: Any sarex contacts yet?
> Date: 7 Jul 1995 01:13:07 GMT
> Organization: MHVNet, the Mid Hudson Valley's Internet connection
> Lines: 8
> Message-ID: <3ti1n3$ar2@over.mhv.net>
> NNTP-Posting-Host: csbh.mhv.net
> X-Newsreader: TIN [version 1.2 PL2]
>
>
> So far I haven't heard ANY sarex activity. Anyone else hear any? anyone
> make a contact?
>
> I guess that's about it for this mission since they come down tomorrow.
>
>
> Tom
>

Here in THE NETHERLANDS i did'nt here any SAREX activity on Thursday 6th july.
Neither on 145.840 or on 145.550

Packet Adress : PE1MXV @PI8VAD.ZH2.NLD.EU

Next time more luck,

73's Peter.

1477. UoSat 2 ?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: icesb@iroe.fi.cnr.it
Message-ID: <icesb.84.3000D7AF@iroe.fi.cnr.it>
Source record: 24684

I was not able to hear anything from Uosat 2 on 2m neither 70cm. Is it down,
or just off in this period, or maybe my receiving system is poor?
Thanks in advance.
73 de Lapo IK5NAX

Lapo Pieri IK5NAX internet: icesb@iroe.fi.cnr.it
@IROE-CNR (Italy) lpieri@nyx.cs.du.edu
Phone: +39 55 4235276 (IROE) packet: ik5nax@IW5CZJ.ITOS.IT.EU
+39 55 410209 (home) [TCP/IP] 44.134.208.174

1478. Egg beater antennas for sat work?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: kory@avatar.com
Message-ID: <3tsl2v$bg7@avatar.avatar.com>
Source record: 24685
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.space

I very new to satellites. I have a Yaesu FT-736 with a Diamond X510
omni ground plane antenna. I've had very little success being able to
pick up any of the sats. I can get DO-17 and the MIR, but very faintly.
I now part of the problem is the antenna since omni radiate outwards and
upwards. I'm thinking of getting an egg beater style antenna since they
are truly omni and I won't need to buy a az/el rotor.

Couple of very naive questions:

1. All of the EB antennas seem to have a gain of 1 db. Will this be enough?

2. I think I definitly well need to mast mounted pre-amp. Is this correct?

3. Also, is a lower gain directional antenna (such as a yagi) better than
a high gain omni? For example, my X510 had an advertised gain of 11.7 db
on 70cm. Would I get better sat performance with a lower gain yagi?

4. And finally, this is kind of related to question #3. Can the low gain
be compensated with a mast mount pre-amp? In other words, if I take an EB
antenna with a gain of 1 db and put a pre-amp with a gain of 20 db in front
of it, do I end up with a EB antenna with an effect gain of 20 db? Sounds too
simple.

Any help or pointers would be greatly appreciated.

Thanks,
Kory

1479. Re: Sat station help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3tr96f$32r@hang.primenet.com>
Source record: 24686

In <3tmig3$ri4@huron.eel.ufl.edu>, afn13094@freenet.ufl.edu (Patrick J. McGeehan) writes:
>I got my first sat station set up and I have a few questions. The
>harness that comes off the antennas has a so239, I'm looking for a preamp
>and have noticed that they come with N or BNC connectors. How should I
>work this? I know nothing about hardline and N connectors. Do they make
>N connector to fit RG213 or 9913? Or do they make a pl259 male to N
>female adaptor? Would this adapter cause significant loss? My radio to
>feed point length is about 30 feet. Thanks for any help, Patrick KC4VKG
>afn13094@freenet.ufl.edu
>
There are almost all adapter combos. Look for brand names, Amphenol for one.
Cheap import adapters have broken on me. Also read an article saying avoid nickel
plating at UHF. Silver-plating is usually is a sign of higher-quality.
Connectors for RG series coax won't work with 9913. You may cobble it
together, but in the long run...

Jim N7TCF

1480. Western Indiana ATV Balloon Launch

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: au156@yfn.ysu.edu
Message-ID: <3tr9pc$i45@news.ysu.edu>
Source record: 24687

INDIANA ATV BALLOON LAUNCH

On July 15 at 7:30 AM EST (12:30 UTC), weather permitting, there will be a helium balloon launch from Veedersburg, Indiana (25 miles east of Danville, Il) to test the deployment of 3 helium balloons to lift a package aloft with minimal spinning on the package.

The package will contain a Amateur Television transmitter on 439.250 Mhz with horizontal polarity on the antenna showing two camera views, plus a video Id'er with the call of KT9V. A GPS receiver and packet telemetry software will give position of the balloon at 1200 baud and other balloon status on 446.000 with the call of WB9IHS.

Also on board will be a cross band repeater with call of W9DUU.
Input will be on 144.300 MHz FM with outputs on 444.850 and 52.525.

A HF net on 3.871 MHz will be hosted by Emmett Dodson, K9YKX, to provide status of preparation, launch, and balloon operation during the flight.

This balloon is expected to reach an altitude of 100,000 feet or more and should have a 440+ mile range from the balloon at peak altitude.

All amateur operators are encouraged to participate in this flight.

Location: western Indiana (Veedersburg, IN)
Date/Time *: July 15/ 7:30 AM EST (12:30 UTC)
FM Repeater: Input - 144.300 MHz
Output - 444.850 MHz; 52.525 MHz (W9DUU)
ATV: 439.250 MHz two cameras plus video ID
(KT9V)
Packet: 446.000 MHz GPS derived position and
misc. telemetry (WB9IHS)
HF Voice Net: 3.871 Mhz (net control K9YKX)

* Note: slight launch time change from
earlier posting (0:30 later) 7/10
==========
Original information source: Mark Garrett mgarrett@prairienet.org
KA9SZX @ N9LNQ.#ECIL.IL.USA.NOAM

Please email the original source for launch specific info.

posted by Hank Riley, N1LTV
this edit 7/10

Please email me to submit news of upcoming balloon launches
for distribution on the Net.

h1riley@umassd.edu
au156@yfn.ysu.edu

1481. Microwave Frequency Stability

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: dbraun@ichips.intel.com
Message-ID: <2DJ0mmvRnPxl076yn@ichips.intel.com>
Source record: 24688

I am planning to builda AO-13 Mode S downconverter,
and I was wondering: How critical is the frequency
stability of the local oscillator? I.e.: to what extent
do frequency error, drift, and phase noise degrade
Mode-S SSB communications? Or are these problems all
swamped by Doppler shift anyway? Is it common to use
a TCXO, crystal oven, etc to reduce these problems?

Thanks,

Doug Braun (N1OWU)

1482. Re: STS-65 QSLs

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: sufana@ceco.ceco.com
Message-ID: <DBIEzB.LFz@ceco.ceco.com>
Source record: 24689

For info on STS-64 QSLs, I would contact the ARRL. They should be able to direct your inquiry. Bob Inderbitzen NQ1R at rinderbitz@arrl.org should be able to help.

73s,

Charlie Sufana AJ9N Internet sufana@ceco.ceco.com
ComEd - A Div. of Unicom (formerly Commonwealth Edison Co.)
Work address: ComEd, System Protection Dept. 1039E, 125 S. Clark St.,
P.O. Box 767, Chicago, Il. 60690
Work phone: (312) 394-2815, work fax: (312) 394-4583

Who are you going to call? Fault busters!

1483. Re: Careful on the uplink and downlink frequencies.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: goris@fc.hp.com
Message-ID: <3trovf$buv@tadpole.fc.hp.com>
Source record: 24690

Ken Wood (ken@chesh.demon.co.uk) wrote:
: In article: <riveroDBB61y.HnC@netcom.com> rivero@netcom.com (Michael
: Rivero) writes:

: > Please be advised that the SAREX uses different frequencies for uplink
: > and downlink. On this last pass over Los Angeles,
: > someone nearby was trying to contact the shuttle on the shuttle's
: > downlink frequency. Not only did the shuttle not hear them, but they
: > wreaked
: > it for everyone else.

: Although I'm sure they have been well publicised, it might be a good idea to
: quote them for everyone's benefit. I'm afraid I don't have them myself. I
: guess it might be a bit late for this mission though.

YES! The frequencies AND protocol should both be well published to maximize
the enjoyment of everyone!

I had a similar problem with a SAREX mission a little over a year ago, only my
problem was that as soon as some @#$% ~30 miles from me could no longer hear
the shuttle, he started yakkin' away on the shuttle down-link frequency, while
I was still listening to a wonderful shuttle QSO from the shuttle in progress.
AAAARRRRGGGGGH.

Sooooo - stay off those shuttle down-link frequencies, EVEN IF YOU THINK the Shuttle is
not overhead. Just because you can't hear them doesn't mean someone else can't.
Also, because the orbit can change, you may also accidently blast on them if
you don't have the latest orbital information, and are presuming the Shuttle is not
within' range.

-Andy Goris
AA0CM
goris@fc.hp.com

1484. Re: SatTrak help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: goris@fc.hp.com
Message-ID: <3trpc0$buv@tadpole.fc.hp.com>
Source record: 24691

Michael F. Nunan (mfn@astral.magic.ca) wrote:
: Greetings,

: I've just recently D/L'd an evaluation copy of SatTrak (Mac) and am
: attempting to use it. I have however encountered a problem.
: Under "site info", along with site longitude, latitude and elevation, the
: program asks for something called "mininum satellite elevation" in
: degrees. Can anyone tell me what its asking for?

Sure,

This is the minimum elevation that a satellite must rise above your horizon
in order for you to be interested in it. If you put in zero, you may get
listings of lots of satellite passes that only get 1-degree, or 2-degrees above
the horizon. You'll never see these, and probably never hear them with a
radio, either. So, depending on your local terrain, what your interest is
(radio contact, optical sighting, etc.) set this parameter to some number
between 2 and 5 degrees.

For example, a couple of weeks ago I was calculating visual MIR passes, and
I was in a wooded area with a lot of humidity and haze on the horizon, so I
was only interested in passes that achieved an elevation above the horizon
greater than 15 degrees. I set the "minimum satellite elevation" to 15 degrees,
and the program only lists the passes I'm interested in.

-Andy Goris
goris@fc.hp.com
AA0CM

1485. ST. MARY's BEACONS on WWW

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: aa679@ccn.cs.dal.ca
Message-ID: <DBIFvy.89@cs.dal.ca>
Source record: 24692

I just posted the list of St. Mary's VHF / UHF Beacons on the WWW.

It can be found at:

http://www.ccn.cs.dal.ca/Science/SAS/sas-home.html

Go to the ... MAIN MENU
Pick .... SUBJICT LINKS
Select ...... RF PROPAGATION

Ralph J. Coppola
aa679@ccn.cs.dal.ca

Society for Amateur Scientists
Official WWW Site ... http://www.thesphere.com/SAS/
Secondary Site ...... http://www.ccn.cs.dal.ca/Science/SAS/sas-home.html

--

1486. NOAA?METEOR?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: tfugate@uklans.uky.edu
Message-ID: <3trrmp$n7c@service1.uky.edu>
Source record: 24693

Does anyone have any idea how wide(in either miles or km) the
NOAA 12/14 or Meteor scan is?
I am trying to scale the received images.
The JVFAX 7.0 software, with the "simplest" converter and the "HAMCOM"
VCO are the fastest way to get NOAA images.
Is there a better NG to querry about wx sat stuff?
Terry WN4ISX

1487. ARLK030 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk030.1995@ampr.org>
Source record: 24694
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK030
ARLK030 Keplerian data

ZCZC SK55
QST de W1AW
Keplerian Bulletin 30 ARLK030
From ARRL Headquarters
Newington, CT July 8, 1995
To all radio amateurs

SB KEP ARL ARLK030
ARLK030 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95187.17862798 -.00000256 +00000-0 +10000-3 0 03610
2 14129 026.4655 259.6639 5999261 290.9317 017.0423 02.05882170062726
RS-10/11
1 18129U 87054A 95187.08097299 +.00000046 +00000-0 +33717-4 0 01020
2 18129 082.9247 045.1064 0013174 042.4121 317.8048 13.72354313402565
UO-11
1 14781U 84021B 95186.98087029 +.00000082 +00000-0 +21663-4 0 08359
2 14781 097.7827 188.6359 0012630 117.9505 242.2990 14.69357401606665
RS-12/13
1 21089U 91007A 95187.13677958 +.00000040 +00000-0 +26122-4 0 08285
2 21089 082.9242 086.7330 0030431 117.0945 243.3324 13.74058670221371
AO-13
1 19216U 88051B 95185.18261337 +.00000281 +00000-0 +10000-4 0 00560
2 19216 057.5496 178.1999 7303467 012.9920 358.5344 02.09719742022528
UO-14
1 20437U 90005B 95187.18586379 +.00000030 +00000-0 +28436-4 0 01203
2 20437 098.5667 271.2507 0011389 138.4941 221.7110 14.29891187284463
RS-15
1 23439U 94085A 95187.21666420 -.00000039 +00000-0 +10000-3 0 00701
2 23439 064.8188 224.2148 0167831 258.9514 099.2484 11.27524682021660
AO-16
1 20439U 90005D 95187.22690101 +.00000023 +00000-0 +25714-4 0 09216
2 20439 098.5783 272.9850 0011512 139.2702 220.9344 14.29945282284483
```

```
DO-17
1 20440U 90005E 95187.21351334 +.00000020 +00000-0 +24624-4 0 09181
2 20440 098.5802 273.4430 0011341 137.9268 222.2785 14.30086507284504
WO-18
1 20441U 90005F 95187.19616720 +.00000001 +00000-0 +17313-4 0 09212
2 20441 098.5801 273.3974 0012039 138.8699 221.3397 14.30057595284503
LO-19
1 20442U 90005G 95187.21762301 +.00000046 +00000-0 +34487-4 0 09257
2 20442 098.5812 273.7844 0012394 138.2681 221.9451 14.30160524284521
FO-20
1 20480U 90013C 95187.19936587 +.00000002 +00000-0 +76812-4 0 08208
2 20480 099.0723 272.2674 0540405 190.1650 168.8168 12.83231178253381
AO-21
1 21087U 91006A 95187.15782173 +.00000094 +00000-0 +82657-4 0 06237
2 21087 082.9395 218.5315 0036476 091.6988 268.8346 13.74557038222330
UO-22
1 21575U 91050B 95187.22611463 +.00000036 +00000-0 +26506-4 0 06382
2 21575 098.3932 258.0755 0006720 222.1944 137.8724 14.36981953208233
KO-23
1 22077U 92052B 95187.09562384 -.00000037 +00000-0 +10000-3 0 05185
2 22077 066.0781 196.1748 0006283 194.5426 165.5403 12.86291768136165
KO-25
1 22828U 93061F 95187.17779412 +.00000032 +00000-0 +30270-4 0 03848
2 22828 098.6129 263.4599 0010126 147.4672 212.7134 14.28105018060587
IO-26
1 22826U 93061D 95187.18566323 +.00000054 +00000-0 +39616-4 0 04053
2 22826 098.6172 263.4317 0009107 162.4677 197.6824 14.27774727092489
AO-27
1 22825U 93061C 95187.16308996 +.00000004 +00000-0 +19508-4 0 04053
2 22825 098.6159 263.3076 0008240 160.9866 199.1624 14.27666653092476
PO-28
1 22829U 93061G 95187.18969558 +.00000057 +00000-0 +40570-4 0 03966
2 22829 098.6137 263.5072 0010037 147.8297 212.3493 14.28084676092509
Mir
1 16609U 86017A 95187.19739363 +.00012003 +00000-0 +16915-3 0 01392
2 16609 051.6466 062.5313 0003235 191.3672 168.7231 15.57069087535890

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
July 11, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1488. Re: Need Interface/decoder for NOAA Polar orbiters on 137 MHz..

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: Terry Fugate <tfugate@uklans.uky.edu>
Message-ID: <3ts0iq$7sf@service1.uky.edu>
Source record: 24695

Could you post the plans for the 300 ohm twin lead antenna?
Circumference, angle, length of elements etc.
Terry Fugate
WN4ISX

1489. Re: Careful on the uplink and downlink frequencies.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3ts2um$8od@over.mhv.net>
Source record: 24696

Andy Goris (goris@fc.hp.com) wrote:
: Ken Wood (ken@chesh.demon.co.uk) wrote:
: : In article: <riveroDBB61y.HnC@netcom.com> rivero@netcom.com (Michael
: : Rivero) writes:

: : > Please be advised that the SAREX uses different frequencies for uplink
: : > and downlink. On this last pass over Los Angeles,
: : > someone nearby was trying to contact the shuttle on the shuttle's
: : > downlink frequency. Not only did the shuttle not hear them, but they
: : > wreaked
: : > it for everyone else.

: : Although I'm sure they have been well publicised, it might be a good idea to
: : quote them for everyone's benefit. I'm afraid I don't have them myself. I
: : guess it might be a bit late for this mission though.

: YES! The frequencies AND protocol should both be well published to maximize
: the enjoyment of everyone!

: I had a similar problem with a SAREX mission a little over a year ago, only my
: problem was that as soon as some @#$% ~30 miles from me could no longer hear
: the shuttle, he started yakkin' away on the shuttle down-link frequency, while
: I was still listening to a wonderful shuttle QSO from the shuttle in progress.
: AAAARRRRGGGGGH.

: Sooooo - stay off those shuttle down-link frequencies, EVEN IF YOU THINK the Shuttle is
: not overhead. Just because you can't hear them doesn't mean someone else can't.
: Also, because the orbit can change, you may also accidently blast on them if
: you don't have the latest orbital information, and are presuming the Shuttle is not
: within' range.

: -Andy Goris
: AA0CM
: goris@fc.hp.com

People can at LEAST get a sat tracking program so they can SEE where
shuttle or Mir is and know when they go below the horizon. The least they
can do is to wait at least 10-15 mins. to start their ragchew but then
they may interfere with a Mir pass at times as well. I do hear
people on the downlink from time to time. Can't stress it enough.....
PLEASE..DO NOT TRANSMIT ON THE DOWNLINK! That's what the uplinks are for!

Tom - KB2SMS

1490. Re: STS-65 QSLs

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: Colin Carson <carson@MBnet.MB.CA>
Message-ID: <Pine.SUN.3.91.950710095740.17008B-100000@access.mbnet.mb.ca>
Source record: 24697

I was wondering if you know whether the QSL's for STS-64 have been sent
out yet? Is there somewhere I can get a confirmation of my QSO..
carson@mbnet.mb.ca VE4CSN

1491. Re: SatTrak help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: julian@kesteven.win-uk.net
Message-ID: <770@kesteven.win-uk.net>
Source record: 24698

In article <mfn-0707951409420001@pm2pool20.magic.ca>,
Michael F. Nunan (mfn@astral.magic.ca) writes:
>
>Under "site info", along with site longitude, latitude and elevation, the
>program asks for something called "mininum satellite elevation" in
>degrees. Can anyone tell me what its asking for?
>
Yup, suppose your site is surrounded by hills, then AOS will be that much
later than for a site in the middle of flatlands. For reliable AOS & LOS
prediction you need to supply the elevation of the highest point of your
site's horizon, as this is the minimum satellite elevation that will give
line of sight.

Julian.
--

1492. Re: Microwave Frequency Stability

Newsgroup: rec.radio.amateur.space
Date: 1995-07-10 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3tsbqq$hj0@maureen.teleport.com>
Source record: 24699

In article <2DJ0mmvRnPxI076yn@ichips.intel.com>, dbraun@ichips.intel.com
said...
>
>I am planning to builda AO-13 Mode S downconverter,
>and I was wondering: How critical is the frequency
>stability of the local oscillator? I.e.: to what extent
>do frequency error, drift, and phase noise degrade
>Mode-S SSB communications?

For an excellent demonstration of what a little drift can do, listen in on an
SSB signal that is otherwise stable, and then vary your Rx frequency by
different amounts. As little as 100 Hz can make it sound really bad.

> Or are these problems all
>swamped by Doppler shift anyway?

No, just compounded! Actually, the Doppler doesn't shift all that much on
AO-13 Mode-S, since S is on at Apogee.

>Is it common to use
>a TCXO, crystal oven, etc to reduce these problems?

I have not seen these used in commercial designs, but they would be welcome.
The biggest problem is that the frequency of the oscillator is multiplied
many, many times. This also multiplies any drift, so whatever you can
(reasonably) do to provide some stabilisation will help in the long run.

Mostly, we just need to make sure that our oscillators are turned on well in
advance of operating, so that they are up to temp. and relatively stable. If
you try to operate them cold (during warming) it can be a wild ride!

Have fun!

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1493. Software Authors Read

Newsgroup: rec.radio.amateur.space
Date: 1995-07-11 00:00:00 UTC
From: amsoft@epix.net
Message-ID: <NEWTNews.805526223.10417.amsoft@amsoft.epix.net>
Source record: 24700
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

ATTENTION AUTHORS OF AMATEUR RADIO, SWL, AND ELECTRONIC SOFTWARE!

If your software is shareware, freeware or public domain, AmSoft would like to include your software in our publication of The World of Ham Radio CD-ROM. If you only have a commercial version you may want to think about a shareware version with registration. Most authors have had good returns on registrations from the first year of publishing thier software on this CD-ROM. If 50 users registered your program from our CD-ROM publication, what would that convert to in income for you? Please give this some thought and let us here at AmSoft know if you would like to publish your works on the AmSoft CD-ROM. If you decide to publish on our CD please upload your software to our FTP site and send me an E-Mail letter of authorization to publish your software on the AmSoft CD-ROM.

The FTP site is HAMSTER.BUSINESS.UWO.CA directory /PUB/AMSOFT

We are working on the September 95 issue at this time. Deadline for insertion of your new software is August 7, 1995

Thank You, Pete, KC3TL

Send E-mail to: amsoft@epix.net ,(Pete deVolpi, KC3TL)
Publisher of "The World of Ham Radio", Callsign CD-ROM
@date@ AD, @time@ EST, Hams do it with FREQUENCY
WWW SITE: http://hamster.business.uwo.ca:80/~amsoft/

1494. Re: Egg beater antennas for sat work?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-11 00:00:00 UTC
From: little@pecan.enet.dec.com
Message-ID: <3tssbe$9ct@nntpd.lkg.dec.com>
Source record: 24701
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.space

In article <3tsl2v$bg7@avatar.avatar.com>
kory@avatar.com (Kory Hamzeh) wrote:

> I very new to satellites. I have a Yaesu FT-736 with a Diamond X510
> omni ground plane antenna. I've had very little success being able to
> pick up any of the sats. I can get DO-17 and the MIR, but very faintly.
> I now part of the problem is the antenna since omni radiate outwards and
> upwards. I'm thinking of getting an egg beater style antenna since they
> are truly omni and I won't need to buy a az/el rotor.
>
> Couple of very naive questions:
>
> 1. All of the EB antennas seem to have a gain of 1 db. Will this be enough?

Enough depends upon a number of things. For Low Earth Orbit satellites such
as DO-17 and MIR, almost any antenna will be enough. Antennas with gain
towards the horizon such as your X510 will help. Remember that the gain needed
is proportional to the path loss. At high elevations, the path loss is minimized, so
the gain requirements are minimized. At low elevations, the path loss is maximized
(and actually the LEO birds spend most of their time at low or lower elevations
simply due to the properties of their orbits) and hence gain at low elevations is
beneficial.

For the non LEO birds such as AO-10, AO-13, and the soon to be launched phase 3D
bird, omni-directional antennas, even with gain, aren't going to be enough. The link
budget for these satellites is such that you need directional antennas to reliably work
them.

> 2. I think I definitly well need to mast mounted pre-amp. Is this correct?

A low noise mast mounted pre-amp is almost always a benefit. How much of
a benefit depends upon its impact on the system noise figure. There have been
some good articles in QST over the last 10-20 years that cover system noise
figure and how to determine the impact of a pre-amp (either mast mounted or
shack mounted) on your system's receive capability. It is safe to say that if
you have a reasonable low noise pre-amp (say NF of 1 dB or less) and normal
feedline losses (9913 or worse for 50-100 ft), and an average front end (NF of
say 2-4 dB), then a good pre-amp is going to make a significant difference.

> 3. Also, is a lower gain directional antenna (such as a yagi) better than
> a high gain omni? For example, my X510 had an advertised gain of 11.7 db
> on 70cm. Would I get better sat performance with a lower gain yagi?

Well 11.7 dB on 70 cm isn't bad, but even a relatively short yagi on that band
is going to have better gain. In addition, that gain is only at the horizon, not at

elevation angles greater than say 30 degrees. A modest yagi (say an 8 ft 16 element crossed yagi) with AZ-EL rotors is going to outperform your X510.

> 4. And finally, this is kind of related to question #3. Can the low gain
> be compensated with a mast mount pre-amp? In other words, if I take an EB
> antenna with a gain of 1 db and put a pre-amp with a gain of 20 db in front
> of it, do I end up with a EB antenna with an effect gain of 20 db? Sounds too
> simple.

Yes and no. Antenna gain is always preferable to amplification gain. A low noise pre-amp gain only amplify what it is given. So a 1 dB antenna with a 20 dB gain pre-amp, is not going to perform at all like a 20 dB antenna with a 1 dB gain pre-amp. A low noise pre-amp will help a good station, but it will not make a bad station into a good station. Again, get the QST articles on calculating system noise figures and you'll be able to make the comparisons yourself.

The primary disadvantage to higher antenna gain is the narrowing of its beamwidth. This means that the antenna most be more accurately pointed and must track the satellite's position more carefully. These disadvantages though are more than offset by the improved overall performance. Given a choice between 3 dB of additional antenna gain and 3 dB of additional pre-amp gain, you'd be far better off taking the 3 dB of additional antenna gain. Remember that a pre-amp can onl amplify the signals it is provided. Additional gain over the losses in the feedline and switching gear only amplifies the noise along with the signal.

73, Member of AMSAT, ARRL, Palatine RACES, and the Arlington
Todd Communications League. Weather spotter and sponsor of the Hunting
N9MWB Ridge Elementary School Radio Club. See you on 160-1296 and OSCAR.

1495. Re: Egg beater antennas for sat work?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-11 00:00:00 UTC
From: zlau@mgate.arrl.org
Message-ID: <3ttv7t$mj@mgate.arrl.org>
Source record: 24702
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.space

Kory Hamzeh (kory@avatar.com) wrote:

: 4. And finally, this is kind of related to question #3. Can the low gain
: be compensated with a mast mount pre-amp? In other words, if I take an EB
: antenna with a gain of 1 db and put a pre-amp with a gain of 20 db in front
: of it, do I end up with a EB antenna with an effect gain of 20 db? Sounds too
: simple.

Yes it is too simple. You have to take into account the amount of
background noise, commonly expressed in Kelvin. On 2 meters, the
background noise is sometimes high enough that some people get little
improvement using a mast mounted preamp.

Consider the following simplified case on 435 MHz:
Very quiet sky 50 Kelvin average
Warm Earth 300 Kelvin.
70 Kelvin receiver

Omni antenna case: 1/2*50Kelvin+1/2*300Kelvin+70 Kelvin=245 Kelvin

Directional antenna that only looks at 20 Kelvin sky
20Kelvin+70 Kelvin=90 Kelvin

effective gain from lower noise pickup 10*log(245/90)=4.3 dB.

Thus, a 15 dBi beam may actually have an effective gain of
19 dBi. See chapter 17 of the 1995 ARRL Handbook or Chapter
12 of an older Handbook for more details.

: Any help or pointers would be greatly appreciated.

: Thanks,
: Kory

--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

1496. 2m HT for wefax <noaa-meteor>????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-11 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3tu2le$4snr@ns3-1.CC.Lehigh.EDU>
Source record: 24703

Is a basic ICOM 2m HT good for rx LOS weather sats? i have tryed for a few months and all i get w/ jvfax6 and jvfax7 is basicly static, with SOME resemblabce <sp?> to pics from wefax sats. or should i use a scanner w/ a larger bandwith?

help

thanks

|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1497. WinOrbit 2.6 available

Newsgroup: rec.radio.amateur.space
Date: 1995-07-11 00:00:00 UTC
From: Carl Gregory <cgregory@uiuc.edu>
Message-ID: <3ttvbt$oev@vixen.cso.uiuc.edu>
Source record: 24704

The latest version of WinOrbit (2.6) is now available on
oak.oakland.edu and ftp.amsat.org. A description of changes, and
an overview of the program, are given below:

New Features in version 2.6
---
* Glossary has finally been included.
* Immediate display of all visible satellites, regardless of
whether they are being tracked in a Map Window.
* Sun and Moon may be tracked for antenna or receiver calibration.
The algorithm is built-in, no keps are required.
* Immediate display of all stations in the QTH database visible from
a particular satellite for mutual visibility determination.
* Latitude and longitude display and specification made more flexible.
Lat/long displays can be in decimal degrees or degrees,
minutes, seconds; and with choice of +/-, or E/W notation.
Choice of direction for positive longitude (E or W)
Shift-click on a map adds a point to the QTH database.
Ctrl-click on a map changes the observer location.
Lat/long and grid square of the point under the mouse cursor
can be displayed on map or globe.
* AOS for next pass now displayed on maps and in Info Window.
* Calculation of EQX, AOS, and Apogee/Perigee for Ephemeris tables
improved (more accurate, some speed up).
* Ephemeris output to an existing file is added at the end ("append")
instead of overwriting the previous information.
* Two-line element sets can be saved from the edited orbital elements.
* User-provided maps may now be used for the background, giving
added display flexibility.
* Fixed bugs in Help:System Info and Colors dialog.
* A companion program for antenna control using the Prairie Digital
board will shortly be available from the author (NO TSRs!).

Program Overview

WinOrbit is a program for computing artificial Earth-satellite
position and visibility, with the Amateur Radio satellite
operator in mind. It was written for the Microsoft Windows 3.1
operating system. WinOrbit is free (not shareware). The
latest version is 2.6.

The principal feature of the program is a series of tracking
windows, one per satellite, which display the current position of
the satellite and the observer on a simple world map, together
with information such as footprint, past ground track, bearing

(azimuth), distance, and elevation above the observer's horizon.

Additional features include:
* Simultaneous tracking of up to 20 satellites.
* Real-time, pseudo-real-time, and manual calculation modes.
* A "view from space" map presentation showing what a particular satellite sees.
* Computation of Doppler shift and path loss for communications satellites.
* Selectable tracking detail, including doppler shift and free-space path loss, for a single satellite.
* Display sun position for eclipse determination, and other observers for mutual visibility.
* 4 different orbital calculation algorithms (selectable).
* Tracking data (Keplerian element sets) read directly from standard, off-the-air bulletins in two different formats (up to 500 satellites). No pre-processing is needed, just grab a bulletin file.
* Propagation of pre-launch keps and other element updates.
* Utility functions for modifying and comparing published element sets, including post-launch updating of pre-launch elements, and saving composite data files compiled from various sources.

* Observer (QTH) data (latitude, longitude) may be imported from a simple text database (up to 1000 locations). Entry by grid-square or mouse-on-map is possible.
* Printing of tables of tracking data (Ephemerides) in several formats. Table printing does not interrupt tracking. Table output may be directed to a disk file.
* On-line help, including direct access to text information about Amateur satellites from the tracking windows.
* Standard Windows interface for all functions - no commands to memorize. Both mouse and keyboard can be used for most functions.
* DDE server interface to tracking-antenna hardware controllers.

This program is available via internet, by anonymous ftp from:
ftp.amsat.org in /amsat/software/windows/tracking/winorb26.zip
oak.oakland.edu /pub3/hamradio/pc/satellite/winorb26.zip
The file VBRUN300.DLL is also required - available from the same sites.

Future enhancements might include (depending upon interest):
Bug fixes (when reported by users)
Corrected/augmented satellite information supplied by users.
Enhanced satellite database maintenance features
Additional table formats (as requested by users)
Fancier map formats
Speedups
BLAT/BLON calculation

Rotor and rig control interface

1498. Source Code for Sat Ephemeri

Newsgroup: rec.radio.amateur.space
Date: 1995-07-11 00:00:00 UTC
From: milliron@ix.netcom.com
Message-ID: <3tsfu0$k1@ixnews2.ix.netcom.com>
Source record: 24705

I am searching for C and/or C++ source code that can interpret satellite ephemeri in the NORAD 2-line format. I am specifically interested in determining satellite position and line-of-sight. Any help would be greatly appreciated.

milliron@ix.netcom.com

1499. Re: 2m HT for wefax <noaa-meteor>????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: gkennedy@helix.net
Message-ID: <rEBBwMvqxmQL083yn@helix.net>
Source record: 24515

In article <3tu2le$4snr@ns3-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> Is a basic ICOM 2m HT good for rx LOS weather sats? i have tryed for a few

Nope. The IF bandwidth is too narrow - you want something with a
bandwidth >30 KHz.....45 KHz is ideal....

> months and all i get w/ jvfax6 and jvfax7 is basicly static, with SOME
> resemblabce <sp?> to pics from wefax sats. or should i use a scanner w/ a
> larger bandwith?

If you use a scanner with a "wide" bandwidth, that's probably *too*
wide (good for FM broadcast, maybe). This may mean noisy pictures. If
you have a tracking directional antenna (cross-polarized Yagis, 6 or
more elements each), low-loss coax, and perhaps a preamp, you may be
able to get satisfactory results.

****
* Geoff L. Kennedy ** Located on the WEsT Coast of *
* "Kennedy's Space Centre" 8-) ** Beautiful British Columbia ! *
* E-mail: gkennedy@helix.net ** Coquitlam, BC, Canada *
****

1500. more GOES questions...:)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3u1524$sa9@ns4-1.CC.Lehigh.EDU>
Source record: 24516

i'm sure my ICOM HT does not have the 40-50KHz bandwith for NOAA OR GOES...

would a typical pro-2006 Rat Shack scanner have a bigger bandwith? that might
be my problem with rx wefax.....thanks

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1501. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: horse1@ix.netcom.com
Message-ID: <3tv9u2$cjh@ixnews5.ix.netcom.com>
Source record: 24706

In <u6XN8c1w165w@angus.mystery.com> Chris Oesterling
<chris@angus.mystery.com> writes:
>
>c002@Lehigh.EDU writes:
>
>> In article <3sp81f$50b@agis.ag.net>, n2ete@ag.net (Jim Laughlan)
writes:
>> >In article <3snmak$19gi@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:
>> >>
>> >>are the GOES sat's tx freq 137.xx or 1691mhz?
>> >>
>> >>
>> >
>> >In the 136 and 1600 MHz region.
>>
>>
>> ok, now i am TOTALLY confused!!!!!
>>
>> david
>
>1691 MHz is the output freq for the WEFAX product. Which is fairly
simple
>to receive, all you need is one or two loop Yags and a down converter.

>Most down converters will bring the 1691 MHz signal down to 137.50 MHz

>(which is one of 4 common output freqs of polar satellites so the same
>receiver can be used on both.) Hope this helps. - Chris
>
>--
>Chris Oesterling (chris@angus.mystery.com)
>Mystery Spot BBS, Royal Oak, MI
---?--
>

I have a dumb question to add to all this:

I have a receiver that tunes to 2000 mHz. Is there any advantage for me
to use a down converter?

Len Winter

1502. Re: GOES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <3tvbl7$1ank@news.doit.wisc.edu>
Source record: 24707

>
>I have a dumb question to add to all this:
>
>I have a receiver that tunes to 2000 mHz. Is there any advantage for me
>to use a down converter?
>
>Len Winter

Len,
Two issues, you'll have more line loss at 1691 than at 137, secondly You'll want 30-50 kHz bandwith. If you have the signal strenght and the bandwith then their is no advantage to the downconverter, you'll still need a preamp at the antenna.

Good Luck,

Kevin N9JKP

--
****
* Kevin G. Shea N9JKP *
* 4460 Dahmen Pass *
* Cross Plains, WI 53528 USA *
* 608.789.4326,voice; 608.798.1747,fax *
****

1503. ARLK031 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk031.1995@ampr.org>
Source record: 24708
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK031
ARLK031 Keplerian data

ZCZC SK56
QST de W1AW
Keplerian Bulletin 31 ARLK031
From ARRL Headquarters
Newington, CT July 11, 1995
To all radio amateurs

SB KEP ARL ARLK031
ARLK031 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-70
1 99970U 99970A 95194.62046583 -.00253378 00000-0 -85192-3 0 12
2 99970 28.4669 326.3673 0004615 286.6946 73.3195 15.91124517 24
AO-10
1 14129U 83058B 95187.17862798 -.00000256 +00000-0 +10000-3 0 03610
2 14129 026.4655 259.6639 5999261 290.9317 017.0423 02.05882170062726
RS-10/11
1 18129U 87054A 95190.07021619 .00000028 00000-0 14532-4 0 00973
2 18129 082.9248 042.8969 0013043 035.0382 325.1624 13.72354252402975
UO-11
1 14781U 84021B 95190.04528817 .00000091 00000-0 23100-4 0 08264
2 14781 097.7826 191.5560 0012812 109.2046 251.0547 14.69358201607113
RS-12/13
1 21089U 91007A 95190.12232537 .00000013 00000-0 -31247-5 0 08251
2 21089 082.9240 084.5188 0030599 109.1393 251.3085 13.74058498221786
AO-13
1 19216U 88051B 95189.95073147 -.00000225 00000-0 10000-4 0 00591
2 19216 057.5312 177.2759 7308638 013.1375 358.5056 02.09726280022627
UO-14
1 20437U 90005B 95190.12482799 .00000114 00000-0 61181-4 0 01153
2 20437 098.5664 274.1408 0010604 128.1908 232.0212 14.29892836284886
RS-15
1 23439U 94085A 95190.14356251 -.00000039 00000-0 10000-3 0 00648
2 23439 064.8180 219.4806 0167786 258.5216 099.6815 11.27524703021995
```

```
AO-16
1 20439U 90005D 95190.16575685 .00000024 00000-0 26209-4 0 09134
2 20439 098.5784 275.8811 0011599 130.6767 229.5433 14.29945598284905
DO-17
1 20440U 90005E 95190.08211338 -.00000008 00000-0 13771-4 0 09110
2 20440 098.5800 276.2698 0011574 129.7068 230.5127 14.30086555284914
WO-18
1 20441U 90005F 95190.20475936 -.00000000 00000-0 16686-4 0 09223
2 20441 098.5799 276.3621 0012329 130.3013 229.9247 14.30057823284939
LO-19
1 20442U 90005G 95189.73626403 .00000012 00000-0 21477-4 0 09166
2 20442 098.5810 276.2670 0012653 131.2309 228.9961 14.30160542284884
FO-20
1 20480U 90013C 95190.16225244 .00000027 00000-0 13180-3 0 08148
2 20480 099.0722 274.6791 0540407 183.4600 176.2692 12.83231688253761
AO-21
1 21087U 91006A 95190.14228514 .00000094 00000-0 82657-4 0 06212
2 21087 082.9389 216.3236 0036540 082.8426 277.6830 13.74556975222742
UO-22
1 21575U 91050B 95190.22022937 .00000021 00000-0 21438-4 0 06235
2 21575 098.3930 260.9951 0006748 212.3510 147.7279 14.36982206208665
KO-23
1 22077U 92052B 95190.12790084 -.00000037 00000-0 10000-3 0 05116
2 22077 066.0778 189.8261 0006230 193.6643 166.4203 12.86291691136559
KO-25
1 22828U 93061F 95190.12043282 .00000034 00000-0 31021-4 0 04035
2 22828 098.6126 266.3614 0010312 139.0248 221.1731 14.28105379061002
IO-26
1 22826U 93061D 95190.12898239 .00000013 00000-0 22764-4 0 04203
2 22826 098.6168 266.3327 0009379 153.6654 206.5019 14.27774838092901
AO-27
1 22825U 93061C 95190.17671567 -.00000014 00000-0 12224-4 0 04224
2 22825 098.6159 266.2788 0008296 151.5940 208.5697 14.27666673092903
PO-28
1 22829U 93061G 95190.20243976 .00000049 00000-0 37208-4 0 04182
2 22829 098.6133 266.4775 0010014 138.9838 221.2096 14.28085111092934
Mir
1 16609U 86017A 95190.21393671 .00002187 00000-0 36402-4 0 01629
2 16609 051.6477 047.4302 0002732 207.2873 152.7989 15.57047239536364

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
July 15, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1504. Re: GOES/line up freq. + any new software?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: butch@apollo.wes.army.mil
Message-ID: <3u0ka0$7gh@prop.wes.army.mil>
Source record: 24709

Any one have the location line-up frequency for the new GOES WX Sat.,
and is there any new software required for the higher res of that new
puppy?

Butch KF5DE

1505. Re: Amateur Radio Astronomy

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: motelwizz@aol.com
Message-ID: <3u0oo4$a29@newsbf02.news.aol.com>
Source record: 24710

Please send me any information you have on propogation. I am the newsletter editor for my local amateur radio club.

Thanks.
MotelWizz
KE4VQD

1506. Re: 2m HT for wefax <noaa-meteor>????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: tfugate@uklans.uky.edu
Message-ID: <3u0q87$666@service1.uky.edu>
Source record: 24711

In article <3tu2le$4snr@ns3-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:

The NOAA LEO WX sat txs a 30KHZ signal. I am currently using a
PRO2004 in the wide band (75KHZ) mode. This is way too wide and
really destroys the sn. Dr. Taggart has a good book on the whole
subject. I stroungly reccomend that you get the book. The ARRL
has it. At least you got something with the 15Khz BW on your icom.
I could not even get sync pulse from any of my noarrow band stuff.
The meteor series has a slightly narrower bw , but still much wider
then your icom. Dr. Taggert says 35Khz with fairly wide filters
should be ok. I don't have the book in front of me, so don't take
these figures as gospell. You also need a better antenna than the
standard antenna used by hams. I am using a radiio shack disk cone
with an older JFET preamp. At the scanner. I am building a trunstile
over reflectors. It should go up this week end. And yes the preamp
will go at the antenna end. Between work, life and family there just
is not enough time to go around. I am getting the last bugs out of my
A&A wefax demode board interfaced to the printer port. Everything about
this project has taken about 4 times as long as I had thought it would.
Good luck and really think about getting the book. I think it is the
4rth edition. It is full of practical advise. He has been doing this
decades.
Terry Fugate
WN4ISX

1507. Re: SatTrak help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: winter@guest.apple.com
Message-ID: <1995Jul12.170725.1626@guest.apple.com>
Source record: 24712

>In article <mfn-0707951409420001@pm2pool20.magic.ca>, <mfn@astral.magic.ca>
>writes:
>> I've just recently D/L'd an evaluation copy of SatTrak (Mac) and am
>> attempting to use it. I have however encountered a problem.
>> Under "site info", along with site longitude, latitude and elevation, the
>> program asks for something called "mininum satellite elevation" in
>> degrees. Can anyone tell me what its asking for?

This lets you tell the program how far above the horizon a satellite
must be before SatTrak will consider it visible from your site. You
could just set it to zero. But I prefer to keep it somewhere between
2 and 5 degrees so that I'm not bothered with having to read pass
information on passes that neither I nor my radio can see. (I consider
5 degrees to be about minimum for those purposes, but I usually keep
this setting at 2 degrees so that SatTrak will let me know when a
bird is going to pop over the horizon.)

I like SatTrak a lot. I particularly like that it tells you in its
printouts when a satellite will be eclipsed. That saves you from
wasting your time looking when it's too late in the evening (or too
early in the morning) to see something. (Of course, eclipse information
isn't relevant for radio contacts, but it's great if you want to see Mir
or the shuttle yourself.)

73,
Patty N6BIS

--
========================= winter@guest.apple.com =========================
*** SUPPORT "DUE SOUTH"! WATCH IT ON CBS FRIDAYS THIS SUMMER! ***
** Write to CBSO01A@prodigy.com **
========= Apple contractor ================== Sunnyvale, Calif. =========

1508. Re: Satellite Antenna Ques.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-12 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Jul12.161454.8177@ke4zv.atl.ga.us>
Source record: 24713

In article <3tkbj7$1nc@newsbf02.news.aol.com> n2oto@aol.com (N2OTO) writes:
>>I recently came upon a TS-790 at a very good price, (2m/440 base rig) and
>>have quickly jumped into the mainstream of VHF/UHF operating. I now need
>>to set up a good VHF/UHF antenna system that has good terrestrial
>>performance along with satellite performance as well. I know already that
>> for truly good sat performance I'll need an az/el rotator...no big
>>deal... but what kind of antennas should I use to get good performance on
>>both types of communication, both ground and sat? Can I get away w/ a
>>circularly polarized antenna for terrestrial contacts, or can I get away
>>with a SSB beam for sat contacts? Is there an antenna that is good at
>>doing both? Thanks to all who choose to reply...your response is very
>>much appreciated. 73!! Joe Moschella, N9YJZ Brookfield, WI 53005
>
>A true CP yagi is difficult to design. A true CP antenna on a satellite
>(especially on large wavelengths) is difficult to design. Those that are
>out there are not perfect CP. Most of the time a satellite's antenna is
>not pointed at you. So you'll never receive a clean cp wavefront. Go
>with a horizontal yagi and if you really want to go nuts, set it up so you
>can rotate 360 degrees in polarization, because you will at times get a
>better signal not in the horizontal or vertical, but somewhere in between!

I disagree. CP antennas take a 3 dB gain hit when used with linear
polarized sources, but they can dramatically reduce the effects of
spin modulation on satellite signals, even when the satellite off-
pointing is giving you eliptical polarization. That can amount to
a 10 dB or greater improvement in receiving the satellite signals.
I consider that a good trade against the 3 dB loss when used
terrestrially with stations having linearly polarized antennas.
Besides, unless it's a line of sight path, where beams usually
are unnecessary anyway, the terrestrial path is going to shift
the polarization of the transmitted wave anyway, so the 3 dB
theoretical handicap of the CP antenna isn't really real. In
fact, on scatter paths, they often work better than linearly
polarized antennas.

> All non FM yagis work well, M2 yagis seem to be the favorite today.

I also disagree that all non-FM yagis work well for satellites. On
2 meters, most long boomer style yagis are cut for 144.2 MHz, and
don't perform very well up at 145.9 MHz. Similarly, but not quite
as serious, long boomers for 70 cm are cut for 432 MHz, not 435 MHz,
and patterns, gain, and match won't be as good for satellite work.
The CP antennas are cut for the satellite segments, which means they
won't work quite as well for terrestrial band segments, but that's
usually not as important. You want ZRO-8 or better capability on

the satellite, and that's usually more demanding than any terrestrial path you'll be using. Sidelobes won't raise your effective system noise temperature much for terrestrial paths where the Earth is in the main lobe anyway, but they make a big difference when your target is against the cold sky, so you want that antenna cut and optimized for the satellite segment of the band.

>Stay away from yagis with a gamma match.

I agree with this.

>PS Why even consider a vertical yagi for FM repeaters? You'll spend less
>time on repeaters once you wet your mouth wet with Meteor scatter, Aurora,
>E skip, Tropo...ducting, and playing king of the mountain or grid :-)

Maybe, maybe not. Repeater Dxing is usually really bad form, but there is a surprising amount of simplex FM operation where a good beam can be a major assist.

I've used both stacked long boomers and CP antennas. My vote goes for the CP antennas if you're serious about satellites. The reduction in spin modulation is really significant. Having low sidelobes in the satellite band segment is really really significant. Being able to work terrestrial paths with either horizontal or vertical polarized stations is also a flexibility plus. The 3 dB loss, if it really exists on a given path, is worth the other advantages. I use KLM antennas, but the M2s are good too. Avoid the Cushcraft AOP-1 package. (Hell, avoid Cushcraft period except for their long boomers which aren't bad.)

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

1509. Re: Software Authors Read

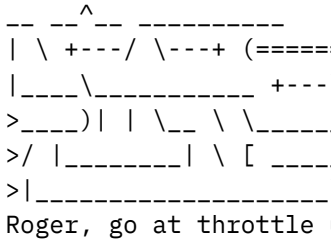
Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3u1obe$it8@paperboy.ids.net>
Source record: 24517
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <NEWTNews.805526223.10417.amsoft@amsoft.epix.net> ,
amsoft@epix.net writes:
>ATTENTION AUTHORS OF AMATEUR RADIO, SWL, AND ELECTRONIC SOFTWARE!
>
>If your software is shareware, freeware or public domain, AmSoft
>would like to include your software in our publication of The
>World of Ham Radio CD-ROM.

Why would any reputable software author want to have their programs
associated with a company which spams the rec.amateur.radio Usenet groups
with:

a) unsolicited comemrcial advertisements
b) unwanted junk E-mail
c) posts cross-posted to the entire rec.amateur.radio hirearchy when
they only belong in one - or at most two of the subgroups
d) a complete lack of netediquitte?

Feel feel to flame me for trying to be a net cop - But I think I speak
for the majority of the folks here who are rather pissed off at all of
Amsoft's commercial advertisements.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1510. Argos & Healthsat Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: dmart@cnj.digex.net
Message-ID: <3u2unk$e0@cnj.digex.net>
Source record: 24518

I was listening to a radio interview program last night. The topic was an expedition made over the last few months to the arctic. A group of 6 people walked across the arctic ocean and north pole from Russia to Canada. During the show they said that they were able to communicate via the internet using the Argos and Healthsat satellites. I assume that Argos and Healthsat are packet store and forward birds because only data communications were mentioned. It was stated that a "platform" communications system was used. If anyone on the list can provide information about Argos or Healthsat it would be appreciated. What frequencies are used? Are they leo birds. What form of modulation is used? Thanks in advance.

1511. Re: more GOES questions...:)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: tfugate@uklans.uky.edu
Message-ID: <3u31ae$8n4@service1.uky.edu>
Source record: 24519

In article <3u1524$sa9@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:
>
>i'm sure my ICOM HT does not have the 40-50KHz bandwith for NOAA OR GOES...
>
>would a typical pro-2006 Rat Shack scanner have a bigger bandwith? that might
>be my problem with rx wefax.....thanks
>
>DAvid
It might be a good idea to get Dr Ralph Taggarts Weather sat book revision
4. It is available from the ARRL. It is the best single source out there.
The radio shack 2004/5/6/? are 75Khz bw in the wide mode. As you thought,
this is about twice as wide as you want. It will at least work(as oppossd
to 15Khz nb), but it doesn't work very well. The extra bandwidth lets in
a lot of extra noise and really trashes the images sn. I am getting a NOAA
12/14 wx sat station up. I will go on to goes after I get the bugs out of
the "simple" part. I am using a Pro2004 and am building an add on external
IF. I brought out the 10.7Mhz and 455Khz if to feed my R2000. I am going
use the IF chain out of an old commercial wireless microphone. It has about
45 to 50Khz bw with a fairly good noise floor. This weekend I will have
a turnstill with the preamp mounted at the antenna. If you like, I will let
you know if the increased signal(i am presently using a rs diskcone with and
old JFET preamp at the receiver(yeh I know that's not where it belongs))
gives a "good enough" signal to overcome the wide bw sn problem. I really
expect it not to.
BTW what software are you using? The JVFAX 7.0 is about the easiest that
I have found. I started out trying to use the SBDSP/IMdisp/APTCAP40 sequence
to record the wx sat pass with my SB, convert the vow(or wav?) to an "raw
binary" image, and then view it. So far I am missing something. Everything
goes great up until the viewing part. Oh well, that is a topic for another
post.
Terry Fugate
WN4ISX

1512. Re: 2m HT for wefax <noaa-meteor>????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: zlau@mgate.arrl.org
Message-ID: <3u36rr$6sr@mgate.arrl.org>
Source record: 24520

WN4ISX Terry Fugate (tfugate@uklans.uky.edu) wrote:

: The NOAA LEO WX sat txs a 30KHZ signal. I am currently using a
: PRO2004 in the wide band (75KHZ) mode. This is way too wide and
: really destroys the sn. Dr. Taggart has a good book on the whole

10.7 MHz filters of the right bandwidth are available from
A & A Engineering--I think they got them for a WX satellite
receiver kit but will sell them separately. Their phone
number is 714-952-2114.

--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

1513. Re: 2m HT for wefax <noaa-meteor>????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3u3gt1$4fql@ns3-1.CC.Lehigh.EDU>
Source record: 24521

> Nope. The IF bandwidth is too narrow - you want something with a
>bandwidth >30 KHz.....45 KHz is ideal....
>
>> months and all i get w/ jvfax6 and jvfax7 is basicly static, with SOME
>> resemblabce <sp?> to pics from wefax sats. or should i use a scanner w/ a
>> larger bandwith?
>
> If you use a scanner with a "wide" bandwidth, that's probably *too*
>wide (good for FM broadcast, maybe). This may mean noisy pictures. If
>you have a tracking directional antenna (cross-polarized Yagis, 6 or
>more elements each), low-loss coax, and perhaps a preamp, you may be
>able to get satisfactory results.

well, would a pro-2006 in narrow band mode be wider then an HT?

either way, i have the best set up i can think of OTHER then useing a
cross-pol. yagi w/tracking software :) thanks anyhow

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1514. Any Radio Astro. in P.E.I. ???

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: aa679@ccn.cs.dal.ca
Message-ID: <DBMyr8.9BH@cs.dal.ca>
Source record: 24522

I was wondering, if there is any radio astronomy being done in PEI,CA.

If so, please let me know. There is a possibility of joint jrojects among
PEI, NB, and NS.

Ralph J. Coppola
aa679@ccn.cs.dal.ca

Society for Amateur Scientists

Official WWW Site ... http://www.thesphere.com/SAS/
Secondary Site ..... http://www.ccn.cs.dal.ca/Science/SAS/sas-home.html

--

1515. Re: SatTrak help

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <3u1o14$io6@paperboy.ids.net>
Source record: 24523

In article <mfn-0707951409420001@pm2pool20.magic.ca>,
<mfn@astral.magic.ca>
writes:

>I've just recently D/L'd an evaluation copy of SatTrak (Mac)
> Under "site info", along with site longitude, latitude and elevation,
the
> program asks for something called "mininum satellite elevation" in
> degrees. Can anyone tell me what its asking for?

The program wants to know what you consider a reasonable minimum
elevation angle for the satellite's position in the sky. At 90 degrees
the satellite is directly overhead, at zero degrees the satellite is on
the theroetical horizon (no large objects blocking your view of the
horizon, perfectly symetcial Earth, no atmosphere. In practice the only
difference between the theroetical and actual is any large obstructions
(e.g. buildings, mountains, etc.

Typically I'll set my minimum elevation to zero - even though I realize
that the 'bad' (e.g. low elevation) passes aren't even worth going for.
But for many good passes I'll hear satellites as soon as the get above
the horizon.

>In article <NEWTNews.10202.805320693.pebbles@pi-user.pi.net> ,
blecourt@pi.net writes:
>Just kidding, I don't have any experience with a MAC !!!
>There are a lot of trackking programs, as you possibly know, for the PC.
>I use the programs traksat version 2.80 and pctrack version 1.1!!
>i'm very content with these program's

Dear schmuck,

who cares? This is *NOT* alt.I.hate.macs. This is
rec.radio.amateur.space. If you don't like Macs fine. But why do you
feel the need to waste net bandwidth by flaming the original request for
information for his preference with computers, without providing anything
useful?

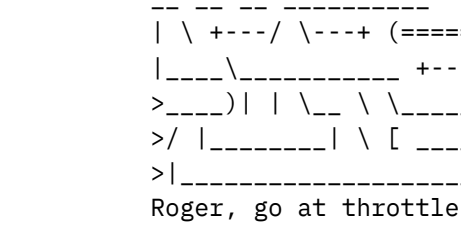
Minimum elevation is a fairly standard parameter in most tracking
programs, including Traksat and PCTrack. You may not realize this - but
Mac and PC satellite tracking programs both obey the same laws of physics
and spherical geometry.

You could have provided useful information. Why didn't you?

P.S. For the record - I use both Macs and PCs - the Mac for applications
where it's better and the PC for applications where it's better. And my

personal preferences are Orbittrack and MacSPOC on the Macintosh, and
Traksat 2.80 on the PC.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET



Roger, go at throttle up CHR$(32) the final frontier

1516. Need BLON/BLAT for Amateur Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: Eric Struble <eric_struble@hp-roseville-om1.om.hp.com>
Message-ID: <3u1noc$hd9@hpchase.rose.hp.com>
Source record: 24524

I am looking for BLON/BLAT for the amateur satellites. I have looked on
most amateur WWW pages but have been unable to find them. If you know of
a source or could post them, I would be most greatful...
TKS
Eric, N6PYF
--
****
***
* Eric Struble
*
* EMail: eric_struble@hp-roseville-om1.om.hp.com Phone: (916)785-8288
*
****
***

1517. Re: 2m HT for wefax <noaa-meteor>????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3u3h6g$53v9@ns3-1.CC.Lehigh.EDU>
Source record: 24525

>The NOAA LEO WX sat txs a 30KHZ signal. I am currently using a
>PRO2004 in the wide band (75KHZ) mode. This is way too wide and
>really destroys the sn. Dr. Taggart has a good book on the whole
>subject. I stroungly reccomend that you get the book. The ARRL
>has it. At least you got something with the 15Khz BW on your icom.
>I could not even get sync pulse from any of my noarrow band stuff.
>The meteor series has a slightly narrower bw , but still much wider

ok, maybe not in the WFM mode, but what about the NFM or will that STILL be to
narrow?

>then your icom. Dr. Taggert says 35Khz with fairly wide filters
>should be ok. I don't have the book in front of me, so don't take
>these figures as gospell. You also need a better antenna than the
>standard antenna used by hams. I am using a radiio shack disk cone
>with an older JFET preamp. At the scanner. I am building a trunstile
>over reflectors. It should go up this week end. And yes the preamp
>will go at the antenna end. Between work, life and family there just

i'm useing the basic Rat Shack ground plane, and soon a preamp....
it works, but it's the bw...

>is not enough time to go around. I am getting the last bugs out of my
>A&A wefax demode board interfaced to the printer port. Everything about
>this project has taken about 4 times as long as I had thought it would.
>Good luck and really think about getting the book. I think it is the
>4rth edition. It is full of practical advise. He has been doing this
>decades.

some day i'll go pick up a book :) one day

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1518. Keplarian Elements for STS-70

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: dpbaker@lilly.com
Message-ID: <1995Jul13.145232.5477@inet.d48.lilly.com>
Source record: 24526

I'm a shuttle newbie. Where do I get the Keplarian Elements for load into
STSORBIT to track the shuttle?

Thanks,

Dave Baker - AA9OQ

****
| David P. Baker | All opinions expressed or implied are mine and not |
| Eli Lilly & Co. | those of my employer. |
****
Internet: dpbaker@lilly.com

1519. 10m + transverter or 2m allmode

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: towen@freenet.vcu.edu
Message-ID: <3u3sup$goj@freenet.vcu.edu>
Source record: 24527

Will a 10m allmode rig and a transverter perform as well as a
2m allmode rig for 2m & 70cm SSB satellite work?

--Thanks
--

Todd Owen (KE4UDN) Virginia Commonwealth University
towen@freenet.vcu.edu Richmond, Virginia

1520. Re: more GOES questions...:)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3u4glf$4qs6@ns3-1.CC.Lehigh.EDU>
Source record: 24528

>It might be a good idea to get Dr Ralph Taggarts Weather sat book revision
>4. It is available from the ARRL. It is the best single source out there.
>The radio shack 2004/5/6/? are 75Khz bw in the wide mode. As you thought,
>this is about twice as wide as you want. It will at least work(as oppossd
>to 15Khz nb), but it doesn't work very well. The extra bandwidth lets in
>a lot of extra noise and really trashes the images sn. I am getting a NOAA
>12/14 wx sat station up. I will go on to goes after I get the bugs out of
>the "simple" part. I am using a Pro2004 and am building an add on external
>IF. I brought out the 10.7Mhz and 455Khz if to feed my R2000. I am going
>use the IF chain out of an old commercial wireless microphone. It has about
>45 to 50Khz bw with a fairly good noise floor. This weekend I will have
>a turnstill with the preamp mounted at the antenna. If you like, I will let
>you know if the increased signal(i am presently using a rs diskcone with and
>old JFET preamp at the receiver(yeh I know that's not where it belongs))
>gives a "good enough" signal to overcome the wide bw sn problem. I really
>expect it not to.

lalala, no offence but i hate replying to LONG messages :-)
ANYWHO....ok, i'll try it anyway, and see which is better, my scanner or HT,
if all fails....the hell with it, i'm buying a GOES rx and all that jazz!!!

>BTW what software are you using? The JVFAX 7.0 is about the easiest that

i AM useing both jvfax6.0 and 7.0 with bad results. It locks up when rx pics
in wefax mode...i do not know why, but it seems like i have the problem with
both versions <which btw: i have had NO problems with 6.0>

well, I'll see what happens and post again...

thanks!!

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1521. Shuttle Retransmission FAQ

Newsgroup: rec.radio.amateur.space
Date: 1995-07-13 00:00:00 UTC
From: hrsblackwell@stars.gsfc.nasa.gov
Message-ID: <hrsblackwell-1307951010240001@dimsdale.gsfc.nasa.gov>
Source record: 24529

Greetings,

This is an attempt to answer some commonly asked questions about the Goddard Amateur Radio Club's Shuttle Retransmission Activity. It was composed of bits and pieces of other documents as well as some new information. Unfortunately, I have lost some of the references to other authors who have contributed to this document. If you see something in this document that looks familiar, please let me know so I can give you credit for it.

This document is really a first draft and I expect it will expand. It can also be found on GARC's WWW server

URL: http://garc.gsfc.nasa.gov/www/garc-home-page.html

under Shuttle Retransmission.

Please send any comments or other questions to

jim.blackwell@gsfc.nasa.gov

I will try to answer them.

73

Jim Blackwell, N3KWU
Past President, Goddard Amateur Radio Club, Inc.

Shuttle Retransmission Fact Sheet
by Jim Blackwell, N3KWU
Last Update 06/30/95

I. History

Kindled by a desire to spread the excitement of America's space program and of the Space Shuttle in particular, members of the Goddard Amateur Radio Club (WA3NAN) and the Amateur Satellite Corporation (AMSAT) devised a plan to re-transmit live, air-to-ground audio over amateur frequencies.

After overcoming many hurdles, the Shuttle Retransmission effort began on August 31, 1983, 7 hours prior to the launch of Challenger on mission STS-8 on the local AMSAT/GARC 2 meter repeater by virtue of a waiver granted by the FCC for this purpose.

Retransmissions expanded to HF frequencies with the launch of STS-9 on November 28, 1983. Among many firsts for the Shuttle program during this mission was the first use of amateur radio from space by Mission Specialist Owen Garriott, W5LFL.

The success of this effort is shared by NASA, the Goddard Space Flight Center, AMSAT, hundreds of dedicated volunteer control operators, and by the world-wide support of the Amateur Community.

II. Frequencies

Retransmission of Shuttle air-to-ground audio from WA3NAN may be heard on the following frequencies:

Frequency (MHz)	Mode	Antennas
3.860	SSB LSB	N-S/E-W Dipoles
7.185	SSB LSB	N-S/E-W Dipoles
14.295	SSB USB	3-element Yagi
21.395	SSB USB	5-element Yagi
28.650	SSB USB	4-element Yagi
147.45	FM Simplex	Phased vertical

Where SSB is Single-Side-Band and LSB, USB indicate either Lower and Upper Side Band. A short-wave receiver possessing a Beat Frequency Oscillator (BFO) is needed to receive these transmissions.

III. Frequently Asked Questions About Shuttle Retransmissions

1. When Are You On The Air ?---There are several criteria that best determine when you will be able to receive Shuttle Retransmissions (not necessarily in order of priority):

A. While The Crew Is Awake---We are usually on the air from the time the crew gets its wakeup call (assuming the mission is not of the 24 hour variety) till the time they go into what is called "Pre-Sleep".

B. When Volunteer Operators Are Available---We have a limited pool of operators available during any single mission. The most difficult days and nights to schedule are usually on the weekends.

C. When Local Weather Permits---We are located in Greenbelt, MD just outside Washington DC. If you do not hear us and have the means to do so, check our current local weather. If there are thunderstorms (or other inclement weather such as a recent snowfall) currently in the area or predicted, we will likely be off the air until such weather has passed.

D. When Equipment Is Operational---Given the nature of our equipment, we typically have at least one major failure during a mission. Though we strive to get the failed equipment back on-line as soon as possible there will be downtimes for all bands.

2. How Soon Before Launch Do You Go On The Air?---We usually begin retransmissions about 1 hour before the predicted launch time.

3. Does Anyone Get Paid To Do This?---No. This is purely a voluntary activity by our membership as a public service to all Radio Amateurs.

4. What Is NASA's Involvement With The Club?---The Goddard Amateur Radio Club is one of many employee clubs sanctioned by the Goddard Employee Welfare Association (GEWA).

5. Your Shuttle Retransmissions Are Interfering With My Net...---We apologize and try to accommodate other Amateur Radio activities that our retransmissions may interfere with. This decision is usually made by the Control Operator on duty and/or the Shuttle Retransmission Director. The club leadership may also consider requests made , in writing, by groups or individual Radio Amateurs.

6. Why Do Other Hams Interfere With Shuttle Retransmissions---Contrary to popular belief, Radio Amateurs share the frequencies we are allotted by the FCC and our license class. All are free to use the frequencies whenever they want and may not even realize that they are on top of our signal. During missions, we ID the station frequently to let others know that the frequency is in use.

7. I Do Not Hear You In Anytown, Planet Earth, But I Know You Must Be On The Air, Why?---If you know that we are on the air and you cannot receive our signal and the problem is not with your equipment (receiver and antenna), then it is likely that signal propagation is not good for your geographic location.. Good propagation depends on a number of factors and varies with solar cycle (and storms), time of day, some atmospheric conditions, whether the given frequencies "skip zone" is such that the signal even reaches your location, and what direction and power we are transmitting. We welcome propagation reports since it tells us if it is indeed propagation, or that perhaps it is an antenna or transmitter problem at the station.

8. I Want To Send A Signal Report---You can send us a signal report to the addresses listed under "Contact Information". Please include a Self-Addressed Stamped Envelope (SASE) with appropriate postage if you wish to receive confirmation of your report (we use the QSL bureaus for requests made outside the US). Note that postage comes out of the club budget.

9. How Can I Get NASA TV---NASA Television offers the general public a front-row seat at mission launches and activities taking place in space during a mission, as well as informational and educational programming, historical documentaries, and updates on the latest developments in aeronautics and space science. NASA TV occasionally airs live coverage of SAREX activities. Programming is received by satellite dish or may be available through your local cable television network. NASA TV can be received from: Spacenet 2, Transponder--5, Channel--9, located at 69 degrees west longitude, at a frequency of 3880.0 MHz (C-band) with horizontal polarization (audio on 6.8 MHz).

For more information, contact: Technology and Evaluation Branch, Education Division, Code FET, NASA Headquarters, Washington D.C. 20546, or call (202) 358-1540.

10. Can I Retransmit Communications Between The Space Shuttle And Mission Control On Amateur Frequencies?---The FCC rules indicate that amateur stations are permitted to retransmit Space Shuttle air-to-ground

communications, provided that approval has been obtained from NASA (FCC Rules, Part 97.113 (e)).

In 1990, ARRL sought permission from NASA, on behalf of radio amateurs, to retransmit shuttle communications. The response from NASA's Office of Public Affairs encouraged such retransmissions, and indicated that the audio is public domain.

If you plan to rebroadcast NASA Shuttle audio, please follow these guidelines:

A. In keeping with good amateur practice and the FCC rules, shuttle audio retransmissions should be limited to missions of a specific educational purpose (non-commercial), such as those carrying the SAREX payload.

B. Retransmissions should be done manually (with a control operator present).

C. Occasionally, NASA audio may contain music. Amateurs should avoid, if at all possible, retransmitting music or any other prohibited transmissions not permitted by the FCC rules (FCC Rules, Part 97.113).

Please note however that the Shuttle audio retransmitted by GARC is not what one can receive from NASA TV. Rather, we get a direct feed from NASCOM. The difference is that this audio feed does not contain other coverage such as press briefings and mission status reports. This is significant because of restrictions on what are considered "permissible" transmissions by the FCC (see item C. above).

11. I Want NASA Goodies, Where Can I Get Them?---By "goodies" I refer to patches, photos, information related to the Space program, NASA centers, GSFC, projects and so on. Rather than send such requests to GARC, we prefer that you send your queries to the GSFC Visitor's Center at:

GSFC Visitor's Center
Code 130.0
NASA Goddard Space Flight Center, Greenbelt MD 20771

12. Can I Become A Member?---Membership is presently limited to GSFC Civil Servant and Contractor employees and their immediate families. We do extend membership to those outside GSFC provided they assist us with our public service activities including Shuttle Retransmission. We are working to allow other levels of membership to include a "Contributing Membership" that would allow interested individuals to receive our monthly newsletter and help to offset the cost of our activities.

IV. Contact Information

You can contact the Goddard Amateur Radio Club at the following address:

Goddard ARC/WA3NAN
P.O. Box 86

Greenbelt, MD 20768-0086
(301) 286-6673 (during missions)

V. WA3NAN Club BBS

The Goddard Amateur Radio Club, Inc. maintains a Bulletin Board System (BBS) which is accessible by way of the Internet, modem and packet radio. The BBS contains areas with information on the club, mail distributed by the Amateur Satellite Corporation BB (AMSAT-BB) listserver, SAREX bulletins and Space Shuttle mission information. During Shuttle missions, users can also access Keplerian Orbital Elements (Keps) which are generated by the club based on information generated by NASCOM at GSFC (these orbital elements are read over-the-air by our volunteer operators).

The BBS is accessible by the following means:

1. Internet: telnet to wa3nan.gsfc.nasa.gov (128.183.105.17)
2. Telephone: (301) 286-4137 (up to 14.4 kbaud supported)
3. Packet Radio: WA3NAN on 145.090 MHz in DC area.

Just follow the login instructions. Note: Full access to the BBS is limited to members of the club.

VI. GARC World Wide Web (WWW) Server

The Goddard Amateur Radio Club, Inc. maintains a WWW Server containing a wide variety of information about the club, its activities, as well as links to other Amateur Radio resources. To access this server, you must have an Internet connection and a WWW browser such as NCSA Mosaic, Netscape Communications Corporation NetScape Navigator, or the text-based Lynx. The URL address is:

http://garc.gsfc.nasa.gov/www/garc-home-page.html

--
Jim Blackwell
Goddard High Resolution Spectrograph Science Support
Computer Sciences Corporation
NASA/GSFC Code 681.0
Greenbelt, MD 20771

1522. Re: Software Authors Read

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: hanko@wv.mentorg.com
Message-ID: <3u6jg5$fhn@hpbab.wv>
Source record: 24530
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <3u1obe$it8@paperboy.ids.net>, Philip Chien <Pchien@ids.net> writes:
|> In article <NEWTNews.805526223.10417.amsoft@amsoft.epix.net> ,
|> amsoft@epix.net writes:
|> >ATTENTION AUTHORS OF AMATEUR RADIO, SWL, AND ELECTRONIC SOFTWARE!
|> >
|> >If your software is shareware, freeware or public domain, AmSoft
|> >would like to include your software in our publication of The
|> >World of Ham Radio CD-ROM.
|>
|> Why would any reputable software author want to have their programs
|> associated with a company which spams the rec.amateur.radio Usenet groups
|> with:
|>
|> a) unsolicited comemrcial advertisements
|> b) unwanted junk E-mail
|> c) posts cross-posted to the entire rec.amateur.radio hirearchy when
|> they only belong in one - or at most two of the subgroups
|> d) a complete lack of netediquitte?
|>
|> Feel feel to flame me for trying to be a net cop - But I think I speak
|> for the majority of the folks here who are rather pissed off at all of
|> Amsoft's commercial advertisements.

Ok. Stop playing net cop, idiot.

You do not speak for me, and your spam was worse than the posting
you complain about. Stuff a rag in it.

|>
|> Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET
|> __ __^__ __________
|> | \ +---/ \---+ (=========
|> |______________ +---_____/---+ //
|> >____)| | __ \ ______//___
|> >/ |________| \ [_____\
|> >|_____________________\ _______/
|> Roger, go at throttle up CHR$(32) the final frontier

1523. Re: Software Authors Read

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: mbramwel@ashley.business.uwo.ca
Message-ID: <mbramwel.1604.3006965A@ashley.business.uwo.ca>
Source record: 24531
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <3u4h35$bo7@indy-backup.indy.net> andyb@indy.net (Andy Birkhead) writes:
>From: andyb@indy.net (Andy Birkhead)
>Subject: Re: Software Authors Read
>Date: 14 Jul 1995 01:25:57 GMT

>Philip Chien (Pchien@ids.net) wrote:

>: Why would any reputable software author want to have their programs
>: associated with a company which spams the rec.amateur.radio Usenet groups
>: with:

>: a) unsolicited comemrcial advertisements
>: b) unwanted junk E-mail
>: c) posts cross-posted to the entire rec.amateur.radio hirearchy when
>: they only belong in one - or at most two of the subgroups
>: d) a complete lack of netediquitte?

>As a shareware author, let me answer you!

>I plan to upload to them because they can help to distribute my program.
>It would certainlly help with Sarah's college education fund.

>Andy
>KB9CAT

I also upload to them because of my shareware program.

ps: The subject said 'Software Authors Read' I don't consider that spamming
at all and being an author, they are doing me an important service (free CD
distribution of my ham software).

1524. Re: Software Authors Read

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: andyb@indy.net
Message-ID: <3u4h35$bo7@indy-backup.indy.net>
Source record: 24532
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Philip Chien (Pchien@ids.net) wrote:

: Why would any reputable software author want to have their programs
: associated with a company which spams the rec.amateur.radio Usenet groups
: with:

: a) unsolicited comemrcial advertisements
: b) unwanted junk E-mail
: c) posts cross-posted to the entire rec.amateur.radio hirearchy when
: they only belong in one - or at most two of the subgroups
: d) a complete lack of netediquitte?

As a shareware author, let me answer you!

I plan to upload to them because they can help to distribute my program.
It would certainlly help with Sarah's college education fund.

Andy
KB9CAT

1525. Re: Keplarian Elements for STS-70

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: dlarson@UWYO.EDU
Message-ID: <1995Jul14.090112.12846@roper.uwyo.edu>
Source record: 24533

In article <1995Jul13.145232.5477@inet.d48.lilly.com>, dpbaker@lilly.com (David P. Baker) writes:
>I'm a shuttle newbie. Where do I get the Keplarian Elements for load into
>STSORBIT to track the shuttle?
>
>Thanks,
>
>Dave Baker - AA9OQ

Try spacelink.msfc.nasa.gov ftp, telnet, www, gopher, whatever.
it's under hot topics, current mission STS-XX, keplerian elements,
or something like that. If you nt keps for other sats, check
instructional materials, software, ibm pc, satellite tracking, keps,
or something like that.

---Donald Larson---
---Laramie Wyoming---

1526. STS-70 launch time?\

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: dlarson@UWYO.EDU
Message-ID: <1995Jul14.092123.12847@roper.uwyo.edu>
Source record: 24534

Can someone please post or e-mali to me (at dlarson@uwyo.edu)
the official launch time of STS-70. I have read status reports
and the first launch report says it launched at 8:41 CDT and the
second day report says it launched at 8:42 CDT. Can someone
please tell me the actual launch time to the second.
UTC, GMT, EDT, PDT, whatever format, I don't care too much,
just want a correct time.
Thanks in advance.
73
KC7EGB
---Donald Larson---
---Laramie Wyoming---

1527. STS-70 Element_Set (95195.816)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-70.95195.816@thomsoft.com>
Source record: 24535
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-70
1 23612U 95035A 95195.81651499 .00025000 00000-0 18713-3 0 56
2 23612 28.4627 317.7506 0021414 150.7002 209.4850 15.90210846 218

Satellite: STS-70
Catalog number: 23612
Epoch time: 95195.81651499 = (14-Jul-95 19:35:46.89 UTC)
Element set: 005
Inclination: 28.4627 deg
RA of node: 317.7506 deg Space Shuttle Flight STS-70
Eccentricity: .0021414 Keplerian element set JSC-005
Arg of perigee: 150.7002 deg from flight Day 2 post OMS-4 vector
Mean anomaly: 209.4850 deg
Mean motion: 15.90210846 rev/day Gil Carman
Decay rate: 2.5000e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 21

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
--
Gary Morris Internet: garym@thomsoft.com
Thomson Software Products Packet: KK6YB @ K6JCC.#SOCA.CA.USA.NA
San Diego, CA, USA Phone: +1 619-457-2700 x128
```

1528. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.805757408@dolphin>
Source record: 24536

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
STS 70
1 23612U 95035A 95195.25042824 .00000506 00000-0 00000+0 0 50
2 23612 28.4667 321.9503 0025431 200.1866 162.8595 15.85013361 111
1995035B
1 23613U 95035B 95195.29737294 .00000027 00000-0 00000+0 0 44
2 23613 0.0676 231.4948 0007482 288.4053 58.6857 1.00255656 07
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
```

```
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1529. Two-Line Orbital Element Sets (TLE639)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.805757661@dolphin>
Source record: 24537

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #639 -
Alouette 1
1 00424U 62049A 95192.70719627 .00000020 00000-0 13027-4 0 1199
2 00424 80.4663 260.6825 0023009 189.5571 170.5140 13.67845165635657
ATS 1
1 02608U 66110A 95185.18274218 .00000043 00000-0 10000-3 0 9374
2 02608 14.6392 356.5104 0010461 61.5963 298.5694 1.00331325 21362
ATS 3
1 03029U 67111A 95193.55901972 -.00000130 00000-0 10000-3 0 3785
2 03029 14.8369 3.4309 0008428 266.5894 115.8160 1.00273095101357
Cosmos 398
1 04966U 71016A 95194.16346357 .00178865 91341-5 17148-3 0 9333
2 04966 51.4071 106.8239 0542967 181.9572 177.9034 15.05370541829090
Starlette
1 07646U 75010A 95190.82990502 -.00000131 00000-0 91046-5 0 8995
2 07646 49.8283 63.6547 0206379 176.5007 183.7383 13.82188945 31470
LAGEOS
1 08820U 76039A 95192.39167625 .00000008 00000-0 10000-3 0 1206
2 08820 109.8512 268.9068 0044125 201.9924 157.8914 6.38664717192003
ETS-2
1 09852U 77014A 95193.33958817 -.00000194 00000-0 10000-3 0 321
2 09852 12.7799 36.8161 0004751 61.1656 298.9378 1.00021583 14234
GOES 2
1 10061U 77048A 95189.57793438 .00000044 00000-0 10000-3 0 5518
2 10061 11.8454 41.1138 0010866 122.6862 153.5275 1.00274057 10981
IUE
1 10637U 78012A 95192.48687868 -.00000288 00000-0 00000+0 0 1479
2 10637 35.2429 88.6023 1329384 47.4109 280.3115 1.00319123 16508
GPS BI-01
1 10684U 78020A 95194.00893805 -.00000033 00000-0 10000-3 0 3701
2 10684 64.8655 33.9323 0061329 162.9766 197.2876 1.98069343112676
```

```
GPS BI-02
1 10893U 78047A 95186.13747550 -.00000013 00000-0 10000-3 0 1720
2 10893 63.3154 272.1734 0222831 14.3600 346.3056 2.01627077125796
GOES 3
1 10953U 78062A 95186.48891539 .00000110 00000-0 10000-3 0 5078
2 10953 10.8112 43.9064 0004503 100.9260 150.2758 1.00323335 15564
SeaSat 1
1 10967U 78064A 95193.51540036 -.00000055 00000-0 26341-4 0 4131
2 10967 107.9983 189.8930 0002901 263.5193 96.5612 14.38043796892475
GPS BI-03
1 11054U 78093A 95193.41642762 .00000007 00000-0 10000-3 0 3374
2 11054 63.0245 270.2226 0045188 178.1208 181.9809 1.93505299122067
Nimbus 7
1 11080U 78098A 95192.69014708 -.00000074 00000-0 -29086-4 0 5148
2 11080 98.9986 65.6370 0009111 161.7748 198.3734 13.83708273843949
GPS BI-04
1 11141U 78112A 95193.73080898 -.00000029 00000-0 10000-3 0 9858
2 11141 64.8399 35.8129 0049494 28.4201 331.9235 1.92895069 11315
GPS BI-05
1 11690U 80011A 95193.31788119 -.00000024 00000-0 10000-3 0 9263
2 11690 65.1854 35.5589 0143754 194.6356 165.0750 2.00565140127367
GPS BI-06
1 11783U 80032A 95190.30046366 .00000012 00000-0 10000-3 0 870
2 11783 62.4526 265.2235 0219090 29.4937 331.7905 2.03456694111838
GOES 5
1 12472U 81049A 95189.54032729 -.00000289 00000-0 10000-3 0 8669
2 12472 7.5697 53.7549 0007861 28.2606 331.7427 1.00267272 9644
Cosmos 1383
1 13301U 82066A 95191.53509276 .00000013 00000-0 -26530-5 0 4184
2 13301 82.9289 25.0311 0028771 102.3884 258.0485 13.68066345650523
LandSat 4
1 13367U 82072A 95192.75392280 -.00000011 00000-0 75165-5 0 7182
2 13367 98.1261 248.0246 0007358 115.4206 244.7755 14.57152429690792
DMSP B5D2-1
1 13736U 82118A 95194.00536359 .00000025 00000-0 29079-4 0 8020
2 13736 98.6294 22.8056 0008011 306.0120 54.0313 14.25741914652596
IRAS
1 13777U 83004A 95195.06295700 -.00000334 00000-0 -20036-3 0 186
2 13777 98.9631 22.7668 0013798 314.9935 45.0127 13.99229037305941
Cosmos 1447
1 13916U 83021A 95191.75155227 .00000042 00000-0 28064-4 0 5157
2 13916 82.9451 84.3274 0039285 28.1142 332.2118 13.74327274616704
TDRS 1
1 13969U 83026B 95194.57250888 .00000097 00000-0 10000-3 0 4342
2 13969 8.4238 47.0416 0005409 106.5631 175.1203 1.00727912 17979
GOES 6
1 14050U 83041A 95188.35748818 -.00000061 00000-0 10000-3 0 4257
2 14050 6.3849 57.0311 0005675 8.4412 235.5870 1.00325875102724
OSCAR 10
1 14129U 83058B 95187.17862798 -.00000256 00000-0 10000-3 0 3610
```

```
2 14129 26.4655 259.6639 5999261 290.9317 17.0423 2.05882170 62726
LandSat 5
1 14780U 84021A 95195.19303466 .00000001 00000-0 10000-4 0 2793
2 14780 98.1116 250.8970 0005724 112.5619 247.6114 14.57102558604566
UoSat 2
1 14781U 84021B 95191.54344728 .00000090 00000-0 22941-4 0 8112
2 14781 97.7825 192.9836 0012900 104.8885 255.3750 14.69358608607331
GPS BI-09
1 15039U 84059A 95190.52178635 -.00000014 00000-0 10000-3 0 3461
2 15039 64.5164 30.2819 0082023 18.2644 342.0727 1.92302211 80823
Cosmos 1574
1 15055U 84062A 95195.17795111 -.00000007 00000-0 -23757-4 0 7172
2 15055 82.9573 135.9685 0026308 202.8113 157.1866 13.73623589554448
GPS BI-10
1 15271U 84097A 95193.98864100 .00000011 00000-0 10000-3 0 253
2 15271 62.1262 265.4169 0155194 353.9876 5.9160 2.00600068 78442
Cosmos 1602
1 15331U 84105A 95194.17775340 .00000215 00000-0 22489-4 0 4030
2 15331 82.5337 71.5597 0020959 357.1192 2.9899 14.84641505582527
NOAA 9
1 15427U 84123A 95194.78110716 .00000081 00000-0 66666-4 0 3229
2 15427 98.9962 253.6658 0014599 190.0886 169.9995 14.13717701545676
GPS BI-11
1 16129U 85093A 95189.98813745 -.00000010 00000-0 10000-3 0 6646
2 16129 65.1852 33.4579 0154935 86.8126 275.0292 1.89368103 15403
Mir
1 16609U 86017A 95194.25734066 .00001533 00000-0 27515-4 0 1364
2 16609 51.6482 27.1918 0002640 213.0660 147.0167 15.57066196537027
SPOT 1
1 16613U 86019A 95194.25199404 .00000090 00000-0 62356-4 0 8313
2 16613 98.6495 265.0196 0000947 67.6396 292.4876 14.20063734172060
Cosmos 1766
1 16881U 86055A 95192.19689237 .00000201 00000-0 21410-4 0 3189
2 16881 82.5195 131.2529 0020802 28.9285 331.3088 14.83639207483133
EGP
1 16908U 86061A 95194.68735490 -.00000083 00000-0 10000-3 0 138
2 16908 50.0118 320.7711 0011567 227.8052 132.1801 12.44412360 74136
NOAA 10
1 16969U 86073A 95194.77107886 .00000057 00000-0 42718-4 0 2314
2 16969 98.5111 196.8520 0012098 267.7091 92.2704 14.24946666458268
MOS-1
1 17527U 87018A 95193.18503722 -.00000043 00000-0 00000+0 0 2283
2 17527 98.9817 257.6995 0000818 173.5973 186.4070 13.94885615427314
GOES 7
1 17561U 87022A 95190.44521855 .00000079 00000-0 10000-3 0 4611
2 17561 2.3700 72.1590 0002409 340.4631 258.6956 1.00272963 13852
Kvant-1
1 17845U 87030A 95193.93644356 -.00002529 00000-0 -27545-4 0 3148
2 17845 51.6469 28.8000 0002433 210.9448 149.1718 15.57060444536883
DMSP B5D2-3
```

```
1 18123U 87053A 95194.71387152 .00000034 00000-0 39495-4 0 600
2 18123 98.7765 25.4531 0014438 139.0236 221.2025 14.15410864416473
RS-10/11
1 18129U 87054A 95192.54910045 .00000033 00000-0 19195-4 0 827
2 18129 82.9247 41.0643 0013048 28.1811 332.0047 13.72354356403319
Meteor 2-16
1 18312U 87068A 95193.17700485 .00000016 00000-0 46736-6 0 4100
2 18312 82.5534 262.5441 0013784 93.1324 267.1413 13.84059412399005
Meteor 2-17
1 18820U 88005A 95193.86025405 .00000046 00000-0 27711-4 0 6682
2 18820 82.5396 317.8199 0016456 157.7232 202.4646 13.84740737376421
DMSP B5D2-4
1 18822U 88006A 95195.10200493 .00000011 00000-0 23426-4 0 210
2 18822 98.4036 38.0128 0005283 281.2294 78.8291 14.23158905386348
Glonass 34
1 19163U 88043A 95193.37445987 -.00000010 00000-0 10000-3 0 28
2 19163 65.1460 97.2969 0006513 145.9152 214.1284 2.13102570 54976
Glonass 36
1 19165U 88043C 95192.96165999 -.00000013 00000-0 10000-3 0 4023
2 19165 65.1157 97.2811 0003363 324.1660 35.8443 2.13102071 55581
METEOSAT 3
1 19215U 88051A 95192.43376715 -.00000288 00000-0 10000-3 0 1447
2 19215 2.5632 69.9348 0002154 53.6425 253.0205 1.00268516 13813
AO-13
1 19216U 88051B 95192.33475220 .00000147 00000-0 10000-4 0 610
2 19216 57.5285 176.8359 7307644 13.4280 358.4284 2.09720928 22671
OKEAN 1
1 19274U 88056A 95193.11782224 .00000159 00000-0 16878-4 0 185
2 19274 82.5134 230.8091 0019699 161.4856 198.7059 14.82355068378847
Meteor 3-2
1 19336U 88064A 95191.53137566 .00000051 00000-0 10000-3 0 4073
2 19336 82.5404 48.9010 0018083 15.8030 344.3646 13.16973730334376
Glonass 39
1 19503U 88085C 95190.64366583 -.00000053 00000-0 10000-3 0 2965
2 19503 65.6862 336.2839 0008417 152.9062 207.1351 2.13101832 53022
NOAA 11
1 19531U 88089A 95194.71523728 -.00000002 00000-0 24096-4 0 1300
2 19531 99.1962 198.7835 0012775 111.2317 249.0219 14.13056638350503
TDRS 2
1 19548U 88091B 95190.08774903 -.00000197 00000-0 10000-3 0 1337
2 19548 1.7923 74.4111 0004002 111.3334 217.6569 1.00275477 12070
Glonass 40
1 19749U 89001A 95192.08990186 -.00000017 00000-0 10000-3 0 5118
2 19749 65.0993 96.9206 0003684 279.8244 80.1458 2.13101348 50568
Glonass 41
1 19750U 89001B 95193.08388563 -.00000012 00000-0 10000-3 0 4250
2 19750 65.1105 96.9376 0006731 237.3710 122.5798 2.13101784 50604
GPS BII-01
1 19802U 89013A 95194.11107527 -.00000014 00000-0 10000-3 0 714
2 19802 55.1999 124.1774 0025126 183.1779 176.8200 2.00550970 46897
```

```
Akebono
1 19822U 89016A 95194.81508104 .00006130 00000-0 29615-3 0 5375
2 19822 75.0923 319.8266 3779410 1.0076 359.6193 7.86681425139916
Meteor 2-18
1 19851U 89018A 95192.49634607 .00000028 00000-0 11847-4 0 4085
2 19851 82.5164 193.5164 0013277 208.6256 151.4241 13.84392114321550
MOP-1
1 19876U 89020B 95188.83392351 .00000058 00000-0 00000+0 0 1247
2 19876 1.2354 74.4438 0002242 36.1540 124.1934 1.00271756 3227
TDRS 3
1 19883U 89021B 95194.54524611 -.00000285 00000-0 00000+0 0 979
2 19883 0.0655 98.2112 0002080 37.7724 310.1829 1.00267334195713
GPS BII-02
1 20061U 89044A 95192.45949072 -.00000062 00000-0 10000-3 0 893
2 20061 54.4164 300.4845 0147656 213.5904 145.4952 2.00563088 44608
Nadezhda 1
1 20103U 89050A 95194.75736620 .00000022 00000-0 81529-5 0 4519
2 20103 82.9580 358.9915 0036298 279.9148 79.7912 13.73854524302077
GPS BII-03
1 20185U 89064A 95194.29305672 -.00000013 00000-0 10000-3 0 1097
2 20185 55.0071 124.7170 0015039 303.6378 56.1820 2.00573064 43215
GMS 4
1 20217U 89070A 95194.31191690 -.00000381 00000-0 10000-3 0 2152
2 20217 1.0890 76.2386 0009827 84.2612 6.3672 1.00134611 22019
INTERCOSMOS 24
1 20261U 89080A 95191.33558102 .00000199 00000-0 51480-4 0 4231
2 20261 82.5937 129.7084 1243132 101.2090 273.0993 12.47257916263162
GPS BII-04
1 20302U 89085A 95193.33087930 .00000036 00000-0 10000-3 0 799
2 20302 53.3487 240.4406 0015045 175.2616 184.8290 2.00556942 41990
Meteor 3-3
1 20305U 89086A 95194.95112787 .00000044 00000-0 10000-3 0 3489
2 20305 82.5412 359.1206 0007567 62.6260 297.5584 13.04428291273979
COBE
1 20322U 89089A 95192.53274332 .00000340 00000-0 24537-3 0 1351
2 20322 98.9598 208.2106 0008214 268.0014 92.0205 14.03454967289004
Kvant-2
1 20335U 89093A 95193.93644356 -.00002529 00000-0 -27545-4 0 3226
2 20335 51.6469 28.8000 0002433 210.9448 149.1718 15.57060444320095
GPS BII-05
1 20361U 89097A 95193.84325157 -.00000039 00000-0 00000+0 0 9506
2 20361 55.7676 66.7727 1076540 49.2357 300.5987 2.00562149 31485
SPOT 2
1 20436U 90005A 95192.54688649 -.00000044 00000-0 00000+0 0 9500
2 20436 98.7360 266.3205 0000967 125.7622 234.3645 14.20023349283357
UO-14
1 20437U 90005B 95192.71392147 -.00000077 00000-0 -13225-4 0 1108
2 20437 98.5673 276.6904 0011252 121.1305 239.0980 14.29890866285250
UO-15
1 20438U 90005C 95192.76398896 -.00000020 00000-0 91368-5 0 9077
```

```
2 20438 98.5603 275.2171 0010594 126.9816 233.2339 14.29209824285154
PACSAT
1 20439U 90005D 95193.73436646 -.00000002 00000-0 16060-4 0 9099
2 20439 98.5782 279.3965 0011744 120.9051 239.3280 14.29945663285411
DO-17
1 20440U 90005E 95193.23057640 -.00000033 00000-0 39442-5 0 9093
2 20440 98.5800 279.3732 0011794 121.2295 239.0047 14.30086489285361
WO-18
1 20441U 90005F 95192.72358043 -.00000003 00000-0 15868-4 0 9135
2 20441 98.5798 278.8449 0012420 122.9985 237.2392 14.30057962285297
LO-19
1 20442U 90005G 95192.25490337 .00000022 00000-0 25224-4 0 9099
2 20442 98.5811 278.7505 0012735 124.1875 236.0507 14.30160956285245
GPS BII-06
1 20452U 90008A 95191.74068067 .00000058 00000-0 10000-3 0 542
2 20452 54.0280 180.7097 0056738 83.1390 277.5015 2.00575822 39942
MOS-1B
1 20478U 90013A 95193.73305808 .00000091 00000-0 10000-3 0 8033
2 20478 98.9944 262.5609 0000792 61.6608 298.4633 13.94928604197098
DEBUT
1 20479U 90013B 95192.25921101 .00000027 00000-0 13116-3 0 9086
2 20479 99.0720 276.5383 0540481 178.2988 182.0113 12.83334603254044
FO-20
1 20480U 90013C 95192.26746211 .00000026 00000-0 12918-3 0 8050
2 20480 99.0727 276.3947 0540306 178.7037 181.5605 12.83231868254031
MOS-1B R/B
1 20491U 90013D 95192.83060422 .00000779 00000-0 15301-2 0 1492
2 20491 99.0465 331.6505 0470521 13.9625 347.3993 13.02995907257400
LACE
1 20496U 90015A 95189.85372133 .00000721 00000-0 29449-4 0 5550
2 20496 43.1031 7.5040 0010728 338.8038 21.2372 15.34641913300908
Nadezhda 2
1 20508U 90017A 95194.80122175 .00000014 00000-0 -75446-6 0 4506
2 20508 82.9549 133.5407 0043187 229.6987 130.0392 13.73495281269304
OKEAN 2
1 20510U 90018A 95194.98946977 .00000137 00000-0 15602-4 0 4188
2 20510 82.5238 180.9338 0019544 353.9574 6.1381 14.78505997289552
GPS BII-07
1 20533U 90025A 95193.15156235 -.00000062 00000-0 10000-3 0 741
2 20533 54.7964 301.0670 0060902 86.8627 273.8426 2.00573669 38743
PegSat
1 20546U 90028A 95193.88327635 .00002715 00000-0 56451-4 0 8219
2 20546 94.1139 158.7978 0063067 237.3920 122.1235 15.43753699292448
HST
1 20580U 90037B 95194.33637435 .00003595 00000-0 34134-3 0 6847
2 20580 28.4697 242.8646 0005702 216.7912 143.2152 14.90909233 87819
MACSAT 2
1 20608U 90043B 95191.91419069 .00000107 00000-0 15614-4 0 1098
2 20608 89.9260 176.2819 0105603 171.1471 189.1645 14.64845185276187
Glonass 44
```

```
1 20619U 90045A 95190.58132719 -.00000054 00000-0 10000-3 0 2038
2 20619 65.2843 335.7063 0024747 210.5313 149.3172 2.13102467 39986
Glonass 45
1 20620U 90045B 95192.57714208 -.00000065 00000-0 10000-3 0 2111
2 20620 65.2874 335.6244 0008567 56.6057 303.4594 2.13102613 40063
Glonass 46
1 20621U 90045C 95193.58217180 -.00000067 00000-0 10000-3 0 8085
2 20621 65.3055 335.6516 0012908 191.3048 168.6566 2.13101698 40083
Kristall
1 20635U 90048A 95193.93644356 -.00002529 00000-0 -27545-4 0 1139
2 20635 51.6469 28.8000 0002433 210.9448 149.1718 15.57060444536839
ROSAT
1 20638U 90049A 95192.96177101 -.00000062 00000-0 14881-4 0 4742
2 20638 52.9904 35.5027 0013778 165.1807 194.9566 15.07208025280859
Meteor 2-19
1 20670U 90057A 95191.19054918 .00000027 00000-0 10494-4 0 9078
2 20670 82.5459 260.2883 0016826 133.2904 226.9664 13.84161646254291
CRRES
1 20712U 90065A 95193.67802574 .00000092 00000-0 30740-3 0 1189
2 20712 18.0464 28.7388 7188908 122.7004 326.3404 2.35436055 35081
GPS BII-08
1 20724U 90068A 95192.97371680 -.00000021 00000-0 10000-3 0 9162
2 20724 54.8358 122.3876 0117956 173.8169 186.3100 2.00565734 34607
Feng Yun1-2
1 20788U 90081A 95194.24137306 -.00000027 00000-0 10000-4 0 4335
2 20788 98.8203 206.3910 0016004 3.4270 356.6939 14.01373932248485
Meteor 2-20
1 20826U 90086A 95193.02072324 .00000029 00000-0 13228-4 0 9191
2 20826 82.5220 195.7928 0014796 40.4934 319.7327 13.83610326241665
GPS BII-09
1 20830U 90088A 95193.51640180 -.00000036 00000-0 10000-3 0 9253
2 20830 55.7236 64.7523 0067345 99.8689 260.9627 2.00572562 35250
GPS BIIA-10
1 20959U 90103A 95193.92829186 -.00000016 00000-0 10000-3 0 8924
2 20959 55.0463 124.3100 0098196 229.8795 129.2392 2.00553353 33859
DMSP B5D2-5
1 20978U 90105A 95194.52400505 .00000059 00000-0 36384-4 0 2625
2 20978 98.6392 262.6704 0080338 91.7710 269.2680 14.32562078241085
Glonass 47
1 21006U 90110A 95195.01570827 -.00000006 00000-0 10000-3 0 7774
2 21006 65.0655 96.1548 0059321 188.5267 171.4174 2.13102856 35784
Glonass 48
1 21007U 90110B 95190.04254738 -.00000024 00000-0 10000-3 0 9056
2 21007 65.0957 96.3960 0032866 177.2240 182.8155 2.13101404 35661
Glonass 49
1 21008U 90110C 95192.40188608 -.00000016 00000-0 00000+0 0 979
2 21008 65.0625 96.2696 0009526 279.3473 174.1912 2.13098496 35704
AO-21
1 21087U 91006A 95192.54441290 .00000094 00000-0 82657-4 0 6126
2 21087 82.9388 214.5442 0036432 76.1434 284.3771 13.74557140223076
```

```
RS-12/13
1 21089U 91007A 95192.16123336 .00000025 00000-0 97014-5 0 8147
2 21089 82.9236 83.0065 0030689 103.7368 256.7211 13.74058618222067
MOP-2
1 21140U 91015B 95193.66571759 -.00000023 00000-0 00000+0 0 746
2 21140 0.3571 89.1746 0002916 28.9224 51.5551 1.00275160 18199
Nadezhda 3
1 21152U 91019A 95194.77089826 .00000010 00000-0 -53087-5 0 1415
2 21152 82.9217 37.1879 0041510 204.9183 154.9969 13.73520609217150
Glonass 50
1 21216U 91025A 95193.15730478 -.00000067 00000-0 10000-3 0 4219
2 21216 65.0283 335.2674 0008032 189.2226 170.7624 2.13102757 33259
Glonass 51
1 21217U 91025B 95193.69548207 -.00000068 00000-0 10000-3 0 8312
2 21217 65.0179 335.2588 0009081 240.3496 119.5478 2.13101484 33255
Glonass 52
1 21218U 91025C 95191.46113344 -.00000060 00000-0 10000-3 0 3054
2 21218 65.0322 335.3165 0032711 80.3111 280.0505 2.13101082 33215
GRO
1 21225U 91027B 95194.73131875 .00001194 00000-0 20657-4 0 2794
2 21225 28.4598 30.1929 0003482 311.9403 48.0942 15.42783316117435
Meteor 3-4
1 21232U 91030A 95195.18339171 .00000050 00000-0 10000-3 0 8184
2 21232 82.5399 252.4507 0012145 291.0726 68.9096 13.16468108202935
NOAA 12
1 21263U 91032A 95194.77502448 .00000146 00000-0 84648-4 0 5579
2 21263 98.5862 218.1600 0012757 174.8925 185.2386 14.22539339216205
OKEAN 3
1 21397U 91039A 95192.13451893 .00000128 00000-0 14979-4 0 1171
2 21397 82.5250 96.7530 0024639 71.1792 289.2091 14.76384154220892
GPS BIIA-11
1 21552U 91047A 95192.19874664 -.00000034 00000-0 10000-6 0 8722
2 21552 56.0160 62.5059 0064413 242.8251 116.5824 2.00565172 29415
ERS-1
1 21574U 91050A 95192.36242342 .00000032 00000-0 28046-4 0 1740
2 21574 98.5501 266.3438 0001452 73.6824 286.4514 14.32245962208517
UO-22
1 21575U 91050B 95192.72692997 -.00000017 00000-0 85410-5 0 6159
2 21575 98.3929 263.4392 0006877 203.0412 157.0468 14.36982052209025
ORBCOMM-X
1 21576U 91050C 95193.17306471 .00000010 00000-0 18139-4 0 7100
2 21576 98.3914 262.2630 0002987 207.3344 152.7689 14.36390427208992
TUBSAT-A
1 21577U 91050D 95193.72468988 -.00000026 00000-0 57236-5 0 6091
2 21577 98.3911 263.3304 0005670 202.4926 157.6013 14.36487921209109
SARA
1 21578U 91050E 95191.74878653 .00000188 00000-0 74819-4 0 8091
2 21578 98.4086 266.9696 0004367 199.2938 160.8086 14.39029571209084
TDRS 4
1 21639U 91054B 95194.57790844 .00000064 00000-0 00000+0 0 9137
```

```
2 21639 0.0472 256.3569 0003842 206.3644 221.9777 1.00270964108489
Meteor 3-5
1 21655U 91056A 95191.46524342 .00000051 00000-0 10000-3 0 8152
2 21655 82.5510 202.5070 0012394 312.1933 47.8136 13.16839617187560
UARS
1 21701U 91063B 95192.98927046 -.00000078 00000-0 14287-4 0 6866
2 21701 56.9846 37.2355 0005577 100.8398 259.3271 14.96404946209286
DMSP B5D2-6
1 21798U 91082A 95194.72036582 .00000110 00000-0 81902-4 0 9107
2 21798 98.9607 206.5287 0013566 106.9884 253.2769 14.13904346186953
Glonass 53
1 21853U 92005A 95193.08075729 -.00000012 00000-0 10000-3 0 225
2 21853 65.0271 95.9061 0007088 196.8135 163.1955 2.13102193 26851
Glonass 54
1 21854U 92005B 95193.37044409 -.00000010 00000-0 00000+0 0 1571
2 21854 65.0101 95.8986 0016660 15.3399 344.7514 2.13103965 26847
Glonass 55
1 21855U 92005C 95194.84235777 -.00000007 00000-0 00000+0 0 1526
2 21855 65.0061 95.8553 0007003 207.0665 152.9472 2.13101998 26868
JERS-1
1 21867U 92007A 95194.21676381 .00000410 00000-0 39039-4 0 6242
2 21867 97.7155 270.7470 0000807 91.4704 268.6609 14.98638592186947
GPS BIIA-12
1 21890U 92009A 95193.16321982 .00000039 00000-0 10000-3 0 6756
2 21890 53.9215 240.6932 0058246 183.6986 176.3383 2.00574165 24804
GPS BIIA-13
1 21930U 92019A 95193.36654915 -.00000078 00000-0 10000-3 0 6483
2 21930 55.6893 2.2366 0039056 174.4042 185.6332 2.00565934 23734
EUVE
1 21987U 92031A 95191.58779094 .00000667 00000-0 21286-4 0 4678
2 21987 28.4330 325.7146 0009709 262.6937 97.2526 15.19340756171514
SAMPEX
1 22012U 92038A 95191.86405313 .00000263 00000-0 20894-4 0 6449
2 22012 81.6731 120.7074 0117128 209.6226 149.8313 14.91393153164204
GPS BIIA-14
1 22014U 92039A 95193.90734688 .00000035 00000-0 10000-3 0 5699
2 22014 54.8555 182.1681 0089743 313.7068 45.5366 2.00571186 15587
Glonass 56
1 22056U 92047A 95193.80332489 -.00000068 00000-0 00000+0 0 604
2 22056 64.8695 335.3643 0003713 262.8019 97.1465 2.13103082 22932
Glonass 57
1 22057U 92047B 95194.56787248 -.00000068 00000-0 00000+0 0 583
2 22057 64.8823 335.3624 0006409 327.8556 32.0967 2.13102566 22928
Glonass 58
1 22058U 92047C 95192.63094044 -.00000066 00000-0 10000-3 0 274
2 22058 64.8776 335.4286 0008504 263.9607 95.9319 2.13102950 22933
TOPEX
1 22076U 92052A 95194.51212906 -.00000061 00000-0 00000+0 0 8917
2 22076 66.0362 198.1904 0007922 263.7457 96.2640 12.80929601136610
KO-23
```

```
1 22077U 92052B 95194.01543459 -.00000037 00000-0 10000-3 0 5064
2 22077 66.0776 181.6865 0006123 193.0705 167.0143 12.86291706137054
S80/T
1 22078U 92052C 95192.07180733 -.00000037 00000-0 10000-3 0 5038
2 22078 66.0807 184.6264 0006154 179.4967 180.6056 12.86576157136888
GPS BIIA-15
1 22108U 92058A 95193.36849220 .00000036 00000-0 00000+0 0 5846
2 22108 54.1632 241.4795 0112127 152.4146 208.2957 2.00568619 20759
FREJA
1 22161U 92064A 95193.96932517 .00000142 00000-0 10000-3 0 5292
2 22161 62.9954 23.4282 0812232 349.0874 9.3701 13.21843400133455
LAGEOS II
1 22195U 92070B 95194.38298766 -.00000009 00000-0 10000-3 0 4162
2 22195 52.6385 206.4324 0138279 288.0557 70.4983 6.47294212 64273
GPS BIIA-16
1 22231U 92079A 95194.04975667 .00000035 00000-0 10000-3 0 5672
2 22231 54.6196 183.2817 0013493 290.0454 69.8057 2.00563965 19345
GPS BIIA-17
1 22275U 92089A 95191.21012284 .00000067 00000-0 10000-3 0 5770
2 22275 54.6386 180.9570 0053491 244.2941 115.1576 2.00562345 18697
TDRS 5
1 22314U 93003B 95189.17695602 -.00000283 00000-0 10000-3 0 5337
2 22314 1.9143 71.7841 0003185 31.0779 200.2547 1.00279802 9125
GPS BIIA-18
1 22446U 93007A 95193.27687668 -.00000063 00000-0 10000-3 0 5747
2 22446 54.4399 301.3130 0082619 356.7831 3.2026 2.00579347 17721
Glonass 59
1 22512U 93010A 95192.14368153 -.00000017 00000-0 10000-3 0 7140
2 22512 65.0252 95.8018 0008081 198.3727 161.6332 2.13102018 18402
Glonass 60
1 22513U 93010B 95193.95996942 -.00000008 00000-0 00000+0 0 7802
2 22513 65.0177 95.7523 0006243 197.6120 162.4116 2.13102739 18630
Glonass 61
1 22514U 93010C 95193.31495774 -.00000011 00000-0 00000+0 0 7781
2 22514 65.0394 95.7555 0010044 188.0744 171.9547 2.13102499 18622
ASTRO-D
1 22521U 93011A 95193.83640712 .00000748 00000-0 47046-4 0 4218
2 22521 31.1055 74.2867 0056504 32.5995 327.8113 15.02321410131230
UFO F1
1 22563U 93015A 95193.44405558 -.00000062 00000-0 00000+0 0 4317
2 22563 25.9523 293.9419 0005376 227.9178 197.6438 0.99248474 12716
GPS BIIA-19
1 22581U 93017A 95187.43456744 -.00000050 00000-0 10000-3 0 4440
2 22581 55.2333 2.0235 0060749 38.2100 322.2427 2.00574646 16668
ARSENE
1 22654U 93031B 95183.17620687 -.00000108 00000-0 10000-3 0 3187
2 22654 2.6139 83.9117 2900118 214.0013 122.9678 1.42203951 6607
GPS BIIA-20
1 22657U 93032A 95192.05243005 -.00000070 00000-0 10000-3 0 4834
2 22657 55.2480 1.6925 0073227 214.4154 145.1222 2.00565201 12082
```

```
RADCAL
1 22698U 93041A 95192.30509825 .00000027 00000-0 63119-5 0 4148
2 22698 89.5433 289.2574 0092743 1.2790 358.8616 14.21348206105860
GPS BIIA-21
1 22700U 93042A 95190.02584197 .00000050 00000-0 10000-3 0 4409
2 22700 54.3187 242.3962 0038345 341.6861 18.2795 2.00564541 14847
NOAA 13
1 22739U 93050A 95194.88093405 .00000004 00000-0 27276-4 0 8446
2 22739 98.9961 143.7557 0010847 96.5182 263.7214 14.10937744 99205
GPS BIIA-22
1 22779U 93054A 95194.09818559 -.00000063 00000-0 10000-3 0 4934
2 22779 54.5450 301.2467 0020334 246.8898 112.9147 2.00572163 13681
Meteor 2-21
1 22782U 93055A 95194.68776666 .00000056 00000-0 37800-4 0 4159
2 22782 82.5487 256.1852 0021079 206.1124 153.8974 13.83035059 94200
UFO F2
1 22787U 93056A 95194.13169825 -.00000074 00000-0 00000+0 0 4819
2 22787 4.4717 325.1195 0003453 138.4876 305.6618 1.00272658 5420
SPOT 3
1 22823U 93061A 95193.71497336 .00000031 00000-0 35107-4 0 4543
2 22823 98.7380 267.5086 0001049 56.4352 303.6916 14.20026107 92919
STELLA
1 22824U 93061B 95192.24213021 -.00000044 00000-0 96669-8 0 4019
2 22824 98.6188 267.9811 0005913 141.7962 218.3638 14.27101557 93165
AO-27
1 22825U 93061C 95195.22278389 .00000000 00000-0 17886-4 0 4043
2 22825 98.6156 271.2530 0008672 136.9044 223.2811 14.27667173 93629
IO-26
1 22826U 93061D 95195.17467022 -.00000000 00000-0 17568-4 0 4039
2 22826 98.6166 271.3081 0009401 139.1182 221.0706 14.27775094 93623
HEATHSAT
1 22827U 93061E 95191.19904837 .00000021 00000-0 25925-4 0 4632
2 22827 98.6142 267.3220 0009585 138.0353 222.1564 14.27898687 93065
ITAMSAT
1 22828U 93061F 95195.23501628 -.00000001 00000-0 17285-4 0 3811
2 22828 98.6122 271.4046 0010603 124.9665 235.2511 14.28105578 61736
PO-28
1 22829U 93061G 95194.75658756 -.00000019 00000-0 97444-5 0 3953
2 22829 98.6132 270.9686 0010161 126.0274 234.1851 14.28084881 93586
KO-25
1 22830U 93061H 95191.73431473 -.00000004 00000-0 15719-4 0 4134
2 22830 98.5130 260.9240 0012288 113.6565 246.5907 14.28093114 93158
GPS BIIA-23
1 22877U 93068A 95192.66310232 -.00000036 00000-0 10000-3 0 2910
2 22877 55.4557 62.8153 0037655 292.9898 68.9414 2.00578536 12547
METEOSAT 6
1 22912U 93073B 95191.42749421 -.00000096 00000-0 00000+0 0 3401
2 22912 0.7615 277.7296 0001154 124.2506 29.7170 1.00260513 4422
HST Array
1 22920U 90037C 95191.42038309 .00002943 00000-0 21032-3 0 3452
```

```
2 22920 28.4729 219.8082 0003597 76.1820 283.9171 15.01363942 87805
Meteor 3-6
1 22969U 94003A 95193.27371926 .00000051 00000-0 10000-3 0 1811
2 22969 82.5588 141.0356 0016862 15.0177 345.1446 13.16730080 70182
TUBSAT-B
1 22970U 94003B 95192.24618176 .00000051 00000-0 10000-3 0 1720
2 22970 82.5586 141.6966 0016962 15.5553 344.6085 13.16825615 70057
GPS BIIA-24
1 23027U 94016A 95193.73342416 -.00000081 00000-0 10000-3 0 2291
2 23027 55.0796 3.6499 0063836 197.0289 162.7664 2.00557777 9877
Glonass 62
1 23043U 94021A 95193.86228336 -.00000068 00000-0 00000+0 0 2248
2 23043 64.7539 335.7711 0006330 178.1146 181.8769 2.13102851 9759
Glonass 63
1 23044U 94021B 95193.74495281 -.00000068 00000-0 00000+0 0 2049
2 23044 64.7503 335.7737 0029467 201.1817 158.6870 2.13103107 9757
Glonass 64
1 23045U 94021C 95194.39051955 -.00000068 00000-0 00000+0 0 2105
2 23045 64.7401 335.7619 0010760 38.2048 321.8625 2.13102490 9762
GOES 8
1 23051U 94022A 95194.45060913 -.00000272 00000-0 10000-3 0 3444
2 23051 0.0812 86.0509 0003538 55.7800 236.6337 1.00276564 11964
MSTI 2
1 23101U 94028A 95194.19118073 .00002762 00000-0 49575-4 0 2138
2 23101 97.0978 27.0566 0012560 137.5806 222.6427 15.50690125 66550
STRV-1A
1 23125U 94034B 95189.25099265 .00001112 00000-0 40004-3 0 1777
2 23125 7.4797 22.5849 7260555 136.8244 310.9850 2.29973437 8131
STRV-1B
1 23126U 94034C 95190.33140533 .00003284 00000-0 99478-3 0 1607
2 23126 7.4912 22.1745 7267903 137.4711 310.1454 2.29629724 8209
Nadezhda 4
1 23179U 94041A 95195.17956610 -.00000001 00000-0 -16182-4 0 1159
2 23179 82.9471 127.8627 0036978 353.2249 6.8389 13.75669293 50188
Glonass 65
1 23203U 94050A 95193.12043544 .00000078 00000-0 00000+0 0 1657
2 23203 64.7958 215.5746 0006678 161.6768 198.4066 2.13101945 7134
Glonass 66
1 23204U 94050B 95193.82374166 .00000068 00000-0 00000+0 0 1730
2 23204 64.7835 215.5885 0015157 339.4227 20.5754 2.13102331 7140
Glonass 67
1 23205U 94050C 95192.76812085 .00000083 00000-0 00000+0 0 1625
2 23205 64.7880 215.6059 0003507 278.3116 81.7156 2.13102137 7126
DMSP B5D2-7
1 23233U 94057A 95194.53306579 .00000071 00000-0 61894-4 0 4124
2 23233 98.8778 252.3834 0013720 64.5710 295.6876 14.12620384 44872
OKEAN 1-7
1 23317U 94066A 95193.99995376 .00000163 00000-0 21191-4 0 792
2 23317 82.5422 11.9551 0027591 103.7274 256.7013 14.73945240 40424
ELEKTRO
```

```
1 23327U 94069A 95185.26997106 -.00000090 00000-0 10000-3 0 808
2 23327 0.7392 261.1625 0005178 183.3043 10.0861 1.00268211 2500
RESURS 1-3
1 23342U 94074A 95195.18944054 .00000011 00000-0 10000-4 0 1799
2 23342 98.0170 254.3682 0001226 77.5250 282.6077 14.69753438 37011
Glonass 68
1 23396U 94076A 95191.20370146 -.00000022 00000-0 00000+0 0 1218
2 23396 64.9518 95.9174 0029216 191.3321 168.6341 2.13102505 4937
Glonass 69
1 23397U 94076B 95193.72548076 -.00000009 00000-0 00000+0 0 1234
2 23397 64.9439 95.8467 0013436 322.9235 37.0252 2.13102293 4986
Glonass 70
1 23398U 94076C 95192.21621944 -.00000017 00000-0 00000+0 0 1323
2 23398 64.9336 95.8758 0003443 300.1766 71.3911 2.13102148 4960
RS-15
1 23439U 94085A 95194.13478576 -.00000039 00000-0 10000-3 0 635
2 23439 64.8171 213.0240 0167860 257.7887 100.4187 11.27524769 22441
NOAA 14
1 23455U 94089A 95194.75445158 .00000015 00000-0 32375-4 0 2449
2 23455 98.9047 137.0625 0010314 115.5621 244.6621 14.11520771 27566
ODERACS II A
1 23471U 95004C 95193.86876542 .00018882 00000-0 83645-4 0 1537
2 23471 51.6501 1.8233 0012275 194.6009 165.4629 15.84375287 25246
ODERACS II B
1 23472U 95004D 95193.67327258 .00064432 12864-4 17137-3 0 1586
2 23472 51.6420 356.6025 0010582 214.9228 145.0684 15.94758193 25297
Glonass 71
1 23511U 95009A 95194.15589100 -.00000068 00000-0 00000+0 0 694
2 23511 64.7624 336.0381 0004849 324.7416 35.2175 2.13102118 2722
Glonass 72
1 23512U 95009B 95193.98006012 -.00000068 00000-0 00000+0 0 725
2 23512 64.7725 336.0547 0013116 195.8791 164.0681 2.13102518 2726
Glonass 73
1 23513U 95009C 95194.03850436 -.00000068 00000-0 00000+0 0 742
2 23513 64.7721 336.0301 0006145 203.7853 156.1766 2.13102639 2723
Soyuz TM-21
1 23519U 95010A 95193.93644356 -.00002529 00000-0 -27545-4 0 1351
2 23519 51.6469 28.8000 0002433 210.9448 149.1718 15.57060444 18849
SFU
1 23521U 95011A 95194.41501383 .00001741 00000-0 52520-4 0 792
2 23521 28.4615 255.6060 0020058 151.9753 208.1921 15.28581485 17953
GMS 5
1 23522U 95011B 95188.75410010 -.00000284 00000-0 00000+0 0 376
2 23522 0.8613 296.6307 0001602 212.0732 188.0097 1.00267898 984
DMSP B5D2-8
1 23533U 95015A 95194.68861150 .00000043 00000-0 46729-4 0 1394
2 23533 98.8319 196.7001 0006496 308.3299 51.7291 14.12693153 15690
Microlab 1
1 23547U 95017C 95191.54734428 .00000132 00000-0 54717-4 0 349
2 23547 69.9792 245.1150 0014430 296.2577 63.7071 14.45375657 14155
```

```
OFEQ 3
1 23549U 95018A 95194.25881340 .00012424 00000-0 34850-3 0 734
2 23549 143.3738 328.2158 0253492 172.6443 187.8077 15.07564217 14905
GFZ-1
1 23558U 86017JE 95193.93218523 .00001920 00000-0 29546-4 0 415
2 23558 51.6526 27.2588 0007172 33.6669 326.4774 15.60057372536858
ERS-2
1 23560U 95021A 95193.78162163 .00000029 00000-0 26961-4 0 938
2 23560 98.5509 267.7555 0001449 98.8331 261.3018 14.32245932 11841
Spektr
1 23579U 95024A 95193.93644356 -.00002529 00000-0 -27545-4 0 733
2 23579 51.6469 28.8000 0002433 210.9448 149.1718 15.57060444 8406
GOES 9
1 23581U 95025A 95190.18241808 -.00000181 00000-0 00000+0 0 391
2 23581 0.5045 269.5337 0000688 305.9959 45.9597 1.00256848 476
Cosmos 2314
1 23601U 95031A 95195.20599764 .00387248 56277-5 15175-3 0 381
2 23601 67.1274 127.1127 0170390 78.2015 283.8227 15.97965956 2483
1995031B
1 23602U 95031B 95185.12604097 .50703518 63517-5 19757-3 0 302
2 23602 67.1297 160.7071 0016154 110.2574 250.1052 16.57018846 872
1995032A
1 23603U 95032A 95195.23202661 .00012136 00000-0 13259-1 0 90
2 23603 82.9078 351.1919 0027720 256.3862 103.4199 13.72221218 1242
1995032B
1 23604U 95032B 95194.71248237 .00000015 00000-0 00000+0 0 93
2 23604 82.8987 351.5696 0023348 243.4621 115.9559 13.73607455 1171
1995033A
1 23605U 95033A 95195.17702546 .00000006 00000-0 10000-4 0 236
2 23605 98.0709 131.4121 0001566 72.2971 287.8440 14.63865242 958
1995033B
1 23606U 95033B 95193.46303257 .00000070 00000-0 21139-4 0 105
2 23606 98.0706 129.7444 0006182 168.5986 191.5377 14.66883086 777
1995033C
1 23607U 95033C 95191.07519335 -.00000052 00000-0 -75981-6 0 60
2 23607 98.0693 127.3951 0007635 178.5384 181.5852 14.67124177 415
1995033D
1 23608U 95033D 95193.52797299 -.00000142 00000-0 -16122-4 0 105
2 23608 98.0374 129.8997 0027183 202.0407 157.9631 14.67875849 756
STS 70
1 23612U 95035A 95195.25042824 .00000506 00000-0 00000+0 0 50
2 23612 28.4667 321.9503 0025431 200.1866 162.8595 15.85013361 111
1995035B
1 23613U 95035B 95195.29737294 .00000027 00000-0 00000+0 0 44
2 23613 0.0676 231.4948 0007482 288.4053 58.6857 1.00255656 07
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
--
Dr TS Kelso Adjunct Professor of Space Operations
```

tkelso@afit.af.mil Air Force Institute of Technology

1530. Re: Argos & Healthsat Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: mcneills@landcare.cri.nz
Message-ID: <mcneills.34.026F887E@landcare.cri.nz>
Source record: 24538

In article <3u2unk$e0@cnj.digex.net> dmart@cnj.digex.net (Dave Marthouse) writes:

>I was listening to a radio interview program last night. The topic
>was an expedition made over the last few months to the arctic. A
>group of 6 people walked across the arctic ocean and north pole
>from Russia to Canada. During the show they said that they were
>able to communicate via the internet using the Argos and Healthsat
>satellites. I assume that Argos and Healthsat are packet store and
>forward birds because only data communications were mentioned. It
>was stated that a "platform" communications system was used. If
>anyone on the list can provide information about Argos or Healthsat
>it would be appreciated. What frequencies are used? Are they leo
>birds. What form of modulation is used? Thanks in advance.

ARGOS is a commercial French teletry store and forward system, carried
on the US NOAA meteorological satellites. It's commonly used in
conjunction with buoys, tide gauges, and the odd whale to send vital
data at a low rate. ARGOS platforms (whales etc) can generally be
located to a precision of roughly 500 metres, sometimes better sometimes
worse. The system is commercial in the sense that you pay for access
by each platform (an activation charge if you like), plus I gather that
you pay for data traffic. While appearing commercial, ARGOS supports
an awful lot of very important science.

And no, ARGOS is not the same as the SARSAT/COSPAS system on NOAA.

As for NOAA - it is a low earth orbit sun-synchronous satellite.

Healthsat is based on the UOSAT bus. More than that and I'm afraid I'm
stuck. Someone can surely answer this one ??

Stephen ZL4HG

1531. Re: 10m + transverter or 2m allmode

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: moritz@ipers1.e-technik.uni-stuttgart.de
Message-ID: <3u58ts$12o2@info4.rus.uni-stuttgart.de>
Source record: 24539

In article <3u3sup$goj@freenet.vcu.edu>, <towen@freenet.vcu.edu> wrote:
>Will a 10m allmode rig and a transverter perform as well as a
>2m allmode rig for 2m & 70cm SSB satellite work?

A good transverter with a good HF rig (both with high intercept)
will beat a VHF all mode hands down. So it depends very much on the
10 metres all mode rig you have in mind.

73, Moritz DL5UH

1532. Re: Keplarian Elements for STS-70

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: garym@alsys.com
Message-ID: <DBq9w5.7tG@thomsoft.com>
Source record: 24540

In <1995Jul14.090112.12846@roper.uwyo.edu> dlarson@UWYO.EDU (D. Larson) writes:
>In article <1995Jul13.145232.5477@inet.d48.lilly.com>, dpbaker@lilly.com (David P. Baker) writes:
>>I'm a shuttle newbie. Where do I get the Keplarian Elements for load into
>>STSORBIT to track the shuttle?

>Try spacelink.msfc.nasa.gov ftp, telnet, www, gopher, whatever.
>it's under hot topics, current mission STS-XX, keplerian elements,

All the places previous mentioned usually have Shuttle elements, but they're not always up to date. The best place (IMHO) is the Shuttle Elements Mailing List, which is also at <http://www.cts.com/browse/garym/elements>.

The reason it's better is that the Shuttle Elements Mailing List has many sources including all known ftp and Web sites with elements and it constantly scans them all for the latest elements and updates the mailing list subscribers and the web page automatically.

--GaryM
--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)

1533. Re: STS-70 launch time?\

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: garym@alsys.com
Message-ID: <DBqA17.7z9@thomsoft.com>
Source record: 24541

In <1995Jul14.092123.12847@roper.uwyo.edu> dlarson@UWYO.EDU (D. Larson) writes:
>Can someone please post or e-mali to me (at dlarson@uwyo.edu)
>the official launch time of STS-70. I have read status reports
>and the first launch report says it launched at 8:41 CDT and the
>second day report says it launched at 8:42 CDT.

Launch: 13-Jul-95 13:41:54.985 UTC

According to the first Keplerian elements sets I received from JSC.
--GaryM

1534. ARLS011 Shuttle Astronauts On-The-Air

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls011.1995@ampr.org>
Source record: 24542
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS011
ARLS011 Shuttle Astronauts On-The-Air

ZCZC AS90
QST de W1AW
Space Bulletin 011 ARLS011
From ARRL Headquarters
Newington, CT July 14, 1995
To all radio amateurs

SB SPACE ARL ARLS011
ARLS011 Shuttle Astronauts On-The-Air

NASA astronauts successfully setup the Amateur Radio equipment aboard the Space Shuttle Discovery on Friday morning. During a test pass, volunteers at the Johnson Space Center Amateur Radio Club station, W5RRR, made contact with the crew as the shuttle orbited over Houston, Texas. Astronaut Don Thomas, KC5FVF said ''Tell everyone hello and thanks to all of the SAREX volunteers, who are doing really great work.'' Don began calling CQ right after the test pass and began working other stations.

The crew may make random contacts with many amateurs throughout this mission, which ends on July 21. The educational nature of these contacts makes this activity exciting for amateurs and school children around the world. To avoid causing interference to other stations, SAREX participants should operate only when the shuttle is within range and the astronauts are on-the-air. Non-participants are asked to be patient, as shuttle passes are short and usually occur only a few times each day.

The following frequencies can be used to make contact with the shuttle astronauts. The crew will use separate receive and transmit frequencies. The worldwide FM voice downlink is 145.55 MHz. Please do not transmit on the shuttle's downlink frequency. The downlink is your receiving frequency. The uplink is your transmitting frequency. The voice uplink frequencies are 144.91, 144.93, 144.95, 144.97, and 144.99 MHz. In Europe, the uplink frequencies are 144.70, 144.75, and 144.80 MHz. Look for Don, KC5FVF and Mission Specialist Nancy Sherlock Curie, KC5OZX. The crew may also operate packet in an ''unattended'' mode, allowing amateurs to make contacts with the shuttle's ROBOT station when the crew is working or sleeping. The FM packet downlink frequency is 145.55 MHz. The packet uplink frequency is 144.49 MHz. The ROBOT call sign is W5RRR-1.

Send reports and QSLs to ARRL EAD, STS-70 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: mission STS-70, date, time in UTC, frequency and mode (FM voice or packet). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Sterling Park Amateur Radio Club in Sterling, VA has generously volunteered to manage the cards for this mission.

Thanks to the SAREX Working Group for the preceding information. The Shuttle Amateur Radio EXperiment is sponsored by AMSAT, ARRL and NASA.

1535. Re: Keplarian Elements for STS-70

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: geneo3192@aol.com
Message-ID: <3u5jrc$k1o@newsbf02.news.aol.com>
Source record: 24543

REF: Subject: Keplarian Elements for STS-70
From: dpbaker@lilly.com (David P. Baker)
Date: Thu, 13 Jul 95 19:48:46 GMT
Message-ID: <1995Jul13.145232.5477@inet.d48.lilly.com>

I'm a shuttle newbie. Where do I get the Keplarian Elements for load into
STSORBIT to track the shuttle?

Easiest way is from AMSAT. Try
http://www.qualcomm.com/amsat/AmsatHome.html They have lots of data.

Gene Owens/W6ORZ
Shrewsbury, PA

1536. Re: more GOES questions...:)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: tfugate@uklans.uky.edu
Message-ID: <3u5n9v$qvt@service1.uky.edu>
Source record: 24544

In article <3u4glf$4qs6@ns3-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:
>
>>It might be a good idea to get Dr Ralph Taggarts Weather sat book revision
>>
>
>DAvid

What type demodulator are you using? I had trouble with JVFAX 5/6/7 all
locking up when I was using the "simplest" opamp demode with the
"hamcom" vco front end. As long as I didn't try to save to disk it was
great. But trun on the save or quick save and it would often lock up.
I am using a A&A demod feeding it to the printer port, and the program
has not locked up for three evenings. I was even able to restore
all the device drivers that I'd had to remove.
If you have a SB card you might check out the SBDSP program, it at
OAK.SIM or what ever. you will also need the APTCAP40.?(you can get
that one from AMSAT's www. I have yet to get the SB setup to work.
I have had the thought that my signal just is not "clean" enough yet.
Terry

1537. Re: 10m + transverter or 2m allmode

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: zlau@mgate.arrl.org
Message-ID: <3u5mol$qlg@mgate.arrl.org>
Source record: 24545

DL5UH moritz@ipers1.e-technik.uni-stuttgart.de wrote:
: In article <3u3sup$goj@freenet.vcu.edu>, <towen@freenet.vcu.edu> wrote:
: >Will a 10m allmode rig and a transverter perform as well as a
: >2m allmode rig for 2m & 70cm SSB satellite work?

: A good transverter with a good HF rig (both with high intercept)
: will beat a VHF all mode hands down. So it depends very much on the
: 10 metres all mode rig you have in mind.

However, if you analyze the entire system including a satellite like
Oscar 13, you find that the 2M rig isn't that critical. Since a mast
mounted preamp is used on receive, the noise figure of the receiver isn't
a big factor. Similarly, the satellite doesn't exactly have a huge
dynamic range, so high dynamic range is only needed in dealing with
terrestial interference, which may not be a problem.

Of course, some people do have big local signals to deal with.
A homebrew single conversion or even direct conversion receiver
will do even better than a transverter/top-of-line amateur
transceiver. Building your own makes interfacing with transverters
much easier.
--
Zack Lau KH6CP/1 2 way QRP WAS
8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

1538. Schenectady, NY SAREX Contact 7/17/95

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: "Stephan M. Anderman" <sanderman@delphi.com>
Message-ID: <RbPiok8.sanderman@delphi.com>
Source record: 24546

FOR IMMEDIATE RELEASE

Seven students from the fourth, fifth, and sixth grade of Schenectady's Pinewood Elementary School will have the opportunity to talk directly to astronauts aboard the space shuttle Discovery. The Schenectady Museum Amateur Radio Association will host SAREX, the Shuttle Amateur Radio EXperiment on Monday. The students won the opportunity to ask questions of the shuttle crew in an essay contest sponsored by the school and the Schenectady Museum & Planetarium. The SAREX payload is flying aboard the STS-70 mission launched Thursday from the Kennedy Space Center in Florida.

The Schenectady Museum Amateur Radio Association has worked for several years to bring this educational program to the Capital District. SMARA Chairman Peter Harvey noted that only selected clubs and educational facilities receive this opportunity. "For this flight, the Museum is one of only eight groups to be offered the chance to bring amateur radio and the space program into the science classroom curriculum." Six of the other participating schools are in the United States and the other in Argentina.

The Shuttle Amateur Radio Experiment is sponsored by the American Radio Relay League, the national fraternal organization of "ham" radio operators of Newington, Connecticut, AMSAT - the Radio Amateur Satellite Corporation, and the National Aeronautics and Space Administration, and supported by the Federal Communications Commission. NASA's intent in making astronauts available for SAREX operations is to involve the largest possible number of people, particularly youngsters, in technology and the US Space Program with the help of amateur radio. SAREX also allows astronauts to converse with their families and other hams around the world during their non-working hours in space.

Many of the astronauts in both the US and Russian space programs are avid ham radio operators. Dr. Norman Thagard, who returned from the Russian MIR space station last week, kept in close contact with students here in the US via amateur radio. This same ham equipment helped facilitate communications for the historic docking of MIR and the shuttle Atlantis late last month.

Amateur radio has been flying aboard shuttle missions since 1983 when Dr. Owen Garriott was the first to talk to earthbound amateurs. Slow scan amateur TV (ATV), computer packet messaging systems, and conventional FM voice communications have all been successfully used by astronaut-hams to enlighten school children.

The seven Pinewood students, two boys and five girls, will
ask their questions on a special ham radio station at the Museum.
Licensed members of the STS-70 crew include Mission Specialists
Donald Thomas, KC5FVF, and Nancy Jane Sherlock-Curie, KC5OZX.
Additional members of the Discovery crew, Commander Tom Henricks,
Pilot Kevin Kregel, and Mission Specialist Mary Ellen Weber may
also be available to answer student questions during the planned 17
minute contact, currently scheduled for Monday at 10:10 AM EDT.

END END END

Stephan M. Anderman, WA3RKB
SMARA Vice Chairman
ARRL Eastern New York Section Public Information Coordinator
ARRL Hudson Division Assistant Director
518.664.6809

sanderman@delphi.com
WA3RKB @ WA2UMX.FN32AW.ENY.NY.USA.NA

1539. Re: 10m + transverter or 2m allmode

Newsgroup: rec.radio.amateur.space
Date: 1995-07-14 00:00:00 UTC
From: jimeagle@execpc.com
Message-ID: <3u4r0q$gdo@homer.alpha.net>
Source record: 24547

In article <3u3sup$goj@freenet.vcu.edu>, towen@freenet.vcu.edu says:
>
>Will a 10m allmode rig and a transverter perform as well as a
>2m allmode rig for 2m & 70cm SSB satellite work?
>
>---
> Todd Owen (KE4UDN) Virginia Commonwealth University
>---

Depends on the 10M rig. Most are not very sensitive (0.3 to 1.0 uV
for SSB), however a down converter from 70cm or 2m will probably have
sufficient gain to overcome this (at least in the 0.3 uV case). The
next problem is trying to receive at the same time one is transmitting
(full duplex operation) which is generally not possible with a 10m
transceiver. For optimum satellite work, especially with the Molniya
orbit (high altitude, polar) satellites, it is almost mandatory to be
able to hear your own downlink to properly adjust power and antenna
aiming on the uplink. Seperate transceivers on 2m and 70cm take care
of this as do the transceivers set up for cross band duplex for satellite
work (the very expensive 70cm/2m base stations by Yaesu, etc.)

Lastly, uplink is generally on the opposite sideband from the downlink,
ie USB up would come down as LSB. The typical 10M rig won't do this.

Recommendation: Use the 10M rig with an up or down converter for either
70cm or 2m and use a seperate multimode 2m or 70cm rig for the remaining
band.

=== jim eagleson WB6JNN/9 jimeagle@execpc.com Wisconsin ===
= How did I end up in Wisconsin? I accepted an offer I shoulda refused! =

1540. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: jmaynard@admin5.hsc.uth.tmc.edu
Message-ID: <radio/personal-intro_805813590@rtfm.mit.edu>
Source record: 24548
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

Posted-By: auto-faq 3.1.1.2
Archive-name: radio/personal-intro
Revision: 2.1 1994/11/01 03:50:23
Posting-Frequency: posted on the 15th of each month

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info, and rec.radio.swap newsgroups, as well as their Internet mailing list counterparts and complements. It is intended to serve as a guide for the new reader on what to find where. Questions and comments may be directed to the author, Jay Maynard, K5ZC, by Internet electronic mail at jmaynard@admin5.hsc.uth.tmc.edu. This message was last changed on 31 October 1994 to add the discussion of non-Usenet mailing lists and streamline most of the history discussion, and to change the moderator information for rec.radio.info.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions were held on the mailing list, and sent to the mailboxes of those who had signed up for it. When the Usenet software was created, and net news as we now know it was developed, a newsgroup was created for hams: net.ham-radio. The mailing list and the newsgroup were gatewayed together, eventually.

Over the years, as the net grew, the volume of discussion became progressively higher. First one by one, and then as part of two reorganizations, what was once one group became many. In the process, developments elsewhere on the net were reflected in the groups as they were created, most notably the change to place all of the ham radio groups in one hierarchy.

The collection of newsgroups continues to grow as more people join the net, and as more topics of discussion gain volume, I expect to see more groups be created as well. This follows what is happening on the rest of the net.

Nearly all of the radio newsgroups have corresponding mailing lists, the notable exception being rec.radio.swap. There are also a few mailing lists that don't have newsgroups.

The Current Groups
==================

It's important to post messages to the group that's appropriate for them, and not to the groups that aren't. The whole idea of having different

newsgroups is so that folks who aren't interested in, say, homebrewing, don't have to wade through messages about homebrewing on the way to read about Field Day. Posting appropriately is just good etiquette.

The rec.radio.amateur.misc group is the catchall. It is what rec.ham-radio was renamed to during the first major reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, was removed on September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there. To answer a frequently asked question: No, there is no mailing list that goes along with this group. If you can't read Usenet news directly, you're out of luck.

The group rec.radio.amateur.policy was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate - it's now legal to order a pizza on the autopatch, if you're not in the pizza business - as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The group rec.radio.cb is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently David Dodell, WB7TPY. The email address for submissions to the group is rec-radio-info@stat.com. Inquires and other administrivia should be directed to rec-radio-info-request@stat.com. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

Mailing Lists

In addition to the mailing lists that mirror the Usenet newsgroups, there also are a few that stand alone. These cover specific areas of ham radio, and discussion is focused on just those areas.

The cq-contest mailing list is for discussions of contesting in ham radio. To join, send email with the word "subscribe" on a line by itself to cq-contest-request@tgv.com.

The DX mailing list covers the finer points of DXing. This one is also joined by mailing "subscribe" on a line by itself, this time to

dx-request@unbc.edu.

There's also a VHF mailing list, for VHF operators of the weak signal persuasion. You can join this one be sending "subscribe vhf" on a line by itself to vhf-request@w6yx.stanford.edu.

All of the following mailing lists are sponsored to the Boston Amateur Radio Club, as well as some others of local interest. Thanks to N1IST for the information.

qrp-l: This is the qrp mailing list, previously maintained by Bruce Walker at Think.com. It is for discussions about the design, construction, and use of qrp (low power) radios and related equipment.
arrl-ve-list: This is a one-way list, run by Bart Jahnke of the ARRL VEC, for announcements to VEs and VE teams.
w1aw-list: ARRL bulletins, news, and information
newsline-list: Redistribution of Amateur Radio Newsline
letter-list: Redistribution of the ARRL Letter
fox-list: Fox hunting and Radio Direction Finding
fieldorg-l: ARRL field organization discussions
ham-tech: Technical discussions and questions about Amateur Radio
arrl-exam-list: amateur radio license examinations scheduled in the US and in some foreign areas.

To sign up or inquire about these lists, send mail to listserv@netcom.com with the following in the body (subject is ignored) of the message.
<listname> is the name of the list to subscribe to.
To subscribe: subscribe <listname>
To unsubscribe: unsubscribe <listname>
For more information: help
To post (to the two-way lists), send your message to <listname>@netcom.com

Please do NOT send subscription requests to the mailing lists themselves; that doesn't work very often, and is very annoying to those on the list. Also, please keep your electronic mail address current with any mailing lists you subscribe to, as dealing with returned email is a nuisance for the person maintaining the mailing list.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while

still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
"All is strange and vague." "Are we dead?" "Or is this Ohio?"
-- Yakko and Dot Warner

1541. Request; CO shuttle freq

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: dlarson@UWYO.EDU
Message-ID: <1995Jul15.091643.12887@roper.uwyo.edu>
Source record: 24549
Cross-posted to: rec.radio.amateur.misc,rec.radio.scanner,rec.radio.amateur.space

I am going to be visiting Colorado during the current shuttle
mission (STS-70) and would like to know of any frequencies
that are NOT short wave that I might hear the shuttle
transmissions rebroadcast on.
The areas I will be in are Ft. Collins, Denver, Colorado Springs
and all points in between (along I25 that is).
Any help would be greatly appreciated.

---Donald Larson---
---Laramie Wyoming---

1542. Re: Request; CO shuttle freq

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: drranu@holly.ACNS.ColoState.EDU
Message-ID: <3u8ug8$2od1@yuma.ACNS.ColoState.EDU>
Source record: 24550
Cross-posted to: rec.radio.amateur.misc,rec.radio.scanner,rec.radio.amateur.space

D. Larson (dlarson@UWYO.EDU) wrote:
: I am going to be visiting Colorado during the current shuttle
: mission (STS-70) and would like to know of any frequencies
: that are NOT short wave that I might hear the shuttle
: transmissions rebroadcast on.
: The areas I will be in are Ft. Collins, Denver, Colorado Springs
: and all points in between (along I25 that is).
: Any help would be greatly appreciated.

Usually the 145.46 and 147.225 rebroadcast Nasa Select.
The 5.46 is in Boulder and the 7.225 is in Denver, you'll
probably catch the 5.46 most of the way from Cheyenne through
Denver and beyond I am sure.

: ---Donald Larson---
: ---Laramie Wyoming---

--
-Emarit 73's drranu@holly.ColoState.EDU

KG0CQ _._ __. _____ _._. __._

Packet: KG0CQ@KF0UW.#NECO.USA.NOAM

1543. Help on a 3D starmap, perhance?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: trinel@crl.com
Message-ID: <3u817d$e09@crl4.crl.com>
Source record: 24551

Hello, my name is Noah Edelson and I am working on a project involving programming a 3d representation of a starmap. However, I need either some sort of coordinate system (xyz) to map them. If anyone has a nice 2d starmap scanned, I would be deeply appreciative if you would contact me.

-Trinel / Noah Edelson [Tau Daemons / Red Sector Development Team]

1544. Re: NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: mklee@actrix.gen.nz
Message-ID: <DBqyvt.Kt@actrix.gen.nz>
Source record: 24552

In article <mcneills.35.0031C963@landcare.cri.nz>, mcneills@landcare.cri.nz (Stephen McNeill) says:

.....[Deleted]....

>And no, the signals do not come out on the 2 metre band - they come out
>somewhat lower (137 ish MHz).

137-ish MHz _IS_ 2-Metre band. This is similar to 31-Metre band for frequencies between 9400 and 9900 KHz in the shortwave frequencies. Get it?

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

1545. DL0ART/am balloon launch #2 planned

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: Oliver Welp <welp@uni-muenster.de>
Message-ID: <3u8kkp$1ifk@majestix.uni-muenster.de>
Source record: 24553

The Nienberge Amateur Radio Group (Germany) plans another "small" balloon launch on sunday, 07-16-95.

We planned to have another emergency beacon with our regular balloon equipment, and it now is ready for a launch. Since we have some (smaller) spare balloons, we plan to do a launch with only this rig: 2 m beacon - no data, no remote control, no gas valve; just launching and parachuting (hopefully) "home" after bursting.

Purpose of launch:
Testing emergency beacon and practicing DF (especially coordinating teams).

Planned ARTOB launch 07-16-95:

Launch: # 2
Launch date 07-16-95
Launch time: 1200 UTC
Launch site: Nienberge near Muenster, Germany, JO32SA
Call sign: DL0ART/am
QRG/mod.: 144.991 MHz F1A beacon: call sign and info in cw, in between freq shift slow (- - - - - - = balloon lifts) or fast (..... = balloon is descending)
Power: 100 mW
Antenna: groundplane
Diameter ballon: ca. 3 ft
Gas: hydrogen
Parachute: ca. 5 ft

Talk back via repeater Muenster, DB0PD (R 84). Reports are welcome, please call DL3YBQ or DL9QJ. Or send QSL via bureau, we now have our own QSL cards for the balloon.

Any suggestion or response is always welcome!
Best 73,
Oliver

[Oliver Welp, DL9QJ, N3NSF
n3nsf@amsat.org
welp@uni-muenster.de
Tel./Fax: +49-2533-7312]

1546. Re: NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: mcneills@landcare.cri.nz
Message-ID: <mcneills.35.0031C963@landcare.cri.nz>
Source record: 24554

In article <3tpisl$qo5@draco.bison.mb.ca> jim@draco.bison.mb.ca (Jim Jaworski) writes:

>: >>On air are NOAA 9 and 14 on 137.625 MHz and NOAA 12 on 137.500 MHz.
>: >>The Meteor 2-21 and 3-5 are also on on 137.850 MHz.
>: >>Met 3-5 will be turned off in a few days' time.
>: >
>: >What do these satelites broadcast?

>: These satellites all broadcast Automatic Picture Transmission (APT) imagery.
>: Nominally, this is 4km by 4km resolution. The imagery can be (tolerably)
>: received with a scanner, but a somewhat wider IF filter (say 40kHz) is
>: recommended. The imagery is broadcast in analogue form.

>: APT provides low data rate wide field (+/- 55 degrees edge to edge)
>: earth viewing transmissions. In the case of the NOAA satellite, APT is
>: derived from two channels of the high resolution AVHRR imagery sensor
>: (AVHRR = Advanced Very High Resolution Radiometer). The transmission
>: format is AM (amplitude modulation) on a 2.4 kHz subcarrier, with two
>: imagery lines per second.

> In plain English, he's trying to tell you that these satellites take
>pictures of clouds using various radar technologies and transmit them on the
>2 metre band.

Am I ??? That's news to me...

For a start, the NOAA satellites are used to image a variety of targets.
Some people like looking at clouds, but the land imaging applications
are just as numerous.

And no, NOAA doesn't use radar technologies (good grief...).

And no, the signals do not come out on the 2 metre band - they come out
somewhat lower (137 ish MHz).

Stephen McNeill ZL4HG
>--
>Winnipeg MB Canada jim@draco.bison.mb.ca
>TEAM OS/2 MIME OK
>VE4JAF
>Proud to be a non-hyphenated Polish Canadian!

1547. Re: STSORBIT Plus FTP Site

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: periquet@usa.net
Message-ID: <3u7kvi$f2h@shiva.usa.net>
Source record: 24555

n2ete@ag.net (Jim Laughlan) wrote:

>In article <DB0snJ.Iqz@actrix.gen.nz>, mklee@actrix.gen.nz (Mun-Kong Lee) says:
>>
>>Someone once asked for the FTP site with STSOrbit Plus. Here is one:
>>
>>ftp: spacelink.msfc.nasa.gov
>>
>>directory: Instructional.Manual/Software/IBM.PC/Satellite.Tracking/STSOrbit.Plus
>>
>>The directory has five files. Get them all.

Please update the current directory for stsorbit.plus. The ftf site is
there. Directory is not. Was it deleted?

tia Fred
AI6C

1548. Re: more GOES questions...:)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3u91g5$17f9@ns4-1.CC.Lehigh.EDU>
Source record: 24556

>What type demodulator are you using? I had trouble with JVFAX 5/6/7 all
>locking up when I was using the "simplest" opamp demode with the
>"hamcom" vco front end. As long as I didn't try to save to disk it was
>great. But trun on the save or quick save and it would often lock up.
>I am using a A&A demod feeding it to the printer port, and the program
>has not locked up for three evenings. I was even able to restore
>all the device drivers that I'd had to remove.
>If you have a SB card you might check out the SBDSP program, it at
>OAK.SIM or what ever. you will also need the APTCAP40.?(you can get
>that one from AMSAT's www. I have yet to get the SB setup to work.
>I have had the thought that my signal just is not "clean" enough yet.
>Terry

well, i am useing the HAMCOMM3 interface <both RX and TX>
i have no problems with self testing SSTV anf HAMfax but it's just when i get
a sat., overhead and start rx....it goes pooff and locks up.

i haven't done to much due to the play lighting i'm doing and the heat over in
the east, but i'll look for this aptcap program, and see what it does

DAvid

|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1549. aptcap40

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3u92qt$1dsg@ns3-1.CC.Lehigh.EDU>
Source record: 24557

ummm.....how do you USE it?

DAvid

```
|-------------------------------------------------------------------------|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
| | | |
| SysOp of NODE 3 BBS | The Flying HAm - BBS | |
| Running OBV/2 Software | TechnoMage - BBS | |
| | N3SQE/SVARC - Ham V |
| HAmmy in IRC | N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet |
```

1550. ARLK032 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-07-15 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk032.1995@ampr.org>
Source record: 24558
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK032
ARLK032 Keplerian data

ZCZC SK57
QST de W1AW
Keplerian Bulletin 32 ARLK032
From ARRL Headquarters
Newington, CT July 15, 1995
To all radio amateurs

SB KEP ARL ARLK032
ARLK032 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-70
1 23612U 95035A 95194.87210206 .00073094 00000-0 23108-3 0 47
2 23612 28.4620 324.7442 0024281 195.1654 164.8261 15.85289896 67
AO-10
1 14129U 83058B 95187.17862798 -.00000256 +00000-0 +10000-3 0 03610
2 14129 026.4655 259.6639 5999261 290.9317 017.0423 02.05882170062726
RS-10/11
1 18129U 87054A 95194.08017614 .00000025 00000-0 10785-4 0 00948
2 18129 082.9246 039.9322 0012928 024.7280 335.4492 13.72354286403522
UO-11
1 14781U 84021B 95193.99497890 .00000110 00000-0 26417-4 0 08274
2 14781 097.7826 195.3204 0013024 097.5949 262.6745 14.69359470607697
RS-12/13
1 21089U 91007A 95194.12732241 .00000043 00000-0 29125-4 0 08233
2 21089 082.9236 081.5488 0030778 098.4186 262.0467 13.74058865222333
AO-13
1 19216U 88051B 95193.28837012 .00000204 00000-0 10000-4 0 00621
2 19216 057.5277 176.6582 7307987 013.5026 358.3973 02.09720144022693
UO-14
1 20437U 90005B 95194.18340580 -.00000097 00000-0 -20887-4 0 01165
2 20437 098.5674 278.1364 0011408 117.2313 243.0041 14.29890514285462
RS-15
1 23439U 94085A 95194.13478576 -.00000039 00000-0 10000-3 0 00893
2 23439 064.8171 213.0240 0167860 257.7887 100.4187 11.27524769022441
```

```
AO-16
1 20439U 90005D 95194.22417490 .00000028 00000-0 27801-4 0 09115
2 20439 098.5782 279.8790 0011644 119.2613 240.9730 14.29946023285482
DO-17
1 20440U 90005E 95194.21009772 -.00000010 00000-0 13058-4 0 09128
2 20440 098.5800 280.3391 0011811 118.2540 241.9841 14.30086732285504
WO-18
1 20441U 90005F 95194.19289208 .00000005 00000-0 18710-4 0 09190
2 20441 098.5799 280.2932 0012473 118.9296 241.3141 14.30058152285504
LO-19
1 20442U 90005G 95194.14388331 .00000015 00000-0 22626-4 0 09162
2 20442 098.5811 280.6127 0012685 118.4984 241.7487 14.30161097285515
FO-20
1 20480U 90013C 95194.13876024 -.00000055 00000-0 -52303-4 0 08141
2 20480 099.0725 277.9172 0540481 174.4679 186.2692 12.83231236254278
AO-21
1 21087U 91006A 95194.07304100 .00000094 00000-0 82657-4 0 06214
2 21087 082.9395 213.4161 0037018 072.4439 288.0755 13.74556832223288
UO-22
1 21575U 91050B 95194.18917073 .00000028 00000-0 23765-4 0 06252
2 21575 098.3924 264.8642 0006844 198.5367 161.5560 14.36982631209233
KO-23
1 22077U 92052B 95194.01543459 -.00000037 00000-0 10000-3 0 05402
2 22077 066.0776 181.6865 0006123 193.0705 167.0143 12.86291706137054
KO-25
1 22828U 93061F 95194.18407469 .00000006 00000-0 19836-4 0 04024
2 22828 098.6123 270.3682 0010531 127.7924 232.4213 14.28105543061583
IO-26
1 22826U 93061D 95194.19356478 -.00000016 00000-0 11306-4 0 04178
2 22826 098.6166 270.3406 0009409 142.0231 218.1622 14.27774881093480
AO-27
1 22825U 93061C 95194.17151973 .00000005 00000-0 19756-4 0 04239
2 22825 098.6157 270.2168 0008636 140.1188 220.0627 14.27667122093479
PO-28
1 22829U 93061G 95194.19607701 -.00000019 00000-0 99822-5 0 04149
2 22829 098.6132 270.4159 0010138 127.5943 232.6148 14.28084854093503
Mir
1 16609U 86017A 95194.19315989 .00001310 00000-0 24493-4 0 01620
2 16609 051.6474 027.5124 0002620 214.0674 146.0150 15.57065428537012

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
July 18, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1551. STS-70 Element_Set (95196.569)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-16 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-70.95196.569@thomsoft.com>
Source record: 24465
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-70
1 23612U 95035A 95196.56939848 .00070695 00000-0 20860-3 0 63
2 23612 28.4632 312.1213 0021330 158.8689 201.2847 15.90588344 335

Satellite: STS-70
Catalog number: 23612
Epoch time: 95196.56939848 = (15-Jul-95 13:39:56.02 UTC)
Element set: 006
Inclination: 28.4632 deg
RA of node: 312.1213 deg Space Shuttle Flight STS-70
Eccentricity: .0021330 Keplerian element set JSC-006
Arg of perigee: 158.8689 deg from NASA flight Day 3 vector
Mean anomaly: 201.2847 deg
Mean motion: 15.90588344 rev/day Gil Carman
Decay rate: 7.0695e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 33

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1552. Schenectady, NY SAREX Contact on WA3NAN

Newsgroup: rec.radio.amateur.space
Date: 1995-07-16 00:00:00 UTC
From: "Stephan M. Anderman" <sanderman@delphi.com>
Message-ID: <5nAC4ZL.sanderman@delphi.com>
Source record: 24466

FOR IMMEDIATE RELEASE Page 1 of 1

NASA and the SAREX Working Group have announced that the scheduled amateur radio contact between astronauts aboard the space shuttle Discovery and students in Schenectady, New York will be carried on WA3NAN by the Goddard Amateur Radio Club in Greenbelt, Maryland. WA3NAN retransmits air-to-ground and ground-to-air audio on the amateur HF bands for all shuttle missions carrying the SAREX (Shuttle Amateur Radio EXperiment) payload.

The scheduled SAREX contact between Discovery mission STS-70 and students at the Schenectady Museum & Planetarium will take place Monday, June 17th, at 1450 UTC (10:50 AM EDT). The Schenectady Museum Amateur Radio Association, WB2CRZ, will also carry the question and answer session locally in the Albany/Schenectady/Troy area on its KA2QYE repeater on 147.375 MHz. The contact will also be carried by tape delay Monday at 8:15 PM on 147.375 and on the Capital District Satellite Net Monday at 9:15 PM on the WA2OQE repeater in Troy on 145.33 MHz.

WA3NAN can be heard on the amateur HF frequencies 3.860, 7.185, 14.295, 21.395, and 28.650 MHz single sideband (SSB) and locally in the Washington, DC area on 147.45 MHz FM. Propagation conditions, time of day, and your location and receiving equipment should guide your choice of the best received signal.

The seven young people who will be asking questions of the shuttle astronauts are all students at Pinewood Elementary School (Mohonasen School District) in Rotterdam, NY. The students were chosen based upon the results of an essay contest, held this past Spring, and sponsored jointly by the school and the museum.

35 entries were received and judged by school faculty and museum staff. The seven students (2 boys and 5 girls) scheduled to participate are third grader Brendan French, fourth graders Lisa Rothman, Shannon Campbell, and Kate Nichols, and fifth graders Kathleen Komarinski, Susie Slater, and Brandon Tuchovsky.

The students participated in a "dress rehearsal" at the museum in June, a few days before the initial launch date was scrubbed by NASA due to the now-famous "woodpecker problem". The contact will take place from the "Space Shuttle Schenectady", a scale mock-up of the NASA shuttles, in the museum rotunda, adjacent to the planetarium theater.

Amateur licensed shuttle crew members aboard Discovery include Mission Specialists Donald Thomas, KC5FVF, and Nancy Jane Sherlock-Curie, KC5OZX, who received her license just a few days before Thursday's launch. Additional members of the Discovery crew are Commander Tom Henricks, Pilot Kevin Kregel, and Mission Specialist Mary Ellen Weber.

Stephan M. Anderman, WA3RKB
SMARA Vice Chairman
ARRL Eastern New York Section Public Information Coordinator
ARRL Hudson Division Assistant Director
518.664.6809

sanderman@delphi.com
WA3RKB @ WA2UMX.FN32AW.ENY.NY.USA.NA

1553. Re: NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-16 00:00:00 UTC
From: mcneills@landcare.cri.nz
Message-ID: <mcneills.36.000F9A4A@landcare.cri.nz>
Source record: 24559

In article <DBqyvt.Kt@actrix.gen.nz> mklee@actrix.gen.nz (Mun-Kong Lee) writes:

>137-ish MHz _IS_ 2-Metre band. This is similar to 31-Metre band
>for frequencies between
>9400 and 9900 KHz in the shortwave frequencies. Get it?

Like the long wave band is close to medium wave ? Oh, I get it...
It makes absolutely no sense at all.

2 metres means either 144-146 or 144-148 MHz, depending on where you live
in the world. The 137 MHz band is a separately recognised band. Attempting
to muddy the distinction puts amateurs in a difficult position.

Get it ???

Stephen

1554. STS-70 QSO report

Newsgroup: rec.radio.amateur.space
Date: 1995-07-16 00:00:00 UTC
From: caver@acca.nmsu.edu
Message-ID: <3uba1c$e98@bubba.NMSU.Edu>
Source record: 24560

Just to show that working the shuttle is not all that hard...

At 14:09 UTC I heard the shuttle switch from packet to voice, so I
switched modes and threw out my call after they called CQ.

I was rewarded with a very nice contact with KC5FVF.

This was accomplished with 25 watts to a 6 dB gain dual band vertical
about 20 ft. up. Very common gear for most hams.
D
Just be persistant, and with a little luck the shuttle can be worked.

73

NW5B
Tom Kindel
Las Cruces, NM

1555. Re: STS-70 QSO report

Newsgroup: rec.radio.amateur.space
Date: 1995-07-16 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3ubno8$bfl@over.mhv.net>
Source record: 24561

Tom Kindel (caver@acca.nmsu.edu) wrote:
: Just to show that working the shuttle is not all that hard...

: At 14:09 UTC I heard the shuttle switch from packet to voice, so I
: switched modes and threw out my call after they called CQ.

: I was rewarded with a very nice contact with KC5FVF.

: This was accomplished with 25 watts to a 6 dB gain dual band vertical
: about 20 ft. up. Very common gear for most hams.
: D
: Just be persistant, and with a little luck the shuttle can be worked.

: 73

: NW5B
: Tom Kindel
: Las Cruces, NM

Tom,
Thanks for the report! Incourageing news for us low powered hams. I have
hit Mir with as little as 4 watts on 2
occasions. Once with the bbs (got a busy message back) and once with
R0MIR but I lost her before my message got back into their tnc. I use a
ringo ranger 2 vertical. Heard Nic 2 or 3 days ago but I didn't realise
it was him until it was too late. I could have talked to him!
What did you talk to Don about?

Tom Randall - KB2SMS

1556. Need QSL Look-up Info

Newsgroup: rec.radio.amateur.space
Date: 1995-07-16 00:00:00 UTC
From: Randy Williams <102051.2045@CompuServe.COM>
Message-ID: <3uc2ur$709$1@mhade.production.compuserve.com>
Source record: 24562

On behalf of KD3UY, I need an address for ES2RJ. This is to QSL
a contact via RS-15, I think. Can any Satellite ops help?

In addition, Are there any web sites for DX callbook information?
Tnx es 73,
Randy N7CJE
Key Largo, FL
102051.2045@compuserve.com

1557. Re: NOAA Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-07-16 00:00:00 UTC
From: jim@draco.bison.mb.ca
Message-ID: <3ucp29$9vo@draco.bison.mb.ca>
Source record: 24563

Stephen McNeill (mcneills@landcare.cri.nz) wrote:
: In article <3tpisl$qo5@draco.bison.mb.ca> jim@draco.bison.mb.ca (Jim Jaworski) writes:

: >: >What do these satelites broadcast?

: > In plain English, he's trying to tell you that these satellites take
: >pictures of clouds using various radar technologies and transmit them on the
: >2 metre band.

: And no, NOAA doesn't use radar technologies (good grief...).

Sorry, I goofed <sigh>, you're right.

: And no, the signals do not come out on the 2 metre band - they come out
: somewhat lower (137 ish MHz).

Close enough, I say.
--
Winnipeg MB Canada jim@draco.bison.mb.ca
TEAM OS/2 MIME OK
VE4JAF
Proud to be a non-hyphenated Polish Canadian!

1558. Re: Any Radio Astro. in P.E.I. ???

Newsgroup: rec.radio.amateur.space
Date: 1995-07-16 00:00:00 UTC
From: mallorys@nbnet.nb.ca
Message-ID: <950716201815.40FE16@news.nbnet.nb.ca>
Source record: 24564

On Thu, 13 Jul 1995 03:52:18 GMT, aa679@ccn.cs.dal.ca writes:
>
>I was wondering, if there is any radio astronomy being done in PEI,CA.
>
>If so, please let me know. There is a possibility of joint jrojects among
>PEI, NB, and NS.
>
>Ralph J. Coppola
>aa679@ccn.cs.dal.ca
>
>Society for Amateur Scientists
>
>Official WWW Site ... http://www.thesphere.com/SAS/
>Secondary Site ..... http://www.ccn.cs.dal.ca/Science/SAS/sas-home.html
>
>
>--
>
Hello, name here is Steve. I was down to St Marys University a couple of
weeks ago to pick up some ham gear for our club. Although I don't remember
the Profs name, I was shown a whole lot of radio astromony gear. Im sure if
you contacted St Marys you could find out more. Its not PEI but is is close.

Stephen
mallorys@nbnet.nb.ca

1559. Re: more GOES questions...:)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-17 00:00:00 UTC
From: tfugate@uklans.uky.edu
Message-ID: <3ue4ad$222@service1.uky.edu>
Source record: 24467

In article <3u91g5$17f9@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU says:
>
>>What type demodulator are you using? I had trouble with JVFAX 5/6/7 all
>>locking up when I was using the "simplest" opamp demode with the
>>"hamcom" vco front end. As long as I didn't try to save to disk it was
>>great. But trun on the save or quick save and it would often lock up.
>>I am using a A&A demod feeding it to the printer port, and the program
>>has not locked up for three evenings. I was even able to restore
>>all the device drivers that I'd had to remove.
>>If you have a SB card you might check out the SBDSP program, it at
>>OAK.SIM or what ever. you will also need the APTCAP40.?(you can get
>>that one from AMSAT's www. I have yet to get the SB setup to work.
>>I have had the thought that my signal just is not "clean" enough yet.
>>Terry
>
>well, i am useing the HAMCOMM3 interface <both RX and TX>
>i have no problems with self testing SSTV anf HAMfax but it's just when i get
>a sat., overhead and start rx....it goes pooff and locks up.
>
>i haven't done to much due to the play lighting i'm doing and the heat over in
>the east, but i'll look for this aptcap program, and see what it does
>
>DAvid
>
While using the Hamcom vco with the simplest converter, JVFAX would lock
up about 1 out of 3 attemps. I removed all unneeded device drivers,
turned break on,. It seemed to work best with a smartdrvice cache set up
to sped up disk write(I think the cache allows the cpu to hand off the
disk write to the dma controller). I was using MSDOS5.0 on a 20Mhz
80386. I recently got a 4086dx2 66MHz mother board. I thought that the
higher speed would help. And it did, a little bit. I tried XMS, EMS,
DOS HI DOS LOW and anyting else that I could think of. While going nuts
with this part of the project, I decide to dig out my old A&A wefax demod
board. Is is designed for NOAA birds and talks via an 8bit a>d..
After nearly giving up on trying to get JVFAX to listen to the A7A via
printer port, I decided to use the printer status bits, they comprise a
5bit input. Bit 7 has to be inverted!. With this setup I get 32 levels
of grey. Even though it was too hot to errect a proper antenna this
weekend, I did get a crossed horizontal dipole array up about 40', with
the preamp at the the top. I simply have the pipoles paired wiht an
opposing set, I also do not have the proper reflecting elemnets in place
yet.
Even so it is about 20 time better that the diskcone. I get pretty good
pictures from about 10 degrees above the horizon, with only a few deep

fades as it goes over head.
I have not been able to get more than sync pulse usnig a 15Kc NB mode.
And I have yet to get the SBDSP/APTCAP40 method to work. I am working
tonight, so I am going to try capturing the a "wav" of the pass. The
signal is now a lot better than before, so that might be the trick.
The method is to use the SB "vrec." to capture a pass, process the "wav"
file wiht the SBDSP and view the result wiht either RG8 or aptcap40.
I will let you know if anyof this works.
Terry

1560. QSO with STS-70

Newsgroup: rec.radio.amateur.space
Date: 1995-07-17 00:00:00 UTC
From: rafaels@zimmer.CSUFresno.EDU
Message-ID: <DBvDz6.4zr@CSUFresno.EDU>
Source record: 24468

A friend of mine (Jules, KK6TR) contacted astrounat Don Thomas (KC5FVF) on Monday, July 17 at about 0850 (PST). He interchanged call signs with the astronaut who acknowledged his contact. As you would expect he (my friend) was very thrilled and he hopes to get a QSL card from the SAREX people. He asked me to ask to this group's community on the procedure to get a QSL card from this shuttle mission. Anyone knows the procedure? Thanks.

Rafael (KE6JSR)

PS: Jules lives in Oakhurst, CA (near Yosemite NP). The total contact lasted less than 20 seconds, he told me.

1561. RE: Software Authors Read...etal

Newsgroup: rec.radio.amateur.space
Date: 1995-07-17 00:00:00 UTC
From: bdonaldson@hns.com
Message-ID: <1995Jul17.183805.4282@hns.com>
Source record: 24469

Bicker Bidker Bicker

Let's talk about space... not cluter it up!

KF6BL
bdonaldson@HNS.COM

1562. QSL For ES2RJ

Newsgroup: rec.radio.amateur.space
Date: 1995-07-17 00:00:00 UTC
From: gcom@bud.peinet.pe.ca
Message-ID: <gcom.55.001CB1CA@bud.peinet.pe.ca>
Source record: 24470

The guy that was looking for the QSL info for ES2RJ here is what I got off a Database.

ES2RJ
ES2RJ POB 4
3006 VIIMSI ESTONIA
UPDATED BY DJ5JH: 13-MAY-1995 1553Z

Hope this helps.

73-Wendell. (VE1BZV)

1563. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-17 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.806023644@dolphin>
Source record: 24471

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
STS 70
1 23612U 95035A 95197.58376157 .00002206 -69712-5 00000+0 0 147
2 23612 28.4640 304.5415 0021409 171.8920 248.7207 15.90500796 480
1995035B
1 23613U 95035B 95195.47704588 .00000030 00000-0 00000+0 0 82
2 23613 0.0399 252.9912 0006649 259.6497 130.8307 1.00274071 09
1995035C
1 23614U 95035C 95195.75047128 .00000933 00000-0 83802-3 0 25
2 23614 26.3082 324.3133 7261610 0.3296 359.7831 2.27673548 23
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1564. Schenectady SAREX Contact a Success!

Newsgroup: rec.radio.amateur.space
Date: 1995-07-17 00:00:00 UTC
From: "Stephan M. Anderman" <sanderman@delphi.com>
Message-ID: <R-IioHa.sanderman@delphi.com>
Source record: 24472

FOR IMMEDIATE RELEASE Page 1 of 1

Seven young people from the Pinewood Elementary School in Rotterdam, New York had an opportunity to ask questions of Pilot Kevin Kregel during a scheduled contact with the space shuttle Discovery. The SAREX (Shuttle Amateur Radio EXperiment) contact between Discovery and the students, gathered in the Schenectady Museum & Planetarium at a scale mock-up of the NASA shuttles, occurred Monday, June 17th, at 1453 UTC (10:53 AM EDT).

Members of the Schenectady Museum Amateur Radio Association, WB2CRZ, facilitated the nine minute contact through amateur radio, telebridge, and NASA satellite communications channels. Hans Van Der Groendaal, ZS5AKV, near Johannesburg, South Africa served as the amateur tracking station for the contact.

Pilot Kregel answered questions from the 5 girls and 2 boys about living and sleeping in microgravity, energy conservation, shuttle experiments, mission objectives, and the safety of space travel. The students were selected based upon the results of an essay contest, held this past Spring, and sponsored jointly by the school and the museum.

The contact was well covered by the news bureaus of the three major TV network affiliates, two regional and one local newspaper, two news radio stations, and the Associated Press. The STS-70 mission, carrying Kregel, Commander Tom Henricks, and Mission Specialists Donald Thomas, KC5FVF, Nancy Jane Sherlock-Curie, KC5OZX, and Mary Ellen Weber is scheduled to land Friday at the Kennedy Space Center in Florida.

Stephan M. Anderman, WA3RKB
SMARA Vice Chairman
ARRL Eastern New York Section Public Information Coordinator
ARRL Hudson Division Assistant Director
518.664.6809

sanderman@delphi.com
WA3RKB @ WA2UMX.FN32AW.ENY.NY.USA.NA

1565. Re: Egg beater antennas for sat work?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-17 00:00:00 UTC
From: bmm1@freenet3.scri.fsu.edu
Message-ID: <3uf2n8$i2k@freenet3.scri.fsu.edu>
Source record: 24473
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.space

Kory:

Your questions are typical of those that everyone asks as they think through setting up a LEO (low earth orbit) ground station. You are asking the right questions, so you are on the right track. I have not tried an eggbeater however I would like to. I would like to find the perfect LEO, non-az-el-rotor ground station combination. Most "omni" antennas are not omni in 3 dimensions but in 2. This is fine for signals coming from the direction of the horison. Of course satellites don't always come from the direction of the horizon. However their signal is most attenuated when they are near the horizon. Therefore an antenna with some more gain on the horizon is benificial. An "omni" antenna with 8 to 11 db gain will do very well for passes of low elevation and the low elevation portions of higher passes but will loose the signal above 40 to 60 degrees even though the satellite has the strongest signal at this point in the pass. I suppose the egbeater will perform better at these higher elevations than a gain omni which will have a gain of less than 1 at high elevations. The eggbeater will perform poorly at low angles. When setting up a ground station an important question is "how much of the horizon can I see?". Here in eastern Tennessee the mountains and high trees can result in much or little very little view of the horizon. In this case an antenna such as a quadrifilar helix with a high gain at higher elevations would bea good choice. In Kansas, or on a mountain top the choice would be different.

As for preamps, a mast mounted preamp is a must for 70cm. At 70cm the attenuation even in very good coax is unacceptable if you have more than a short run of coax. Get a copy of the satellite experimenters handbook and work some of the antenna/preamp/coax equasions. They are tedious but very educational.

I have more ideas on the perfect LEO groundstation however I have been summoned for dinner (and it looks and smells exceptionel) so will write more if coaxed.

Bruce.
N4USH
--
Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

1566. Re: STSORBIT Plus FTP Site

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: mklee@actrix.gen.nz
Message-ID: <DBwyos.KvD@actrix.gen.nz>
Source record: 24474

In article <3u7kvi$f2h@shiva.usa.net>, periquet@usa.net says:
>
>n2ete@ag.net (Jim Laughlan) wrote:
>
>>In article <DB0snJ.Iqz@actrix.gen.nz>, mklee@actrix.gen.nz (Mun-Kong Lee) says:
>>>
>>>Someone once asked for the FTP site with STSOrbit Plus. Here is one:
>>>
>>>ftp: spacelink.msfc.nasa.gov
>>>
>>>directory: Instructional.Manual/Software/IBM.PC/Satellite.Tracking/STSOrbit.Plus
>>>
>>>The directory has five files. Get them all.
>
>Please update the current directory for stsorbit.plus. The ftf site is
>there. Directory is not. Was it deleted?
^^^^^^^^^^^^^^

Don't know. That was the directory I got it from. You may like to browse
down the directory one level and find it there. I can say that, when I
last ftped it, it was in that directory as posted; down one level was the
previous version.

All the best.

Regards

Mun-Kong Lee
mklee@actrix.gen.nz
Raumati Beach
New Zealand

1567. Re: 10m + transverter or 2m allmode

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: edsuom@u.washington.edu
Message-ID: <3ufnrv$3ks@nntp4.u.washington.edu>
Source record: 24475

It might perform better. I used a Microwave Modules transverter with a 10M rig and was very pleased. The UHF all modes tend to be a little sloppy in the low frequency processing.

It's also a lot cheaper.

-Ed NM7T

1568. Re: more GOES questions...:)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3ugidu$3a1b@ns2-1.CC.Lehigh.EDU>
Source record: 24476

>And I have yet to get the SBDSP/APTCAP40 method to work. I am working
>tonight, so I am going to try capturing the a "wav" of the pass. The
>signal is now a lot better than before, so that might be the trick.
>The method is to use the SB "vrec." to capture a pass, process the "wav"
>file wiht the SBDSP and view the result wiht either RG8 or aptcap40.
>I will let you know if anyof this works.
>Terry

well, i hope that yours works, but right now i'm stuck on a ht, jvfax6-7, a
hamcomm demod, and a ground plane....i hope my scanner will work.

now that i think about it....if a get a 1.6GHz to 137MHz converter, will my HT
STILL have enought bandwith?

gezz, might as well, and spend the 600$ on that HF-VHF+ PC card and program
seen in 73 and QST's :)

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1569. ARLK033 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk033.1995@ampr.org>
Source record: 24477
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK033
ARLK033 Keplerian data

ZCZC SK58
QST de W1AW
Keplerian Bulletin 33 ARLK033
From ARRL Headquarters
Newington, CT July 18, 1995
To all radio amateurs

SB KEP ARL ARLK033
ARLK033 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-70
1 23612U 95035A 95198.57687142 .00028696 00000-0 83889-4 0 80
2 23612 28.4632 297.1097 0021964 184.3973 175.6495 15.90940114 655
AO-10
1 14129U 83058B 95197.37742478 .00000064 00000-0 10000-3 0 03622
2 14129 026.4675 258.0080 5997615 293.6945 015.8718 02.05879778062935
RS-10/11
1 18129U 87054A 95198.01722604 .00000052 00000-0 40270-4 0 00905
2 18129 082.9238 037.0203 0012611 015.0419 345.1109 13.72354676404062
UO-11
1 14781U 84021B 95198.01276304 .00000108 00000-0 26062-4 0 08270
2 14781 097.7825 199.1492 0013049 085.6768 274.5930 14.69360614608287
RS-12/13
1 21089U 91007A 95198.13231687 .00000037 00000-0 23252-4 0 08234
2 21089 082.9232 078.5783 0030857 087.4547 273.0141 13.74058985222884
AO-13
1 19216U 88051B 95198.05660969 -.00000089 00000-0 10070-2 0 00634
2 19216 057.5126 175.7607 7309775 013.9399 358.3378 02.09725251022792
UO-14
1 20437U 90005B 95198.17200132 .00000004 00000-0 18268-4 0 01162
2 20437 098.5672 282.0608 0011565 106.1498 254.0962 14.29891465286034
RS-15
1 23439U 94085A 95198.12600805 -.00000039 00000-0 10000-3 0 00810
2 23439 064.8168 206.5696 0167792 257.1614 101.0508 11.27525013022891
```

```
AO-16
1 20439U 90005D 95198.21262020 -.00000018 00000-0 10041-4 0 09371
2 20439 098.5784 283.8095 0011929 108.1422 252.1062 14.29945805286052
DO-17
1 20440U 90005E 95198.19814822 .00000008 00000-0 19923-4 0 09122
2 20440 098.5800 284.2702 0012038 107.2612 252.9894 14.30087143286073
WO-18
1 20441U 90005F 95198.18102277 -.00000002 00000-0 16051-4 0 09210
2 20441 098.5797 284.2233 0012541 107.3705 252.8849 14.30058473286074
LO-19
1 20442U 90005G 95198.20168936 .00000251 00000-0 11364-3 0 09124
2 20442 098.5806 284.6134 0012958 107.3546 252.9046 14.30162432286098
FO-20
1 20480U 90013C 95198.19323625 -.00000032 00000-0 -36033-5 0 08121
2 20480 099.0729 281.2188 0540556 165.3007 196.4540 12.83231247254798
AO-21
1 21087U 91006A 95198.07658178 .00000094 00000-0 82657-4 0 06282
2 21087 082.9394 210.4518 0037172 062.3326 298.1594 13.74557032223831
UO-22
1 21575U 91050B 95198.15811171 .00000015 00000-0 19534-4 0 06205
2 21575 098.3927 268.7353 0006927 185.8182 174.2927 14.36982968209808
KO-23
1 22077U 92052B 95198.05847124 -.00000037 00000-0 10000-3 0 05350
2 22077 066.0771 173.2209 0005894 190.8314 169.2575 12.86291617137574
KO-25
1 22828U 93061F 95198.17765179 .00000022 00000-0 26471-4 0 03998
2 22828 098.6122 274.3064 0010654 116.2848 243.9426 14.28106078062155
IO-26
1 22826U 93061D 95198.18806607 -.00000002 00000-0 16959-4 0 04168
2 22826 098.6163 274.2785 0009356 130.1666 230.0331 14.27775365094053
AO-27
1 22825U 93061C 95198.16632373 -.00000009 00000-0 14064-4 0 04210
2 22825 098.6158 274.1554 0008887 128.3989 231.7996 14.27667206094042
PO-28
1 22829U 93061G 95198.18971263 -.00000019 00000-0 97623-5 0 04225
2 22829 098.6130 274.3542 0010500 116.8217 243.4048 14.28085040094078
Mir
1 16609U 86017A 95198.17233695 .00000555 00000-0 14263-4 0 01821
2 16609 051.6479 007.5883 0002900 241.0953 118.9719 15.57081558537604

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
July 22, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1570. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.806109731@dolphin>
Source record: 24478

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
STS 70
1 23612U 95035A 95199.25000000 .00002209 -69829-5 00000+0 0 203
2 23612 28.4637 292.0856 0020434 197.1500 65.1531 15.90341513 748
1995035B
1 23613U 95035B 95195.47704588 .00000030 00000-0 00000+0 0 82
2 23613 0.0399 252.9912 0006649 259.6497 130.8307 1.00274071 09
1995035C
1 23614U 95035C 95198.38563744 .00000941 00000-0 82676-3 0 32
2 23614 26.3043 323.3287 7261577 1.9738 359.6386 2.27679265 81
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1571. Re: * CURRENT ver of Instant Track? *

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: mts@usa1.com
Message-ID: <3ugr7g$898@ns1.usa1.com>
Source record: 24479

```
In article <D7ArDA.3r4@ancc.com>, bruce@ancc.com says...
>
>What is the current ver of Instant track? I'm still running
ver. 1.0,
>is there a more current one available? Are there upgrades via
any
>BBS's?
>
>Please E-mail, and I'll summarize one post on the newsgroup.
>
>Thanks
>Bruce N9EHA
>
>
>----------------------------------------
>Bruce Warrington
>American National Can Corp.
>Chicago, IL USA
>bruce@ancc.com
>----------------------------------------
>${opinions} == "my_own" && !those.of.ancc
```

1572. Re: QSO with STS-70

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <3uf0gc$d2e@news.onramp.net>
Source record: 24480

>>> He asked me to ask to this group's community
on the procedure to get a QSL card from this shuttle mission. Anyone
knows the procedure?

The Sterling Park Amateur Radio Club, Sterling Park, Virginia has
generously volunteered to distribute the QSL cards for this mission.
Send reception reports and QSLs to ARRL EAD, STS-70 QSL, 225 Main Street,
Newington, CT 06111, USA. Include the following information in your QSL
or report: STS-70, date, time in UTC, frequency and mode (FM voice or
packet). In addition, you must also include a SASE using a large, business
sized envelope if you wish to receive a card.

[Info via Frank H. Bauer, KA3HDO for the SAREX Working Group]

1573. SAREX school contact schedule list wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: au156@yfn.ysu.edu
Message-ID: <3uf9an$kj8@news.ysu.edu>
Source record: 24481

Does anyone have or know how to get an accurate list of SAREX school contact schedules? I just missed the one for NY state on Monday morning posted here.

I'd like to have my little niece and nephew listen in on the kid's questions.

A contact I heard by chance on WA3NAN was pretty fun to listen to.

Hank, N1LTV
h1riley@umassd.edu
au156@yfn.ysu.edu

1574. STS-70 Element_Set (95199.016)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-18 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-70.95199.016@thomsoft.com>
Source record: 24482
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-70
1 23612U 95035A 95199.01604808 .00002208 -69779-5 00000 0 0 194
2 23612 28.4656 293.8254 0020308 192.6474 167.3629 15.90345403 745

Satellite: STS-70
Catalog number: 23612
Epoch time: 95199.01604808 (18 JUL 95 00:23:06.56 UTC)
Element set: GSFC-019
Inclination: 28.4656 deg
RA of node: 293.8254 deg Space Shuttle Flight STS-70
Eccentricity: 0.0020308 Keplerian Elements
Arg of perigee: 192.6474 deg
Mean anomaly: 167.3629 deg
Mean motion: 15.90345403 rev/day Semi-major Axis: 6679.4478 Km
Decay rate: 0.22E-04 rev/day*2 Apogee Alt: 314.62 Km
Epoch rev: 74 Perigee Alt: 287.50 Km

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1575. STS-70 Element_Set (95199.957)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-19 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-70.95199.957@thomsoft.com>
Source record: 24483
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-70
1 23612U 95035A 95199.95722775 .00002210 -69863-5 00000 0 0 222
2 23612 28.4638 286.7964 0020562 204.9060 155.0559 15.90324181 896

Satellite: STS-70
Catalog number: 23612
Epoch time: 95199.95722775 (18 JUL 95 22:58:24.48 UTC)
Element set: GSFC-022
Inclination: 28.4638 deg
RA of node: 286.7964 deg Space Shuttle Flight STS-70
Eccentricity: 0.0020562 Keplerian Elements
Arg of perigee: 204.9060 deg
Mean anomaly: 155.0559 deg
Mean motion: 15.90324181 rev/day Semi-major Axis: 6679.5072 Km
Decay rate: 0.22E-04 rev/day*2 Apogee Alt: 314.85 Km
Epoch rev: 89 Perigee Alt: 287.38 Km

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1576. Packet & meteor scatter

Newsgroup: rec.radio.amateur.space
Date: 1995-07-19 00:00:00 UTC
From: jflowers@unlinfo.unl.edu
Message-ID: <3uhv01$8f6@crcnis3.unl.edu>
Source record: 24484

: We are interested in 2 meter FM packet during the Perseids shower.

We would like to try the MS program that is available on many ham radio CD-roms and elsewhere. If you are interested and live within 500-1000 miles of Lincoln, Nebraska (EN10), or are generally interested in establishing protocols, frequencies, etc. for trying this out, please respond here or e-mail us. Anyone out there who has tried this or similar procedures?

Andy Flowers KB0JSU
John Flowers N0RHL

jflowers@unl.edu

1577. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-20 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.806203568@dolphin>
Source record: 24485

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
STS 70
1 23612U 95035A 95199.91709491 .00002210 -69863-5 00000+0 0 228
2 23612 28.4638 287.0962 0020563 204.4176 285.2888 15.90324187 855
1995035B
1 23613U 95035B 95200.24974179 .00000110 00000-0 00000+0 0 112
2 23613 0.0172 306.2871 0006165 236.2355 32.2306 1.00926488 35
1995035C
1 23614U 95035C 95198.38563744 .00000941 00000-0 82676-3 0 32
2 23614 26.3043 323.3287 7261577 1.9738 359.6386 2.27679265 81
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1578. STS-70 Element_Set (95201.776)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-20 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-70.95201.776@thomsoft.com>
Source record: 24486
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-70
1 23612U 95035A 95201.77653692 .00088056 00000-0 26215-3 0 108
2 23612 28.4623 273.1951 0022124 226.7985 133.0831 15.90836394 1164

Satellite: STS-70
Catalog number: 23612
Epoch time: 95201.77653692 = (20-Jul-95 18:38:12.78 UTC)
Element set: 010
Inclination: 28.4623 deg
RA of node: 273.1951 deg Space Shuttle Flight STS-70
Eccentricity: .0022124 Keplerian element set JSC-010
Arg of perigee: 226.7985 deg from NASA flight Day 8 vector
Mean anomaly: 133.0831 deg
Mean motion: 15.90836394 rev/day Gil Carman
Decay rate: 8.8056e-04 rev/day^2 NASA Johnson Space Center
Epoch rev: 116

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1579. Re: 2m HT for wefax <noaa-meteor>????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-20 00:00:00 UTC
From: danichol@microage-ll.awinc.com
Message-ID: <3ukc1a$spb@kryten.awinc.com>
Source record: 24487

tfugate@uklans.uky.edu (Terry Fugate) wrote:
Ok, I have a pro-2026 converted for home and a basic 'coat-hanger'
with a preamp at the back of the house. I get fairly excellent
pictures (with a few minor dead spots) with my sound board hooked up
and a little program. (.wav converter). I do experience the noisy
signal but only on really bright clouds and reflections of the sun off
of Hudsons Bay. Just about anything will work as long as the signal is
good. Preamp a must!

David Nicholson danichol@microage-ll.awinc.com
Lloydminster, Saskatchewan, Canada

1580. STS-70 Element_Set (95202.717)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-21 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-70.95202.717@thomsoft.com>
Source record: 24488
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-70
1 23612U 95035A 95202.71745370 .00083743 00000-0 25042-3 0 9102
2 23612 28.4615 266.1665 0020761 235.5348 124.3311 15.90877354 1319

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1581. Two-Line Orbital Element Set: Space Shuttle

Newsgroup: rec.radio.amateur.space
Date: 1995-07-21 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.806284929@dolphin>
Source record: 24489

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
STS 70
1 23612U 95035A 95201.27083333 .00002215 -70023-5 00000+0 0 282
2 23612 28.4641 276.9784 0022339 220.5572 117.0979 15.90772755 1065
1995035B
1 23613U 95035B 95200.52923522 .00000109 00000-0 00000+0 0 128
2 23613 0.0165 269.6805 0003099 258.7007 147.9837 1.00974799 33
1995035C
1 23614U 95035C 95200.58153204 .00000071 00000-0 19091-3 0 40
2 23614 26.3019 322.5180 7261585 3.3336 359.4699 2.27679004 138
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1582. Shuttle Frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-07-21 00:00:00 UTC
From: bd703@scn.org
Message-ID: <DC1noK.35K@scn.org>
Source record: 24490

Is there someone who can tell me what the close approach frequency
for Shuttle/Mir docking missions is? I saw a generalized comment
someplace that it is in the 121 Mhz area.

Kerwin
N7JGW

--
---
bd703@scn.org # It's not paranoia if they
really are after you!

1583. Re: Help on a 3D starmap, perhance?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-21 00:00:00 UTC
From: andy@mustang.aero.org
Message-ID: <3uomv1$3e@news2.aero.org>
Source record: 24491

Noah,
Don't know the level of understanding you've got on these things, so no offense if I describe this too basic, ok?

Most starmaps are expressed in a spherical coordinate system. That is, you get two angle measurements to describe its position relative to earth. Some star catalogs include a distance measurement, and most (if not all) include star magnitudes ("brightness"). The two angles you get are right ascension and declination. These are based in a non-rotating earth-fixed (probably more accurate to call it solar system fixed, although the difference is pretty much negligible) coordinate system. This coordinate system is can be thought of as a latitude & longitude system for the stars.

What you can get out of these catalogs is a "celestial sphere", which can be visualized as a 3D planetarium. If you're trying to get a spatial starmap that would show distances away from the earth as well as their angular position, you might have trouble scaring up a fully populated database (I know some detailed subsections of the sky have been done).

You can find varied levels of detail star catalogs at the NASA ftp sites. Check the sci.space FAQs for their addresses.

Hope this helps,

Andy

1584. Colorado Repeater/ATV Balloon Launch.

Newsgroup: rec.radio.amateur.space
Date: 1995-07-21 00:00:00 UTC
From: au156@yfn.ysu.edu
Message-ID: <3up314$k1g@news.ysu.edu>
Source record: 24492

CENTRAL COLORADO REPEATER/ATV BALLOON LAUNCH

The Central States VHF Society is having a meeting in Colorado Springs on the weekend of July 29-30, 1995. In conjunction with this event, EOSS (Edge of Space Sciences) will launch a demonstration flight from the Navsys Corp. in Monument, CO.

Region: Central Colorado

Date/Time: July 30 / 9:00 AM MDT, 15:00 UTC

Location: Monument, Colorado (20 miles north of Colorado Springs)
Site Coordinates: 39.09 North Lat. 104.87 West Long.
ATV: 426.25 MHz AM (1 watt output) NTSC color video
VHF/UHF Repeater: 446.000 MHz FM Input 147.555 MHz FM Output (note change as of 7/16/95)
Beacons: a) 147.555 MHz carrier from repeater always on; (periodic Morse ID audio on FM)
b) 144.34 MHz Morse ID audio on FM (periodic; frequency shared with packet telemetry)
Telemetry: 144.340 MHz FM (1 Watt output) - AX.25, 1200 baud mostly plain english text; includes APRS position data string.
Foxhunters: Pikes Peak FM Association, 448.450 MHz (tentative)

The primary payload will be the Rocky Mountain Radio League's crossband repeater. In addition, tests will be conducted on the GPS system's software. A new cutdown device will also be evaluated this flight. It utilizes a pager receiver, retuned for 2 meters, interfaced with a "basic stamp" microcontroller for decoding DTMF tones.

This balloon will ascend to approximately 95,000 feet where the flight will be terminated by sending a cutdown command to the payload. The duration of the flight should be around 2 hours with the balloon reaching its maximum altitude at approximately 1 hour 30 minutes elapsed time.

Reception of both the 2 meter and ATV signals is possible to 400 miles out and beyond when the balloon gains altitude. All interested

amateurs in Colorado and bordering states with equipment as simple as a 2 meter HT are encouraged to listen in for the steady output of the cross-band repeater on 2 meters with ID, and the ID from the packet system at 144.34 Mhz.

Automatic Position Reporting System (APRS):

EOSS Shuttle controllers now beacon on the packet telemetry frequency with an APRS position string. If you are running APRS you should be able to graphically track the progress of the flight on the "CODENVER.MAP" map file.

The Shuttle is not a TNC-equipped packet station. In order to minimize possible interference with hams in their areas, all APRS users tracking the flight should turn off their APRS position beacons (more packet/APRS info at EOSS web site). Thanks!

For additional launch data and general EOSS information:
http://www.usa.net/~rickvg/eoss.htm
maintained by Rick von Glahn
rickvg@usa.net
---
posted by Hank Riley, N1LTV

Please email news of upcoming balloon launches and post-flight reports for distribution on the Net.

h1riley@umassd.edu
au156@yfn.ysu.edu

1585. FOR SALE-MICROWAWE AMPS & ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-22 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <3upplt$5hi@ixnews4.ix.netcom.com>
Source record: 24493
Cross-posted to: rec.radio.swap,rec.radio.amateur.space,sci.electronics

FOR SALE MICROWAVE AMPS & ACCESSORIES
FOR SALE OR TRADE:
Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 404-925-2779 404-925-2887

1586. Re: FOR SALE-MICROWAWE AMPS & ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-22 00:00:00 UTC
From: n2oto@aol.com
Message-ID: <3ureta$k0r@newsbf02.news.aol.com>
Source record: 24494
Cross-posted to: rec.radio.swap,rec.radio.amateur.space,sci.electronics

>Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.

I'll buy this one for a dollar a watt! ;-)

1587. Two-Line Orbital Element Sets (TLE644)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-22 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.806436408@dolphin>
Source record: 24495

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #644 -
Alouette 1
1 00424U 62049A 95199.21719153 -.00000056 00000-0 -77142-4 0 1218
2 00424 80.4663 254.2590 0023559 172.9164 187.2313 13.67846256636547
ATS 1
1 02608U 66110A 95199.13556171 .00000045 00000-0 10000-3 0 9388
2 02608 14.6402 356.3646 0010461 61.9918 298.1351 1.00335729 21501
ATS 3
1 03029U 67111A 95199.57417666 -.00000129 00000-0 10000-3 0 3794
2 03029 14.8385 3.3780 0008570 265.2023 128.6448 1.00273109101419
Cosmos 398
1 04966U 71016A 95201.78984728 .00181848 90360-5 17491-3 0 9415
2 04966 51.4084 71.0514 0529932 209.0295 148.0148 15.08320288830244
Starlette
1 07646U 75010A 95200.51798810 -.00000114 00000-0 21016-4 0 9015
2 07646 49.8283 25.4243 0206279 208.4422 150.5045 13.82189185 32817
LAGEOS
1 08820U 76039A 95201.16079362 -.00000012 00000-0 10000-3 0 1220
2 08820 109.8533 271.9131 0044070 200.2150 159.6833 6.38664555192564
ETS-2
1 09852U 77014A 95193.33958817 -.00000194 00000-0 10000-3 0 321
2 09852 12.7799 36.8161 0004751 61.1656 298.9378 1.00021583 14234
GOES 2
1 10061U 77048A 95199.42910508 .00000037 00000-0 10000-3 0 5558
2 10061 11.8606 40.9939 0012036 124.5273 108.0330 1.00277137 11085
IUE
1 10637U 78012A 95198.46199978 -.00000306 00000-0 00000+0 0 1496
2 10637 35.2498 88.4908 1331249 47.6572 278.1505 1.00319382 16564
GPS BI-01
1 10684U 78020A 95194.00893805 -.00000033 00000-0 10000-3 0 3701
2 10684 64.8655 33.9323 0061329 162.9766 197.2876 1.98069343112676
```

```
GPS BI-02
1 10893U 78047A 95197.54469360 -.00000031 00000-0 10000-3 0 1738
2 10893 63.3250 271.8086 0223077 14.4023 346.2920 2.01626981126021
GOES 3
1 10953U 78062A 95198.76340704 .00000097 00000-0 10000-3 0 5114
2 10953 10.8391 43.8169 0006033 110.0289 254.5230 1.00328522 15691
SeaSat 1
1 10967U 78064A 95201.65420828 -.00000054 00000-0 26750-4 0 4157
2 10967 107.9993 206.7383 0002834 251.3783 108.7017 14.38044738893644
GPS BI-03
1 11054U 78093A 95200.13457569 -.00000039 00000-0 10000-3 0 3399
2 11054 63.0210 270.0243 0045255 180.3484 179.7424 1.93505331122191
Nimbus 7
1 11080U 78098A 95201.65642196 -.00000082 00000-0 -36019-4 0 5168
2 11080 98.9975 74.2145 0009431 138.2440 221.9439 13.83707656845183
GPS BI-04
1 11141U 78112A 95199.95180297 -.00000053 00000-0 10000-3 0 9882
2 11141 64.8290 35.6387 0049425 28.4880 331.8190 1.92894746 11439
GPS BI-05
1 11690U 80011A 95199.79948070 -.00000051 00000-0 10000-3 0 9276
2 11690 65.1949 35.3665 0143913 196.1450 163.5559 2.00565159127498
GPS BI-06
1 11783U 80032A 95200.13052027 -.00000028 00000-0 10000-3 0 883
2 11783 62.4463 264.8941 0218782 29.4360 331.8490 2.03456687112039
GOES 5
1 12472U 81049A 95198.51628522 -.00000298 00000-0 10000-3 0 8680
2 12472 7.5844 53.6589 0007919 31.9361 328.1316 1.00263957 9737
Cosmos 1383
1 13301U 82066A 95200.01895935 .00000055 00000-0 47080-4 0 4208
2 13301 82.9284 18.8084 0029077 80.1439 280.2993 13.68067101651684
LandSat 4
1 13367U 82072A 95201.88674029 .00000000 00000-0 10000-4 0 7308
2 13367 98.1250 256.9367 0008438 94.7010 265.5133 14.57150026692125
DMSP B5D2-1
1 13736U 82118A 95202.00573943 -.00000009 00000-0 14535-4 0 8080
2 13736 98.6293 30.6794 0007779 281.6990 78.3312 14.25742444653738
IRAS
1 13777U 83004A 95202.07064215 -.00000159 00000-0 -79838-4 0 259
2 13777 98.9642 29.6263 0012912 293.3958 66.5848 13.99229202306923
Cosmos 1447
1 13916U 83021A 95200.70639085 .00000050 00000-0 37240-4 0 5179
2 13916 82.9449 77.7044 0038828 3.7228 356.4200 13.74327763617937
TDRS 1
1 13969U 83026B 95200.39683399 .00000097 00000-0 10000-3 0 4381
2 13969 8.4335 46.9867 0005076 121.5611 112.2273 1.00730095 18033
GOES 6
1 14050U 83041A 95199.32883985 -.00000087 00000-0 10000-3 0 4271
2 14050 6.4008 56.8994 0004547 17.6940 229.0695 1.00326345102839
OSCAR 10
1 14129U 83058B 95197.86322447 .00000009 00000-0 10000-3 0 3636
```

```
2 14129 26.4664 257.9232 5998564 293.7644 15.9473 2.05881650 62943
LandSat 5
1 14780U 84021A 95202.12845011 .00041820 00000-0 92164-2 0 2942
2 14780 98.1086 257.6508 0006168 99.6752 260.5320 14.57184412605574
UoSat 2
1 14781U 84021B 95200.53238881 .00000082 00000-0 21654-4 0 8137
2 14781 97.7827 201.5509 0013057 78.2829 281.9839 14.69361017608650
GPS BI-09
1 15039U 84059A 95197.80201549 -.00000062 00000-0 10000-3 0 3485
2 15039 64.5263 30.0790 0082172 18.2427 342.0901 1.92302093 80960
Cosmos 1574
1 15055U 84062A 95199.18422557 .00000004 00000-0 -12147-4 0 7186
2 15055 82.9575 133.0152 0026501 191.3257 168.7294 13.73623633554997
GPS BI-10
1 15271U 84097A 95200.96759629 -.00000024 00000-0 10000-3 0 287
2 15271 62.1147 265.1974 0155269 353.9302 5.9683 2.00601214 78581
Cosmos 1602
1 15331U 84105A 95198.35641760 .00000087 00000-0 74292-5 0 4040
2 15331 82.5336 67.6453 0020005 344.1562 15.8927 14.84641650583147
NOAA 9
1 15427U 84123A 95202.14169348 .00000062 00000-0 56470-4 0 3348
2 15427 98.9955 261.0678 0014714 169.1081 191.0412 14.13719140546711
GPS BI-11
1 16129U 85093A 95198.43729435 -.00000060 00000-0 10000-3 0 6654
2 16129 65.1874 33.2341 0155460 86.7393 275.0620 1.89368043 15566
Mir
1 16609U 86017A 95202.21573096 .00020029 00000-0 27720-3 0 1542
2 16609 51.6469 347.3494 0002798 260.0480 100.0187 15.57094840538236
SPOT 1
1 16613U 86019A 95200.87515950 .00000090 00000-0 62356-4 0 8339
2 16613 98.6489 271.4950 0001273 45.1017 315.0193 14.20064288173000
Cosmos 1766
1 16881U 86055A 95200.29008426 .00000184 00000-0 19315-4 0 3209
2 16881 82.5198 123.6709 0020106 3.6659 356.4701 14.83641438484335
EGP
1 16908U 86061A 95198.78334681 -.00000083 00000-0 10000-3 0 141
2 16908 50.0124 308.1787 0011434 238.5646 121.4071 12.44412465 74649
NOAA 10
1 16969U 86073A 95202.00353526 .00000062 00000-0 44770-4 0 2422
2 16969 98.5109 203.8649 0011974 245.4231 114.5701 14.24948321459296
MOS-1
1 17527U 87018A 95200.78838250 -.00000043 00000-0 00000+0 0 2308
2 17527 98.9833 265.1041 0000878 174.2834 185.8336 13.94888212428379
GOES 7
1 17561U 87022A 95200.41371053 .00000074 00000-0 10000-3 0 4742
2 17561 2.3893 72.0690 0002216 0.2707 237.5351 1.00276244 13958
Kvant-1
1 17845U 87030A 95201.83066963 .00012977 00000-0 18227-3 0 3220
2 17845 51.6469 349.2791 0002792 264.1249 96.0358 15.57074600538115
DMSP B5D2-3
```

```
1 18123U 87053A 95202.06568449 .00000006 00000-0 25514-4 0 716
2 18123 98.7767 32.6886 0014852 118.5338 241.7329 14.15411372417518
RS-10/11
1 18129U 87054A 95201.58973424 .00000030 00000-0 16644-4 0 870
2 18129 82.9236 34.3781 0012398 5.6508 354.4776 13.72354659404555
Meteor 2-16
1 18312U 87068A 95201.63515868 .00000046 00000-0 28052-4 0 4124
2 18312 82.5546 255.8385 0014113 74.5306 285.7407 13.84060239400179
Meteor 2-17
1 18820U 88005A 95201.37493208 .00000026 00000-0 95829-5 0 6749
2 18820 82.5402 311.8422 0017112 137.0726 223.1769 13.84740731377466
DMSP B5D2-4
1 18822U 88006A 95201.57018405 -.00000017 00000-0 11014-4 0 261
2 18822 98.4032 44.1858 0005109 260.3119 99.7482 14.23159296387263
Glonass 34
1 19163U 88043A 95199.94413425 -.00000046 00000-0 10000-3 0 51
2 19163 65.1423 97.0951 0007713 158.3051 201.7926 2.13102550 55113
Glonass 36
1 19165U 88043C 95199.06205752 -.00000037 00000-0 10000-3 0 4030
2 19165 65.1218 97.0795 0002589 324.4077 35.6160 2.13102078 55718
METEOSAT 3
1 19215U 88051A 95202.17227303 -.00000283 00000-0 10000-3 0 1487
2 19215 2.5811 69.8565 0002311 57.7714 164.2282 1.00264806 13910
AO-13
1 19216U 88051B 95199.96386668 -.00000319 00000-0 72927-3 0 654
2 19216 57.5095 175.4028 7310488 14.0842 358.3342 2.09727499 22831
OKEAN 1
1 19274U 88056A 95201.55555807 .00000209 00000-0 23037-4 0 202
2 19274 82.5128 222.9116 0020751 134.4602 225.8313 14.82358735380099
Meteor 3-2
1 19336U 88064A 95200.04019448 .00000051 00000-0 10000-3 0 4090
2 19336 82.5390 42.8773 0017486 355.4750 4.6203 13.16973867335497
Glonass 39
1 19503U 88085C 95196.74403755 -.00000064 00000-0 10000-3 0 2989
2 19503 65.6853 336.0763 0008028 162.0265 197.9778 2.13101772 53157
NOAA 11
1 19531U 88089A 95202.00842095 -.00000030 00000-0 89626-5 0 1417
2 19531 99.1963 206.2723 0012779 90.7693 269.4942 14.13057563351538
TDRS 2
1 19548U 88091B 95201.74302627 -.00000201 00000-0 10000-3 0 1351
2 19548 1.8159 74.2472 0004009 106.4511 110.1491 1.00272673 12198
Glonass 40
1 19749U 89001A 95198.65961181 -.00000033 00000-0 10000-3 0 5130
2 19749 65.0963 96.6994 0003829 268.7034 91.3093 2.13101366 50706
Glonass 41
1 19750U 89001B 95197.77654070 -.00000023 00000-0 10000-3 0 4262
2 19750 65.1047 96.7818 0007076 239.8597 120.1312 2.13101810 50708
GPS BII-01
1 19802U 89013A 95200.09436938 -.00000026 00000-0 10000-3 0 735
2 19802 55.2013 123.9347 0025502 182.1531 177.8422 2.00551491 47012
```

```
Akebono
1 19822U 89016A 95201.80678834 .00007957 00000-0 37986-3 0 5403
2 19822 75.0880 315.8049 3779437 355.7879 1.8018 7.86789807140469
Meteor 2-18
1 19851U 89018A 95201.02475266 .00000016 00000-0 72983-6 0 4109
2 19851 82.5169 186.7156 0013604 184.0120 176.0931 13.84392483322730
MOP-1
1 19876U 89020B 95195.63701968 .00000040 00000-0 00000+0 0 1253
2 19876 1.2540 74.6431 0001869 30.6805 65.2285 1.00271392 3293
TDRS 3
1 19883U 89021B 95197.49791203 -.00000283 00000-0 00000+0 0 988
2 19883 0.1149 98.3497 0002808 50.0634 283.6882 1.00272135195746
GPS BII-02
1 20061U 89044A 95200.43677046 -.00000090 00000-0 10000-3 0 925
2 20061 54.4142 300.1561 0146862 214.0520 145.0445 2.00563460 44768
Nadezhda 1
1 20103U 89050A 95202.11308589 .00000044 00000-0 31485-4 0 4595
2 20103 82.9582 353.5659 0036264 259.1305 100.5765 13.73855074303085
GPS BII-03
1 20185U 89064A 95200.77434936 -.00000032 00000-0 10000-3 0 1118
2 20185 55.0137 124.4543 0014967 302.9284 56.8887 2.00571886 43340
GMS 4
1 20217U 89070A 95201.52396738 -.00000374 00000-0 10000-3 0 2202
2 20217 1.1030 76.0957 0010012 83.8855 86.7109 1.00130710 22080
INTERCOSMOS 24
1 20261U 89080A 95200.23952310 .00000195 00000-0 50370-4 0 4255
2 20261 82.5955 124.0273 1243141 80.9782 292.9577 12.47260142264277
GPS BII-04
1 20302U 89085A 95200.31109052 .00000012 00000-0 10000-3 0 846
2 20302 53.3700 240.1666 0025179 178.6555 181.4160 2.00558016 42131
Meteor 3-3
1 20305U 89086A 95201.85437980 .00000044 00000-0 10000-3 0 3549
2 20305 82.5458 354.3447 0008487 38.5514 321.6134 13.04417128274876
COBE
1 20322U 89089A 95200.08969907 -.00000022 00000-0 14279-4 0 1373
2 20322 98.9610 215.6553 0008072 242.7333 117.3006 14.03454704290069
Kvant-2
1 20335U 89093A 95201.83066963 .00012977 00000-0 18227-3 0 3296
2 20335 51.6469 349.2791 0002792 264.1249 96.0358 15.57074600321326
GPS BII-05
1 20361U 89097A 95197.90000000 -.00000066 00000-0 00000+0 0 9515
2 20361 55.7790 66.5960 0080644 122.7780 288.3030 2.00564036 31563
SPOT 2
1 20436U 90005A 95202.20004040 -.00000044 00000-0 00000+0 0 9535
2 20436 98.7364 275.8490 0001119 132.7581 227.3690 14.20024154284723
UO-14
1 20437U 90005B 95201.25091582 .00000017 00000-0 23469-4 0 1122
2 20437 98.5671 285.0902 0011697 97.9851 262.2660 14.29891959286471
UO-15
1 20438U 90005C 95201.23504427 -.00000023 00000-0 77905-5 0 9095
```

```
2 20438 98.5624 283.5408 0010773 102.3858 257.8531 14.29210044286361
PACSAT
1 20439U 90005D 95198.21262018 -.00000015 00000-0 10964-4 0 9100
2 20439 98.5785 283.8097 0011921 108.0874 252.1609 14.29945819286059
DO-17
1 20440U 90005E 95202.18619626 .00000029 00000-0 28036-4 0 9119
2 20440 98.5800 288.2012 0012160 95.1915 265.0655 14.30087821286644
WO-18
1 20441U 90005F 95201.18961148 -.00000002 00000-0 16009-4 0 9151
2 20441 98.5796 287.1883 0012616 98.8802 261.3810 14.30058670286501
LO-19
1 20442U 90005G 95201.69979706 .00000016 00000-0 23111-4 0 9119
2 20442 98.5808 288.0631 0012972 96.0892 264.1773 14.30161953286598
GPS BII-06
1 20452U 90008A 95200.21594414 .00000059 00000-0 10000-3 0 568
2 20452 54.0204 180.3728 0056720 82.4719 278.1583 2.00576233 40118
MOS-1B
1 20478U 90013A 95201.69482044 .00000091 00000-0 10000-3 0 8070
2 20478 98.9918 270.3241 0001028 69.1147 291.0125 13.94926762198204
DEBUT
1 20479U 90013B 95200.75732746 -.00000016 00000-0 31481-4 0 9104
2 20479 99.0722 283.4573 0540402 159.0764 203.3394 12.83334877255138
FO-20
1 20480U 90013C 95200.76626394 -.00000034 00000-0 -87446-5 0 8077
2 20480 99.0727 283.3130 0540739 159.4773 202.8989 12.83231203255122
MOS-1B R/B
1 20491U 90013D 95201.89075726 .00000258 00000-0 55293-3 0 1523
2 20491 99.0493 339.2658 0470293 352.7150 6.7275 13.03001637258585
LACE
1 20496U 90015A 95201.37373591 .00000922 00000-0 35254-4 0 5599
2 20496 43.1001 301.8524 0008964 51.2452 308.9205 15.34668965302679
Nadezhda 2
1 20508U 90017A 95202.15889306 .00000012 00000-0 -31522-5 0 4582
2 20508 82.9555 128.1163 0043385 209.0772 150.7997 13.73495301270310
OKEAN 2
1 20510U 90018A 95199.45616975 .00000145 00000-0 16768-4 0 4191
2 20510 82.5236 176.7843 0019065 339.5151 20.5294 14.78506968290210
GPS BII-07
1 20533U 90025A 95199.63307508 -.00000088 00000-0 10000-3 0 750
2 20533 54.8026 300.7972 0045974 80.0002 280.5607 2.00566241 38877
PegSat
1 20546U 90028A 95200.43027302 .00003572 00000-0 73794-4 0 8230
2 20546 94.1133 162.5069 0063989 211.0794 148.6671 15.43793122293451
HST
1 20580U 90037B 95200.42818041 .00000337 00000-0 18209-4 0 6914
2 20580 28.4683 203.7096 0005855 283.7840 76.2096 14.90904326 88723
MACSAT 2
1 20608U 90043B 95199.97509364 .00000104 00000-0 14862-4 0 1114
2 20608 89.9265 176.2118 0106846 143.0285 217.8351 14.64846776277366
Glonass 44
```

```
1 20619U 90045A 95200.43582884 -.00000070 00000-0 10000-3 0 2056
2 20619 65.2814 335.3700 0024899 210.8523 149.0076 2.13102448 40196
Glonass 45
1 20620U 90045B 95198.67756629 -.00000065 00000-0 10000-3 0 2133
2 20620 65.2875 335.4165 0008558 56.3127 303.7609 2.13102504 40192
Glonass 46
1 20621U 90045C 95193.58217180 -.00000067 00000-0 10000-3 0 8085
2 20621 65.3055 335.6516 0012908 191.3048 168.6566 2.13101698 40083
Kristall
1 20635U 90048A 95201.83066963 .00012977 00000-0 18227-3 0 1200
2 20635 51.6469 349.2791 0002792 264.1249 96.0358 15.57074600538060
ROSAT
1 20638U 90049A 95200.85274355 -.00000236 00000-0 34470-5 0 4761
2 20638 52.9915 359.9800 0012975 186.7656 173.3162 15.07210831282046
Meteor 2-19
1 20670U 90057A 95200.15409670 .00000041 00000-0 23301-4 0 9093
2 20670 82.5423 253.1665 0017186 108.7443 251.5571 13.84162082255530
CRRES
1 20712U 90065A 95197.92205517 .00000131 00000-0 27960-3 0 1202
2 20712 18.0531 27.0281 7189899 125.8539 323.4404 2.35438365 35182
GPS BII-08
1 20724U 90068A 95201.94805184 -.00000047 00000-0 10000-3 0 9192
2 20724 54.8466 122.0157 0117975 174.4979 185.6518 2.00565393 34788
Feng Yun1-2
1 20788U 90081A 95202.02371069 .00000208 00000-0 16611-3 0 4396
2 20788 98.8179 213.9105 0016376 343.9513 16.1135 14.01380390249574
Meteor 2-20
1 20826U 90086A 95197.50426837 .00000046 00000-0 28074-4 0 9206
2 20826 82.5223 192.2253 0014573 28.9441 331.2524 13.83610853242280
GPS BII-09
1 20830U 90088A 95200.99477488 -.00000074 00000-0 10000-3 0 9277
2 20830 55.7080 64.4427 0066923 99.5065 261.3040 2.00571916 35406
GPS BIIA-10
1 20959U 90103A 95201.90528197 -.00000043 00000-0 10000-3 0 8964
2 20959 55.0629 124.0130 0098379 230.6042 128.4536 2.00572549 34019
DMSP B5D2-5
1 20978U 90105A 95202.13708376 .00000094 00000-0 48945-4 0 2736
2 20978 98.6387 270.2562 0080404 69.6375 291.3435 14.32564057242175
Glonass 47
1 21006U 90110A 95195.01570827 -.00000006 00000-0 10000-3 0 7774
2 21006 65.0655 96.1548 0059321 188.5267 171.4174 2.13102856 35784
Glonass 48
1 21007U 90110B 95198.95858997 -.00000037 00000-0 10000-3 0 9077
2 21007 65.0974 96.0965 0033381 176.4071 183.6671 2.13101359 35850
Glonass 49
1 21008U 90110C 95198.38035607 -.00000031 00000-0 00000+0 0 1004
2 21008 65.0673 96.0648 0009287 280.0424 79.9013 2.13098716 35834
AO-21
1 21087U 91006A 95199.45962328 .00000094 00000-0 82657-4 0 6145
2 21087 82.9388 209.4263 0037301 58.7419 301.7382 13.74557024224024
```

```
RS-12/13
1 21089U 91007A 95200.17122199 .00000034 00000-0 19837-4 0 8162
2 21089 82.9231 77.0660 0030947 82.1851 278.2816 13.74059007223165
MOP-2
1 21140U 91015B 95199.49341340 -.00000019 00000-0 00000+0 0 783
2 21140 0.3635 87.2764 0002396 26.7679 359.4709 1.00277124 18255
Nadezhda 3
1 21152U 91019A 95202.05558572 .00000057 00000-0 45059-4 0 1492
2 21152 82.9223 31.7908 0041464 184.6613 175.4162 13.73521603218159
Glonass 50
1 21216U 91025A 95198.31916583 -.00000065 00000-0 10000-3 0 4224
2 21216 65.0268 335.0884 0008621 190.9492 169.0421 2.13102754 33366
Glonass 51
1 21217U 91025B 95201.20369832 -.00000073 00000-0 10000-3 0 8343
2 21217 65.0169 334.9990 0009376 239.7828 120.1296 2.13101498 33414
Glonass 52
1 21218U 91025C 95201.78481826 -.00000075 00000-0 10000-3 0 3072
2 21218 65.0364 334.9523 0031871 79.5524 280.8236 2.13102946 33431
GRO
1 21225U 91027B 95201.58796829 .00001965 00000-0 37670-4 0 2814
2 21225 28.4591 342.4524 0003539 52.3731 307.7210 15.42809000118490
Meteor 3-4
1 21232U 91030A 95199.51544527 .00000050 00000-0 10000-3 0 8199
2 21232 82.5385 249.3881 0011978 280.4993 79.4778 13.16467655203505
NOAA 12
1 21263U 91032A 95202.09004337 .00000133 00000-0 78723-4 0 5683
2 21263 98.5856 225.2857 0012789 153.9988 206.1835 14.22542126217248
OKEAN 3
1 21397U 91039A 95200.74188271 .00000130 00000-0 15412-4 0 1193
2 21397 82.5252 88.7862 0024592 45.2263 315.0937 14.76385147222168
GPS BIIA-11
1 21552U 91047A 95200.17601601 -.00000075 00000-0 10000-6 0 8746
2 21552 56.0148 62.1893 0064355 242.7458 116.6513 2.00564247 29571
ERS-1
1 21574U 91050A 95201.79357513 .00000037 00000-0 29950-4 0 1778
2 21574 98.5494 275.6411 0001304 72.9272 287.2049 14.32247223209860
UO-22
1 21575U 91050B 95201.22185407 .00000028 00000-0 23712-4 0 6177
2 21575 98.3880 271.7192 0007216 175.6018 184.5231 14.36983622210248
ORBCOMM-X
1 21576U 91050C 95201.67148225 .00000041 00000-0 28690-4 0 7125
2 21576 98.3911 270.5407 0003268 176.9233 183.1975 14.36391914210210
TUBSAT-A
1 21577U 91050D 95202.22253470 .00000010 00000-0 17791-4 0 6111
2 21577 98.3909 271.6092 0005954 174.4129 185.7123 14.36488967210321
SARA
1 21578U 91050E 95200.23162656 .00000149 00000-0 62160-4 0 8111
2 21578 98.4097 275.2883 0004347 173.5417 186.5824 14.39032510210301
TDRS 4
1 21639U 91054B 95201.60872685 .00000074 00000-0 00000+0 0 9168
```

```
2 21639 0.0346 246.4170 0003704 215.7799 240.5461 1.00273779108551
Meteor 3-5
1 21655U 91056A 95200.05091676 .00000051 00000-0 10000-3 0 8179
2 21655 82.5494 196.4420 0012203 289.8843 70.0958 13.16839730188691
UARS
1 21701U 91063B 95201.87430821 -.00000144 00000-0 84917-5 0 6889
2 21701 56.9843 1.6322 0005230 97.3966 262.7667 14.96407382210612
DMSP B5D2-6
1 21798U 91082A 95201.86767713 .00000071 00000-0 60931-4 0 9204
2 21798 98.9610 213.6925 0013936 88.5837 271.6901 14.13905990187969
Glonass 53
1 21853U 92005A 95201.05819586 -.00000054 00000-0 10000-3 0 258
2 21853 65.0196 95.6356 0007329 196.2710 163.7632 2.13102264 27029
Glonass 54
1 21854U 92005B 95199.00152099 -.00000038 00000-0 00000+0 0 1606
2 21854 65.0133 95.7070 0016275 16.2576 343.8416 2.13103983 26968
Glonass 55
1 21855U 92005C 95199.06569733 -.00000039 00000-0 00000+0 0 1544
2 21855 65.0070 95.7118 0007078 205.7585 154.2535 2.13102014 26957
JERS-1
1 21867U 92007A 95201.36099583 .00000769 00000-0 68943-4 0 6276
2 21867 97.7172 277.8198 0002358 100.1442 260.0053 14.98650454188011
GPS BIIA-12
1 21890U 92009A 95200.14292137 .00000011 00000-0 10000-3 0 6774
2 21890 53.9234 240.4025 0055659 182.2095 177.7902 2.00574019 24942
GPS BIIA-13
1 21930U 92019A 95198.35232004 -.00000088 00000-0 10000-3 0 6502
2 21930 55.6916 2.0393 0038859 174.5175 185.5242 2.00565882 23838
EUVE
1 21987U 92031A 95201.24371521 .00000657 00000-0 20840-4 0 4692
2 21987 28.4332 260.8427 0009655 11.4912 348.5908 15.19349409172982
SAMPEX
1 22012U 92038A 95200.18359762 .00000333 00000-0 26841-4 0 6469
2 22012 81.6724 111.9261 0117923 182.1387 177.9348 14.91396202165447
GPS BIIA-14
1 22014U 92039A 95198.39437489 .00000052 00000-0 10000-3 0 5707
2 22014 54.8543 181.9883 0089771 313.7811 45.4570 2.00571159 15678
Glonass 56
1 22056U 92047A 95201.31147573 -.00000074 00000-0 00000+0 0 650
2 22056 64.8776 335.0813 0003831 264.7156 95.2691 2.13104938 23091
Glonass 57
1 22057U 92047B 95200.19902401 -.00000070 00000-0 00000+0 0 617
2 22057 64.8783 335.1746 0005636 326.2619 33.7058 2.13102426 23048
Glonass 58
1 22058U 92047C 95201.54692324 -.00000075 00000-0 10000-3 0 292
2 22058 64.8840 335.1229 0007263 279.0590 80.8601 2.13102949 23126
TOPEX
1 22076U 92052A 95199.19668333 -.00000061 00000-0 00000+0 0 8926
2 22076 66.0358 188.4599 0008095 266.1622 93.8467 12.80929949137212
KO-23
```

```
1 22077U 92052B 95198.05847124 -.00000037 00000-0 10000-3 0 5079
2 22077 66.0771 173.2209 0005894 190.8314 169.2575 12.86291617137574
S80/T
1 22078U 92052C 95201.01116183 -.00000037 00000-0 10000-3 0 5053
2 22078 66.0802 165.8993 0005388 175.5523 184.5543 12.86576036138035
GPS BIIA-15
1 22108U 92058A 95200.34828830 .00000012 00000-0 00000+0 0 5885
2 22108 54.1416 241.1881 0114014 152.3160 208.3602 2.00569839 20892
FREJA
1 22161U 92064A 95201.83702183 .00000024 00000-0 53660-4 0 5314
2 22161 62.9946 3.4989 0812681 349.7586 8.7691 13.21841185134497
LAGEOS II
1 22195U 92070B 95198.39895899 -.00000009 00000-0 10000-3 0 4178
2 22195 52.6386 203.8930 0138218 289.7764 68.7940 6.47294272 64537
GPS BIIA-16
1 22231U 92079A 95201.02986287 .00000064 00000-0 10000-3 0 5705
2 22231 54.6262 183.0105 0020367 287.8322 71.9240 2.00563640 19486
GPS BIIA-17
1 22275U 92089A 95201.18172006 .00000061 00000-0 10000-3 0 5850
2 22275 54.6288 180.5562 0051254 248.0020 111.4364 2.00559973 18899
TDRS 5
1 22314U 93003B 95201.05751447 -.00000291 00000-0 10000-3 0 5383
2 22314 1.9428 71.7411 0001057 83.8618 116.5585 1.00277786 9240
GPS BIIA-18
1 22446U 93007A 95200.25646286 -.00000091 00000-0 10000-3 0 5768
2 22446 54.4316 301.0240 0083074 357.3442 2.6454 2.00579074 17860
Glonass 59
1 22512U 93010A 95198.71338033 -.00000035 00000-0 10000-3 0 7165
2 22512 65.0275 95.5796 0007857 195.3158 164.7271 2.13102018 18543
Glonass 60
1 22513U 93010B 95199.12183231 -.00000039 00000-0 00000+0 0 7844
2 22513 65.0193 95.5721 0006252 195.8614 164.1684 2.13102634 18749
Glonass 61
1 22514U 93010C 95198.94606607 -.00000037 00000-0 00000+0 0 7816
2 22514 65.0396 95.5672 0010304 187.4001 172.6346 2.13102723 18748
ASTRO-D
1 22521U 93011A 95201.67656665 .00001127 00000-0 74056-4 0 4239
2 22521 31.1038 24.3366 0056283 110.1580 250.5123 15.02334674132418
UFO F1
1 22563U 93015A 95199.43086635 .00000026 00000-0 00000+0 0 4345
2 22563 25.9381 293.8570 0005465 231.2752 173.4112 0.99247598 12773
GPS BIIA-19
1 22581U 93017A 95195.90995566 -.00000090 00000-0 10000-3 0 4456
2 22581 55.2255 1.6875 0058519 37.1594 323.2403 2.00574709 16837
ARSENE
1 22654U 93031B 95197.94163915 -.00000150 00000-0 10000-3 0 3203
2 22654 2.6251 83.4372 2896076 215.1087 121.6465 1.42202940 6810
GPS BIIA-20
1 22657U 93032A 95199.53114912 -.00000086 00000-0 10000-3 0 4857
2 22657 55.2756 1.3892 0068217 206.2797 153.3711 2.00564112 12234
```

```
RADCAL
1 22698U 93041A 95200.75307016 .00000028 00000-0 68545-5 0 4166
2 22698 89.5444 288.8215 0091926 334.0102 25.6493 14.21348500107068
GPS BIIA-21
1 22700U 93042A 95198.50153735 -.00000002 00000-0 10000-3 0 4431
2 22700 54.3192 242.0501 0038419 342.1389 17.7936 2.00565125 15012
NOAA 13
1 22739U 93050A 95201.83052046 .00000061 00000-0 59284-4 0 8498
2 22739 98.9966 150.7150 0010839 77.9004 282.3401 14.10938219100187
GPS BIIA-22
1 22779U 93054A 95201.57657788 -.00000091 00000-0 10000-3 0 4954
2 22779 54.5572 300.9546 0020399 247.0798 112.7382 2.00572399 13830
Meteor 2-21
1 22782U 93055A 95199.17319359 .00000072 00000-0 52078-4 0 4163
2 22782 82.5486 252.6309 0021263 193.0010 167.0590 13.83035601 94822
UFO F2
1 22787U 93056A 95201.16536458 -.00000068 00000-0 00000+0 0 4881
2 22787 4.4563 325.1548 0003606 145.0153 318.2070 1.00274059 5499
SPOT 3
1 22823U 93061A 95201.74751629 -.00000017 00000-0 12512-4 0 4566
2 22823 98.7383 275.4404 0000905 53.2304 306.8953 14.20026396 94059
STELLA
1 22824U 93061B 95201.21646523 -.00000042 00000-0 68639-6 0 4038
2 22824 98.6142 276.8165 0007075 117.6221 242.5656 14.27102229 94445
AO-27
1 22825U 93061C 95200.19876513 .00000054 00000-0 39751-4 0 4054
2 22825 98.6157 276.1590 0008886 121.9376 238.2639 14.27668032 94337
IO-26
1 22826U 93061D 95199.23924997 .00000028 00000-0 29115-4 0 4040
2 22826 98.6162 275.3149 0009282 126.3653 233.8377 14.27775761 94207
HEATHSAT
1 22827U 93061E 95200.16837943 -.00000021 00000-0 90252-5 0 4652
2 22827 98.6140 276.1656 0009743 112.0796 248.1428 14.27899243 94341
ITAMSAT
1 22828U 93061F 95200.20947186 -.00000003 00000-0 16420-4 0 3821
2 22828 98.6123 276.3106 0010797 110.2790 249.9551 14.28106004 62449
PO-28
1 22829U 93061G 95199.17060470 .00000006 00000-0 20113-4 0 3968
2 22829 98.6130 275.3216 0010574 114.1130 246.1161 14.28085346 94214
KO-25
1 22830U 93061H 95200.70243843 -.00000011 00000-0 12841-4 0 4157
2 22830 98.5124 269.6653 0012528 89.4184 270.8431 14.28093461 94438
GPS BIIA-23
1 22877U 93068A 95195.65124431 -.00000050 00000-0 10000-3 0 2923
2 22877 55.4517 62.6961 0037346 294.4407 65.2090 2.00577787 12602
METEOSAT 6
1 22912U 93073B 95200.78599537 -.00000100 00000-0 00000+0 0 3431
2 22912 0.7449 277.5416 0001035 129.4335 162.6129 1.00260526 4519
HST Array
1 22920U 90037C 95201.19207806 .00003295 00000-0 23658-3 0 3477
```

```
2 22920 28.4682 155.9575 0004403 162.4248 197.6494 15.01418646 89274
Meteor 3-6
1 22969U 94003A 95201.32820249 .00000051 00000-0 10000-3 0 1836
2 22969 82.5587 135.3543 0016514 355.6106 4.4870 13.16729915 71243
TUBSAT-B
1 22970U 94003B 95200.83193979 .00000051 00000-0 10000-3 0 1746
2 22970 82.5632 135.6432 0016326 354.7217 5.3694 13.16825773 71186
GPS BIIA-24
1 23027U 94016A 95197.72217432 -.00000090 00000-0 10000-3 0 2316
2 23027 55.0850 3.4842 0064238 197.1261 162.6671 2.00558042 9958
Glonass 62
1 23043U 94021A 95199.02415741 -.00000067 00000-0 00000+0 0 2261
2 23043 64.7511 335.5923 0006335 178.6340 181.3709 2.13102722 9866
Glonass 63
1 23044U 94021B 95198.90682188 -.00000067 00000-0 00000+0 0 2067
2 23044 64.7470 335.5945 0029587 201.2901 158.5846 2.13102809 9869
Glonass 64
1 23045U 94021C 95199.08312808 -.00000067 00000-0 00000+0 0 2124
2 23045 64.7382 335.5984 0010596 37.9124 322.1640 2.13102613 9860
GOES 8
1 23051U 94022A 95202.16475191 -.00000263 00000-0 10000-3 0 3462
2 23051 0.0971 85.9475 0003537 56.0327 141.2725 1.00274082 12031
MSTI 2
1 23101U 94028A 95200.19240295 .00004178 00000-0 74015-4 0 2150
2 23101 97.0993 32.9761 0013325 115.0805 245.1833 15.50734540 67483
STRV-1A
1 23125U 94034B 95197.49929086 .00001162 00000-0 46871-3 0 1802
2 23125 7.4816 19.2461 7262370 143.5128 300.0365 2.29996265 8325
STRV-1B
1 23126U 94034C 95200.33043351 .00001604 00000-0 53595-3 0 1625
2 23126 7.4959 18.1279 7265935 145.6386 296.0334 2.29647787 8432
Nadezhda 4
1 23179U 94041A 95199.17986092 -.00000029 00000-0 -45089-4 0 1169
2 23179 82.9471 124.8985 0036486 342.2132 17.7745 13.75668878 50731
Glonass 65
1 23203U 94050A 95201.09783308 .00000081 00000-0 00000+0 0 1713
2 23203 64.7923 215.3022 0008191 167.3006 192.7799 2.13102040 7307
Glonass 66
1 23204U 94050B 95198.98557887 .00000058 00000-0 00000+0 0 1767
2 23204 64.7823 215.4105 0015149 339.3298 20.6488 2.13101972 7256
Glonass 67
1 23205U 94050C 95199.33772449 .00000061 00000-0 00000+0 0 1653
2 23205 64.7899 215.3862 0003479 278.8889 81.1126 2.13102185 7264
DMSP B5D2-7
1 23233U 94057A 95202.11184935 .00000110 00000-0 83385-4 0 4211
2 23233 98.8775 259.8923 0013695 44.8663 315.3611 14.12622630 45941
OKEAN 1-7
1 23317U 94066A 95198.48047618 .00000119 00000-0 14531-4 0 801
2 23317 82.5420 7.8317 0027941 89.9897 270.4494 14.73946102 41088
ELEKTRO
```

```
1 23327U 94069A 95185.26997106 -.00000090 00000-0 10000-3 0 808
2 23327 0.7392 261.1625 0005178 183.3043 10.0861 1.00268211 2500
RESURS 1-3
1 23342U 94074A 95201.24852299 .00002820 00000-0 48089-3 0 1992
2 23342 98.0125 260.3164 0001244 85.1789 274.9559 14.69757915 37906
Glonass 68
1 23396U 94076A 95199.18112635 -.00000040 00000-0 00000+0 0 1254
2 23396 64.9566 95.6482 0029437 190.7120 169.2733 2.13102630 5105
Glonass 69
1 23397U 94076B 95201.23365237 -.00000054 00000-0 00000+0 0 1270
2 23397 64.9421 95.5909 0013365 323.3952 36.5590 2.13102022 5145
Glonass 70
1 23398U 94076C 95201.11708732 -.00000054 00000-0 00000+0 0 1381
2 23398 64.9348 95.5750 0003154 296.3437 63.6660 2.13102278 5153
RS-15
1 23439U 94085A 95198.48078363 -.00000039 00000-0 10000-3 0 648
2 23439 64.8166 205.9955 0167814 257.0924 101.1212 11.27525000 22932
NOAA 14
1 23455U 94089A 95202.05559998 .00000006 00000-0 27543-4 0 2542
2 23455 98.9052 144.3071 0010346 95.4138 264.8216 14.11522082 28597
ODERACS II A
1 23471U 95004C 95200.55392741 .00026238 00000-0 11316-3 0 1568
2 23471 51.6469 326.9671 0012237 222.3214 137.6853 15.84689550 26300
ODERACS II B
1 23472U 95004D 95201.50346092 .00079395 13755-4 19631-3 0 1669
2 23472 51.6424 315.1214 0010451 265.6301 94.3237 15.95926085 26548
Glonass 71
1 23511U 95009A 95198.84850438 -.00000066 00000-0 00000+0 0 710
2 23511 64.7582 335.8704 0004819 324.9945 34.9756 2.13102327 2821
Glonass 72
1 23512U 95009B 95198.67266527 -.00000066 00000-0 00000+0 0 767
2 23512 64.7640 335.8928 0013378 196.5206 163.4330 2.13102606 2824
Glonass 73
1 23513U 95009C 95201.07741965 -.00000073 00000-0 00000+0 0 770
2 23513 64.7722 335.7853 0006268 204.9937 154.9788 2.13102570 2874
Soyuz TM-21
1 23519U 95010A 95201.83066963 .00012977 00000-0 18227-3 0 1422
2 23519 51.6469 349.2791 0002792 264.1249 96.0358 15.57074600 20071
SFU
1 23521U 95011A 95199.24631057 .00001505 00000-0 44285-4 0 809
2 23521 28.4621 222.6987 0019975 205.5762 154.3855 15.28592904 18692
GMS 5
1 23522U 95011B 95196.94331429 -.00000304 00000-0 00000+0 0 386
2 23522 0.8512 296.6027 0001611 216.4957 259.6284 1.00264668 1074
DMSP B5D2-8
1 23533U 95015A 95201.84206145 -.00000005 00000-0 20866-4 0 1481
2 23533 98.8325 203.7548 0006124 285.7880 74.2601 14.12693631 16703
Microlab 1
1 23547U 95017C 95200.12873528 .00000168 00000-0 64718-4 0 362
2 23547 69.9788 225.2064 0014818 285.3276 74.6214 14.45379767 15391
```

```
OFEQ 3
1 23549U 95018A 95200.21891946 .00010753 00000-0 29724-3 0 761
2 23549 143.3728 4.1155 0253820 222.2599 135.8311 15.07675503 15805
GFZ-1
1 23558U 86017JE 95199.56921405 .00002234 00000-0 33311-4 0 436
2 23558 51.6514 358.9127 0007115 54.1013 306.0651 15.60083410537734
ERS-2
1 23560U 95021A 95199.78961281 .00000028 00000-0 26698-4 0 950
2 23560 98.5496 273.6771 0001236 80.1031 280.0284 14.32247270 12703
Spektr
1 23579U 95024A 95201.83066963 .00012977 00000-0 18227-3 0 804
2 23579 51.6469 349.2791 0002792 264.1249 96.0358 15.57074600 9636
GOES 9
1 23581U 95025A 95190.18241808 -.00000181 00000-0 00000+0 0 391
2 23581 0.5045 269.5337 0000688 305.9959 45.9597 1.00256848 476
Cosmos 2314
1 23601U 95031A 95202.26435690 .00586735 57325-5 18296-3 0 556
2 23601 67.1260 103.4821 0147572 71.1915 290.5243 16.04893575 3618
1995031B
1 23602U 95031B 95185.12604097 .50703518 63517-5 19757-3 0 302
2 23602 67.1297 160.7071 0016154 110.2574 250.1052 16.57018846 872
1995032A
1 23603U 95032A 95200.33619237 .00012145 00000-0 13259-1 0 156
2 23603 82.9064 347.4111 0029417 239.5475 120.2732 13.72242109 1957
1995032B
1 23604U 95032B 95198.86459031 .00000015 00000-0 00000+0 0 112
2 23604 82.9046 348.4854 0023946 230.1908 129.7069 13.73600692 1742
1995033A
1 23605U 95033A 95202.21741673 .00005193 00000-0 10021-2 0 417
2 23605 98.0706 138.3095 0001881 110.6074 249.5326 14.63877293 1983
1995033B
1 23606U 95033B 95199.73860027 .00000003 00000-0 90188-5 0 123
2 23606 98.0705 135.9208 0006297 149.1614 210.9954 14.66882856 1696
1995033C
1 23607U 95033C 95199.66857928 .00000047 00000-0 16939-4 0 86
2 23607 98.0696 135.8550 0007864 151.8474 208.3151 14.67125219 1672
1995033D
1 23608U 95033D 95201.23081056 .00000273 00000-0 55993-4 0 124
2 23608 98.0395 137.4639 0027697 176.4913 183.6493 14.67879191 1884
1995035B
1 23613U 95035B 95202.23554735 .00000110 00000-0 00000+0 0 137
2 23613 0.0250 262.1709 0002937 254.4644 60.0614 1.00983687 55
1995035C
1 23614U 95035C 95201.45991408 .00000312 00000-0 39215-3 0 52
2 23614 26.3018 322.1924 7261212 3.8815 359.4318 2.27680900 150
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
Progress M-28
1 23617U 95036A 95202.24091175 .00129424 18502-4 21000-3 0 66
```

```
2 23617 51.5954 347.4702 0037823 131.7204 228.5489 16.01636494 185
1995036B
1 23618U 95036B 95202.16502295 .02412979 12094-4 52648-3 0 84
2 23618 51.6425 347.7890 0027864 99.3933 261.0244 16.28460582 175
```
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1588. ARLK034 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-07-22 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk034.1995@ampr.org>
Source record: 24496
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK034
ARLK034 Keplerian data

ZCZC SK59
QST de W1AW
Keplerian Bulletin 34 ARLK034
From ARRL Headquarters
Newington, CT July 22, 1995
To all radio amateurs

SB KEP ARL ARLK034
ARLK034 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-70
1 23612U 95035A 95200.91709491 .00002214 -69976-5 00000-0 0 00265
2 23612 028.4657 279.6234 0022238 215.7396 251.7976 15.90762174001012
AO-10
1 14129U 83058B 95197.86322447 .00000009 00000-0 10000-3 0 3636
2 14129 26.4664 257.9232 5998564 293.7644 15.9473 2.05881650 62943
RS-10/11
1 18129U 87054A 95200.56901736 .00000038 00000-0 25030-4 0 00893
2 18129 082.9237 035.1331 0012420 008.4865 351.6483 13.72354697404410
UO-11
1 14781U 84021B 95200.53238881 .00000082 00000-0 21654-4 0 8137
2 14781 97.7827 201.5509 0013057 78.2829 281.9839 14.69361017608650
RS-12/13
1 21089U 91007A 95200.68094805 .00000033 00000-0 18495-4 0 08180
2 21089 082.9231 076.6880 0030951 080.7670 279.6976 13.74059013223239
AO-13
1 19216U 88051B 95199.96386668 -.00000319 00000-0 72927-3 0 654
2 19216 57.5095 175.4028 7310488 14.0842 358.3342 2.09727499 22831
UO-14
1 20437U 90005B 95200.76108819 .00000042 00000-0 32995-4 0 01277
2 20437 098.5670 284.6079 0011648 098.9521 261.2983 14.29892152286407
RS-15
1 23439U 94085A 95200.43204857 -.00000039 00000-0 10000-3 0 00736
2 23439 064.8160 202.8394 0167818 256.7131 101.5029 11.27524907023159
```

```
AO-16
1 20439U 90005D 95200.73163645 .00000005 00000-0 18688-4 0 09229
2 20439 098.5783 286.2912 0012007 100.6386 259.6144 14.29946205286418
DO-17
1 20440U 90005E 95200.71691556 .00000029 00000-0 28118-4 0 09209
2 20440 098.5800 286.7530 0012090 099.8585 260.3969 14.30087631286430
WO-18
1 20441U 90005F 95200.76980851 -.00000003 00000-0 15748-4 0 09314
2 20441 098.5796 286.7745 0012617 100.1335 260.1273 14.30058630286441
LO-19
1 20442U 90005G 95200.72032709 .00000012 00000-0 21465-4 0 09212
2 20442 098.5809 287.0971 0012974 099.5177 260.7466 14.30161811286450
FO-20
1 20480U 90013C 95200.76626394 -.00000034 00000-0 -87446-5 0 08077
2 20480 099.0727 283.3130 0540739 159.4773 202.8989 12.83231203255122
AO-21
1 21087U 91006A 95200.47870585 .00000094 00000-0 82657-4 0 06200
2 21087 082.9392 208.6732 0037291 055.6654 304.8021 13.74557070224166
UO-22
1 21575U 91050B 95200.73444063 .00000024 00000-0 22458-4 0 06338
2 21575 098.3878 271.2440 0007245 177.1475 182.9755 14.36983513210176
KO-23
1 22077U 92052B 95200.39099261 -.00000037 00000-0 10000-3 0 05240
2 22077 066.0769 168.3371 0005670 190.7220 169.3677 12.86291564137871
KO-25
1 22828U 93061F 95200.69991103 -.00000003 00000-0 16220-4 0 03831
2 22828 098.6122 276.7939 0010793 108.8262 251.4090 14.28106049062512
IO-26
1 22826U 93061D 95200.71090859 -.00000017 00000-0 10784-4 0 04082
2 22826 098.6161 276.7655 0009331 122.1810 238.0266 14.27775491094414
AO-27
1 22825U 93061C 95200.75943969 .00000037 00000-0 32667-4 0 04078
2 22825 098.6157 276.7118 0008871 120.4723 239.7333 14.27667963094411
PO-28
1 22829U 93061G 95200.71200575 .00000052 00000-0 38453-4 0 04028
2 22829 098.6128 276.8413 0010448 108.4758 251.7543 14.28086062094434
Mir
1 16609U 86017A 95200.54704336 .00000239 00000-0 10000-4 0 1498
2 16609 51.6481 355.7004 0003333 252.0304 108.0286 15.57025840537974

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
July 25, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1589. FOR SALE-MICROWAWE AMPS & ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-22 00:00:00 UTC
From: johnny.b.goode@wem.org
Message-ID: <187264621-950721200117@wem.org>
Source record: 24497

From: ando1@ix.netcom.com (Johnny B. Goode)
Subject: FOR SALE-MICROWAWE AMPS & ACCESSORIES

FOR SALE MICROWAVE AMPS & ACCESSORIES
FOR SALE OR TRADE:
Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 404-925-2779 404-925-2887

---
* ChristNET Global Christian Network *
* Christ Connection (310) 398-7804 *

1590. Help the Astronauts Memorial Foundation

Newsgroup: rec.radio.amateur.space
Date: 1995-07-23 00:00:00 UTC
From: progrock@digital.net
Message-ID: <3us5la$1bu@ddi2.digital.net>
Source record: 24498

Hello all!!

My name is Mike Whaley KD4UGI, and I would like to ask for help from the readers of this group with a worthy cause. I am a Technical Specialist with the Astronauts Memorial Foundation at the Center for Space Education at the visitor's center at the Kennedy Space Center. AMF is a non-profit independent organization that was originally set up a month after the Challenger tragedy to honor all U.S. Astronauts who have given their lives in the line of duty. As a living memorial to them, AMF operates the Center for Space Education. We basically take the latest in Instructional Technology (IT)... computers, software, etc... and teach educators how to incorporate it into today's classrooms. It is quite a comprehensive program, after an educator goes through a workshop they have been instructed in everything from basic computer troubleshooting and repair (hardware and software), the use of software of all descriptions, and how to use this technology effectively so that really improves the education of their students rather than sitting unexploited as often happens at many schools who don't know how to use it. We typically teach three teachers from every school in a district, right now we focus mostly on Florida but work in conjunction with NASA education programs and others so that we see quite a cross-section of teachers from all grade levels, subjects, and locations. I work on the Instructional Technology Evaluation Center, which is a large computer lab with 10 Macintosh and 7 PC platforms that allows us to both do training and to allow educators to "test-drive" all sorts of educationally-related software and determine its suitability to their needs before spending shrinking budget money on it. This is a free service open to teachers, and is supported by the donations of many software and hardware vendors. If you are a teacher and want more info about any of this, please call AMF at the number below and we can tell you more details!

I think it is important to point out that even as comprehensive as our programs are, there is NO COST to the participants, other than the costs they incur in travel, lodging, and for substitutes at their home schools. AMF is supported by the funds from the Florida Challenger license plate program and from private donations. We are not a government agency, we are entirely independent although we have working partnerships with many organizations and businesses.

I am posting this to r.r.a.space because I now have a unique opportunity to start a Shuttle Amateur Radio Experiment (SAREX) station there. I am sure that most of you are familiar with SAREX contacts where students get to ask questions of Shuttle crew members, but in my view it would be even more useful and lasting to get the teachers fired up about amateur radio, space, and technology because they can then pass it along to hundreds or

thousands of students. I have approval from the powers that be to do this project, however, with all the other educational projects that are ongoing I need to get as many donations of equipment and help as I can before we think about spending a lot of money. (Ie, only buy things that we can't get donated or permanently loaned.) As the only ham currently working at AMF, I am far more familiar with this than my co-workers, although myu boss does know about it and has seen a videotape of a SAREX school contact, and is supportive of this project. Basically, I would like to get a good start (by getting not only equipment but volunteers to assist with this project) before I push for significant sums of money. I believe that once we have the capability of making contacts, not just SAREX but Mir, satellite, and terrestrial, then it will become obvious how valuable a tool this can be to get teachers interested.

For anyone out there who may be considering donating, remember that this will be in a very high-visibility location... the KSC visitor's center is the third most-visited attraction in the state of Florida. So of course, the publicity value for companies is significant. (We will be sure to publically acknowledge any assistance given us.) This is in the formaticve stages right now, I have some ideas about specific equipment I would like to use but I will consider anything. At minimum, right now we need a 2-meter radio, a satellite antenna and the associated rotators and mast, coaxial cable, and an amplifier to put out 150 watts or so if the radio won't do that. Of course, I envision having a much more complete/capable station than that, eventually we would like to have a special event station to commemorate the return-to-flight after Challenger so a full-blown station is something to look forward to. But for now, my main goal is showing that this can work, and that should open up doors and allow it to expand.

Thank you, and please feel free to either e-mail, call, snail-mail, or visit!

Mike Whaley KD4UGI
The Astronauts Memorial Foundation
Mail Code AMF
Kennedy Space Center, FL 32899
(407) 452-2887

73 de KD4UGI

| Mike Whaley progrock@digital.net kd4ugi@ravenloft.stucen.gatech.edu |
| P.O. Box 510717, Melbourne Beach FL 32951-0717 (407) 253-1068 |
| World Wide Web: http://w4aql.gatech.edu/~kd4ugi/mikepage.html |
| And you and I climb over the sea to the valley, |
| And you and I reach out for reasons to call. - Yes |

1591. DOVE ?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-23 00:00:00 UTC
From: stevekit@eznet.net
Message-ID: <3usd48$dqt@roch3.eznet.net>
Source record: 24499

Is DOVE inactive at the time? I don't receive any signal from the satellite.

```
**********************************************************************
* __/\__/\ Steve Kittelsen ______ *
* / /\ \ Rochester, New York \ / *
* I I I I " stevekit@eznet.net " \ / *
* \ __\/__ / * OPEN YOUR MIND * \/ PRIDE *
**********************************************************************
```

1592. AMSAT Freqs / formulas

Newsgroup: rec.radio.amateur.space
Date: 1995-07-23 00:00:00 UTC
From: swt@aloha.net
Message-ID: <3usl9n$3ls@nuhou.aloha.net>
Source record: 24500

Aloha !

A while back I saw a post that had a great list of frquencies of all the birds, and their becons and modes etc. The list also had the formula's for determining the uplink/downlink values. i.e. MODE B 581.398 - Uplink = Downlink etc.

Has anyone seen this list, and if so, can they "Re Post" ?

Many thanks !

Steve W. Teegarden
WH6IC
swt@aloha.net

1593. Re: FOR SALE-MICROWAWE AMPS & ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-23 00:00:00 UTC
From: ssampson@icon.net
Message-ID: <ssampson.141.0009B2C4@icon.net>
Source record: 24501
Cross-posted to: rec.radio.swap,rec.radio.amateur.space,sci.electronics

In article <3ureta$k0r@newsbf02.news.aol.com> n2oto@aol.com (N2OTO) writes:

>>Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
>$16,000.

>I'll buy this one for a dollar a watt! ;-)

The power supply is another 16,000 :-)

My 100 mW Gunn Oscillator cost $100 new. That's $1 a milliwatt. Sheesh, now I know why HF is so fun...

1594. Re: Help on a 3D starmap,

Newsgroup: rec.radio.amateur.space
Date: 1995-07-24 00:00:00 UTC
From: Darkmagi@cris.com
Message-ID: <3uv9po$nhi@warp.cris.com>
Source record: 24502

> Most starmaps are expressed in a spherical coordinate system. That
> is, you
> get two angle measurements to describe its position relative to earth.
> Some
> star catalogs include a distance measurement, and most (if not all)
> include
> star magnitudes ("brightness"). The two angles you get are right
> ascension
> and declination. These are based in a non-rotating earth-fixed (probably
> more
> accurate to call it solar system fixed, although the difference is pretty
> much
> negligible) coordinate system. This coordinate system is can be thought
> of as
> a latitude & longitude system for the stars.
>

Cool! This saves me having to ask the question <G> I'm thinking of writing a space-exploration game, and it would be REALLY cool to have all the real stars acurately represented (say, within 100 light years of earth at the very least.)

can anyone give me a rough guestimate of the number of stars with 100-1000 light years of earth?

-Jeff
,,,
darkmagi@cris.com (o^o) Jeff Crystal (KB8RNQ)
_____oOO_(_)_OOo_____

| AmiQWK 2.7 | UNREGISTERED EVALUATION COPY - SUPPORT THE SHAREWARE CONCEPT
... Hey, Odo! Got anymore of that Jell-O in the fridge? Odo?

1595. RE: AMSAT Freqs / formula

Newsgroup: rec.radio.amateur.space
Date: 1995-07-24 00:00:00 UTC
From: Darkmagi@cris.com
Message-ID: <3uv9pq$nhq@warp.cris.com>
Source record: 24503

> A while back I saw a post that had a great list of frquencies of all the
> birds, and their becons and modes etc. The list also had the formula's for
> determining the uplink/downlink values. i.e. MODE B 581.398 - Uplink =
> Downlink etc.
>
> Has anyone seen this list, and if so, can they "Re Post" ?
>

AMEN! I've been looking for a list of this information for over a year now!

-Jeff
,,,
darkmagi@cris.com (o^o) Jeff Crystal (KB8RNQ)
_____________________oOO_(_)_OOo_____________________________

| AmiQWK 2.7 | UNREGISTERED EVALUATION COPY - SUPPORT THE SHAREWARE CONCEPT
... "I need a drink. Water, straight up." - Garibaldi

1596. Re: Egg beater antennas for sat work?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-24 00:00:00 UTC
From: im@hydra.carleton.ca
Message-ID: <DC82Cx.Cs7@cunews.carleton.ca>
Source record: 24504
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.space

Bruce M. Marshall (bmm1@freenet3.scri.fsu.edu) wrote:
: Kory:

: Your questions are typical of those that everyone asks as they think
: through setting up a LEO (low earth orbit) ground station. You are
: asking the right questions, so you are on the right track. I have not
: tried an eggbeater however I would like to. I would like to find the
: perfect LEO, non-az-el-rotor ground station combination. Most "omni"
: antennas are not omni in 3 dimensions but in 2. This is fine for
: signals coming from the direction of the horison. Of course satellites
: don't always come from the direction of the horizon. However their
: signal is most attenuated when they are near the horizon. Therefore an
: antenna with some more gain on the horizon is benificial. An "omni"
: antenna with 8 to 11 db gain will do very well for passes of low
: elevation and the low elevation portions of higher passes but will
: loose the signal above 40 to 60 degrees even though the satellite has
: the strongest signal at this point in the pass. I suppose the egbeater
: will perform better at these higher elevations than a gain omni which
: will have a gain of less than 1 at high elevations. The eggbeater will
: perform poorly at low angles. When setting up a ground station an
: important question is "how much of the horizon can I see?". Here in
: eastern Tennessee the mountains and high trees can result in much or
: little very little view of the horizon. In this case an antenna such
: as a quadrifilar helix with a high gain at higher elevations would bea
: good choice. In Kansas, or on a mountain top the choice would be
: different.

I just had a thought - how about using two antennas. One higher gain
for the lower elevations, the second with 0 to some gain at the
higher elevations.

The antennas could be either be combined (phased appropriately to give
the pattern and coverate you are looking for), or using some
simple logic and a pin diode swith at the receiver, switch between
the antenna with the "best" signal.

Problem of course is that the antennas need to be circularly
polarized ... and combining two circularly polarized antennas
would probably look pretty weird;-) (I'm thinking of a
quadrafilar stuck on top of two 3 element circular polarized
yagis, that are mounted at 90 degrees:-)

im
: As for preamps, a mast mounted preamp is a must for 70cm. At 70cm the
: attenuation even in very good coax is unacceptable if you have more

: than a short run of coax. Get a copy of the satellite experimenters
: handbook and work some of the antenna/preamp/coax equasions. They are
: tedious but very educational.

: I have more ideas on the perfect LEO groundstation however I have been
: summoned for dinner (and it looks and smells exceptionel) so will
: write more if coaxed.

: Bruce.
: N4USH
: --
: Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

--
Ian A. McEachern, VE3PFH | Try our new www server:
Packet Working Group, Ottawa A.R.C. | http://hydra.carleton.ca/
im@hydra.carleton.ca | Interesting stuff about packet
http://hydra.carleton.ca/~im/im.html | radio & our 56kbps radio LAN

1597. DOVE stuff needed

Newsgroup: rec.radio.amateur.space
Date: 1995-07-24 00:00:00 UTC
From: I121171@amsat.org
Message-ID: <3uvif9$b3l@sgi.iunet.it>
Source record: 24505

Any kind of DOVE (DO-17) stuff is needed for an exhaustive
multi-language booklet to donate to Amsat-NA.
Pictures, photos, drawings, software, books, experience.
Anything will be much appreciated. I can send back everything !
Thanks in advance.
I121171@amsat.org

1598. Re: Help on a 3D starmap,

Newsgroup: rec.radio.amateur.space
Date: 1995-07-24 00:00:00 UTC
From: mdf@vigard.mef.org
Message-ID: <DC85Ju.GIB@vigard.mef.org>
Source record: 24506

Darkmagi@cris.com (DARKMAGI) writes:

>can anyone give me a rough guestimate of the number of stars with 100-1000 light
>years of earth?

the "General Catalogue of Trigonometric Parallaxes (1991)" that came on
my ADC CDROM contains 253 stars with a parallax in excess of 0.1 arc seconds.
that is, less than 10 parsecs in distance. if this stellar density is
scaled out to 300 parsecs (about 1000 lightyears), you get 6.8 million
stars. the real number could be quite a bit higher.
--
Matthew Francey | mdf@io.org | VE3RQX | GPS(NAD27) N43o34.203' W79o34.572' +93m

1599. Meteors by radio: the FAQs

Newsgroup: rec.radio.amateur.space
Date: 1995-07-25 00:00:00 UTC
From: steyaert@vvs.innet.be
Message-ID: <steyaert.2.0015170D@vvs.innet.be>
Source record: 24507

Hopefully still in time for those who want to observe the Perseids by radio,
this year when the Moon hampers the visual observations...

METEOR SCATTER - the FAQs Rev. 1, Jul 25, 1995.

0. About these FAQs

These FAQs are the result of your various questions and remarks to the
monthly RMOB (Radio Meteor Observation Bulletin).
Constantly amateur astronomers, radio amateurs and schools looking for
new projects, get involved in observing meteors by radio methods, and
need the same basic information.

0.1. Revision / posting frequency

I am sure there will be many questions and remarks to this first issue.
The section with references has to be expanded considerably. And undoubtly,
we will hear from existing radio setups for the first time. Rev. 2 can be
expected at the end of August.

0.2. Distribution

These FAQs are posted on:
sci.astro.amateur
rec.radio.amateur.space
Compuserve's Astronomy Forum, Section 11, Radio Astronomy.

Please let me know if you feel that other newsgroup are interesting too or
more appropriate.

0.3. Acknowledgement

Many thanks to Tom Ashcraft (72632.1427@compuserve.com) and other participants
to Compuserve's Astronomy Forum.

1. What is meteor scatter (MS) ?

Meteor scatter is a form of electromagnetic wave propagation. The ionized
trail of meteors (typically appearing between 100 km and 80 km high) acts
tempora- rily as a reflector for radio waves.
A meteor does NOT generate detectable radio emission itself!

In the case of forward scatter, the transmitter and receiver are at
different locations. Backscatter can be seen as a special case, whereby
the sender and receiver coincide (typically the case of radar).

Meteor scatter can be used day and night, allowing daylight meteors
streams to be studied.
Meteor scatter can also be used for secure communication.

Historically, meteor streams were conclusively detected by means of radar at the end of World War II.

2. How to observe MS ?

Tune to an "empty" frequency in the VHF band, and wait until a suitable oriented meteor trail reflects a distant broadcasting station. You hear a more or less short (a fraction of a second to tens of seconds) fragment of the remote broadcast. Occasionally, more than one station (together or one after the other) can be heard. Routinely, stations of 300 km to 1000 km away can be observed. The problem however in densely populated areas can be to find a non-locally used frequency.

2.1. Which frequencies to use ?

The lower the frequency, the better... but at too low frequencies, the radio- waves bend and follow the curvature of the Earth.
A lower practical limit is 40 MHz. More commonly, the VHF is suitable.
VHF Band I ranges from 41 to 68 MHz, and is used for TV.
The FM band (88 MHz - 108 MHz) is also used frequently. Try as low as possible in the band, and avoid free radio's in the upper band (104-108 MHz).
Not to forget are beacons at e.g. 75 MHz.
Radio hams listen also to MS in the 2 m (144 MHz) band. The reflections are shorter and weaker than at the lower frequencies.
There is little use in trying MS at still higher frequencies.

2.2. Which equipment to use ?

A regular FM receiver is sufficient. An all-band receiver is of course better in terms of sensitivity and features such as bandwidth selection.
Connect a horizontally polarized Yagi antenna with 4 to 6 elements (not too directive) to your receiver. The antenna can be pointed horizontally, or at a certain angle (the latter avoids direct reception from nearby stations). Keep the antenna feed cable short to minimize losses, or add an antenna amplifier.
With a good setup, it should be easy to obtain 10 to 20 meteor reflections per hour when no stream is active (the sporadic background). During streams, this number can get as high as several hundreds.
Due to the daily variation in meteor activity, more reflections are received during the morning hours (5h to 6h local time) than in the evening (18h).
This can serve as a proof that you are actually observing meteors!

2.3. Always possible to observe ?

Unfortunately, other forms of propagation interfere with MS.
The worst one is sporadic-E or Es, consisting of conduction clouds in the high atmosphere that make permanent reception of remote stations possible during minutes to tens of minutes. The sporadic-E season is from May to July in large parts of the northern hemisphere. In some regions however, sporadic-E is unknown!

There are also tropospheric influences. A temperature inversion can also cause reception over wider ranges than normal.

Thunderstorms cause very sharp peaks. On FM, most of these (amplitude modulated) spikes are suppressed. However, DO NOT connect your antenna to your receiver during thunderstorms or when you are absent for longer time. Lightning strikes have ruined several radio shacks.

2.4. One step further: recording meteor reflections

Meteor reflections can easily be recognized by listening. But a better measure of the shape of the reflection can be obtained in accessing the signal strength and recording it, either on a pen recorder, either feeding it into a computer via an analog/digital (A/D) convertor. Special care has to be taken to shield well the computer, power supplies etc., or the computer signal will be more or less noticed in the receiver.

Meteor reflections can broadly be divided in two classes - underdense and overdense - with different reflection profiles. These profiles can be related to the physical characteristics of the meteors.

3. Who else is observing ?

During recent years, amateurs in following countries have been recording meteor reflections: Austria, Belgium, Denmark, Germany, Finland, the Netherlands, the UK, the USA.

Some of them observe only during the periods of the great streams, others run continuous automated stations.

Only a few radars are still used for monitoring streams. One is run by O. Belkovitch (oleg@astro.kazan.su), at Kazan University.

4. How to relate radio- to visual observations ?

Hearing and seeing a meteor is a unique experience. There is a fairly simple relation between the visual magnitude of a meteor and the duration of the reflection. At 70 MHz, a zero magnitude meteor gives typically rise to a 1 second reflection.

5. How to correct MS counts to standard conditions ?

The number of meteor reflections that will be observed from a certain stream is not a simple function of radiant height, as is the case with visual counts (cfr. the zenithal hourly rate).
Conversely, deriving the true number of meteors from the observed number of meteors is not a trivial matter, certainly not when more than one transmitter is involved. Certainly, a stream does not necessarily peak when the observed number of meteors is highest!

The various parameters, such as antenna characteristics, position of transmitter and receiver, radiant position and other stream characteristics, power of the transmitter etc. can be fed into a simulation program, such as FORWARD (by the undersigned). Although the general activity pattern can be reconstructed, one has to be careful.

For visual meteors, the observed number is highest when the radiant is in the zenith (all other remaining the same). This is not so for the number

of meteor reflections: the maximum number is observed for a radiant elevation of 45 to 50 degr. When the radiant is too high (say more than 80 degr), very few reflections are received!

6. Where to find meteor stream data ?

The International Meteor Organization (IMO), specializing in visual meteor observations, issues a yearly meteor stream calendar, which can be found on several places on the net. Contact otherwise Juergen Rendtel (jrendtel@aip.de) or Peter Brown (peter@canlon.physics.uwo.ca).

Gary Kronk's home page [http://wums.wustl.edu/~kronk/index.html] gives also a good overview of the various streams.

7. Where to find observational data and reduction software ?

Ilkka Yrjola, OH51Y (ILKKA.YRJOLA@915000.KY.KYMMENE.MEMONET.mailnet.fi) makes his data available on ftp server FTP.FUNET.FI in directory pub/ham/vhf-work/mssoft42.zip. The software for viewing is available too, as well as stream data.

The author edits the monthly RMOB, which gives summaries of recent observations from all over the world. Included are the setup characte-ristics. Just contact me for putting you on the distribution list.

8. References

8.1. Books

THE reference is still "Meteor Science and Engineering" by D.W.R. McKinley, McGrawHill 1961. A fantastic book, giving the theory and practical results of the heydays of the radio meteor science.

A recent, less astronomical and more communication oriented work is: Meteor Burst Communications (Theory and Practice) Ed. Donald L. Schilling, Wiley Series in Communications, 1993, ISBN 0-471-52212-0.

8.2. Periodicals

The regular astronomy magazines, such as Sky & Telescope, Astronomy, or Astronomy Now! run occasionally contributions about forward scatter experiments (due to lack of time: complete list in Rev. 2 of these FAQs).

WGN, the Journal of IMO, contain sometimes contributions and letters about radio observations of meteors.

Chris Steyaert Tel : +32 (14) 31 51 04
V.V.S. Astronomical Association Fax : +32 (14) 22 13 73
Belgium E-mail : steyaert@vvs.innet.be
Kruisven 66 Compuserve: 72650,3513
B 2400 Mol, Belgium 51 degr N, 5 degr E

1600. ARLK035 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-07-25 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk035.1995@ampr.org>
Source record: 24508
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK035
ARLK035 Keplerian data

ZCZC SK60
QST de W1AW
Keplerian Bulletin 35 ARLK035
From ARRL Headquarters
Newington, CT July 25, 1995
To all radio amateurs

SB KEP ARL ARLK035
ARLK035 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-69
1 99969U 95217.66545253 .00006972 00000-0 61643-4 0 14
2 99969 28.4660 5.0912 0004838 274.0067 85.9975 15.64893589 29
AO-10
1 14129U 83058B 95204.17679665 -.00000405 00000-0 10000-3 0 03648
2 14129 026.4138 256.9078 5995436 295.4550 015.4139 02.05883110063078
RS-10/11
1 18129U 87054A 95205.01642638 .00000015 00000-0 -16940-6 0 00967
2 18129 082.9236 031.8446 0012138 356.5897 003.5173 13.72354495405020
UO-11
1 14781U 84021B 95205.02685302 .00000059 00000-0 17797-4 0 08171
2 14781 097.7831 205.8353 0013030 065.1061 295.1494 14.69361753609318
RS-12/13
1 21089U 91007A 95205.12284631 .00000025 00000-0 10417-4 0 08213
2 21089 082.9226 073.3929 0031060 069.5339 290.9149 13.74058948223841
AO-13
1 19216U 88051B 95203.30156188 .00000218 00000-0 81162-3 0 00670
2 19216 057.5059 174.7782 7311568 014.3467 358.3055 02.09721755022904
UO-14
1 20437U 90005B 95205.16953218 .00000016 00000-0 23086-4 0 01291
2 20437 098.5670 288.9451 0011847 087.4123 272.8411 14.29892552287038
RS-15
1 23439U 94085A 95205.04412825 -.00000039 00000-0 10000-3 0 00756
2 23439 064.8153 195.3802 0167784 255.9293 102.2922 11.27524983023674
```

```
AO-16
1 20439U 90005D 95205.20988595 -.00000013 00000-0 11700-4 0 09289
2 20439 098.5782 290.7032 0012080 087.7940 272.4621 14.29946475287055
DO-17
1 20440U 90005E 95205.19472342 -.00000021 00000-0 85636-5 0 09264
2 20440 098.5799 291.1661 0012290 087.6988 272.5606 14.30087616287073
WO-18
1 20441U 90005F 95205.17773948 -.00000020 00000-0 89907-5 0 09320
2 20441 098.5796 291.1188 0012846 088.4469 271.8188 14.30058712287077
LO-19
1 20442U 90005G 95205.19790328 -.00000044 00000-0 -26702-6 0 09269
2 20442 098.5798 291.5109 0013104 086.4898 273.7787 14.30161629287099
FO-20
1 20480U 90013C 95205.21056842 .00000010 00000-0 90336-4 0 08283
2 20480 099.0722 286.9300 0540936 149.4180 213.9661 12.83231892255691
AO-21
1 21087U 91006A 95205.06457743 .00000094 00000-0 82657-4 0 06331
2 21087 082.9393 205.2804 0037386 043.5968 316.8131 13.74556988224790
UO-22
1 21575U 91050B 95205.19079330 -.00000013 00000-0 99869-5 0 06378
2 21575 098.3888 275.5892 0007401 163.0793 197.0640 14.36983635210812
KO-23
1 22077U 92052B 95205.05603553 -.00000037 00000-0 10000-3 0 05276
2 22077 066.0763 158.5693 0005153 188.6706 171.4226 12.86291485138477
KO-25
1 22828U 93061F 95205.18392454 -.00000020 00000-0 94467-5 0 03855
2 22828 098.6120 281.2153 0010972 096.7263 263.5173 14.28106327063150
IO-26
1 22826U 93061D 95205.19596090 -.00000007 00000-0 14670-4 0 04118
2 22826 098.6160 281.1882 0009614 109.5258 250.6958 14.27775714095051
AO-27
1 22825U 93061C 95205.17474713 -.00000022 00000-0 88207-5 0 04094
2 22825 098.6156 281.0644 0009318 109.6823 250.5372 14.27667639095044
PO-28
1 22829U 93061G 95205.19608419 -.00000025 00000-0 75579-5 0 04116
2 22829 098.6127 281.2627 0010753 097.0949 263.1454 14.28085874095073
Mir
1 16609U 86017A 95205.23214112 .00002002 00000-0 33802-4 0 01896
2 16609 051.6486 332.2467 0003264 272.0910 087.9721 15.57124610538706

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
July 29, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1601. DOVE-17 decoder software from Forsberg?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-25 00:00:00 UTC
From: okstein@primenet.com
Message-ID: <okstein.74.022C5C08@primenet.com>
Source record: 24509

I am having a problem getting Bruce Forsberg's ver 1.2 Dove Decoder to work properly, although it displays the incoming telemetry properly. Is anyone using this or do you know if Bruce is active on the net?

1602. zz

Newsgroup: rec.radio.amateur.space
Date: 1995-07-25 00:00:00 UTC
From: F.TRBIC@ZAMIR-SA.ZTN.APC.ORG
Message-ID: <80.34670@zamir-sa.ztn.apc.org>
Source record: 24510

```
unsubscribe ham-space
```

1603. NASA SELECT TV on LongIsland CATV

Newsgroup: rec.radio.amateur.space
Date: 1995-07-26 00:00:00 UTC
From: Keith@unix.asb.com
Message-ID: <Keith.213.000A6DA7@unix.asb.com>
Source record: 24511

ATTENTION ATTENTION ATTENTION ATTENTION

CableVision Of Hauppauge Subscribers

On Sept 1,1995 Cablevision will DROP Broadcasting the NASA SELECT TV Service
that is on channel 1/52 from 10am-4pm 12am-6am.....

I think the only way to save NASA SELECT is by calling Cablevision
and telling them to keep NASA SELECT.. Even if you don't have
CABLE TV or CableVision of Hauppauge you should call. I heard
that they are dropping NASA SELECT because they never get calls
praising there REBroadcasting of NASA SELECT..

So come on and give them a call, or if you want to watch NASA SELECT
you'll have to get a Satellite TVRO 10ft Dish...

*** The 18" DSS (DBS) System does NOT have NASA SELECT ***

CableVision can be reached at (516) 348 - 6800 Main Switchboard
348 - 6700 Sales
582 - 8324 Marketing
348 - 6872 FAX

CALL NOW .... We can't lose NASA SELECT

Thanks for the HELP,

Keith

N2NJS

1604. sts-73 up????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-26 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3v607h$2ctn@ns3-1.CC.Lehigh.EDU>
Source record: 24512

is sts-73 actully up now?
and if so is Sarex up or are they doing any usefull stuff??

thanks

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1605. Re: sts-73 up????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-27 00:00:00 UTC
From: Roger Koss <kossr@edl1.ksc.nasa.gov>
Message-ID: <3v84jk$t6d@niven.ksc.nasa.gov>
Source record: 24315

```
You are about a month and a half early. STS-73 isn't scheduled until
September 21 timeframe.
```

1606. Re: sts-73 up????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-27 00:00:00 UTC
From: dlarson@UWYO.EDU
Message-ID: <1995Jul27.145937.13290@roper.uwyo.edu>
Source record: 24316

In article <3v607h$2ctn@ns3-1.CC.Lehigh.EDU>, c002@Lehigh.EDU writes:
>is sts-73 actully up now?
>and if so is Sarex up or are they doing any usefull stuff??
>
>thanks
>
David,

The most recent Shuttle mission was STS-70, primary mission was the
deployment of TDRS-G. <-- Very usefull stuff I think.

The next Shuttle mission will be STS-69, mission is the second flight
of the WSF, deploy & retrieve the Spartan 201 astronomy sat., and to
test space station assy. techniques and improved space suits. <-- Useful?
I don't know but maybe.

After STS-69 will be STS-73, primary mission is Micrograv. lab. 2 <-- Useful?
No, this is just a mission so it looks like their doing something.

71(MIR-Docking) had SAREX, 70 had it, but I don't know about 69 or 73.

We should know by the end of next week if any future flights will be
delayed due to the charred O-ring found at the base of one of the
SRBs from STS-70. It was found after examination at M. Thiokol
and NASA is determining what if anything should be done about it.

No, STS-73 is not up now. What do you consider useful? Only SAREX,
sat. repairs, dockings, discovering if mouse terds in microgravity
are round or cylindrical?

Yes I was being sarcastic all the way through this post.
73
KC7EGB
---Donald Larson---
---Laramie Wyoming---

1607. Re: NASA SELECT TV on LongIsland CATV

Newsgroup: rec.radio.amateur.space
Date: 1995-07-27 00:00:00 UTC
From: mbg@world.std.com
Message-ID: <DCCwwK.J4r@world.std.com>
Source record: 24317

Keith@unix.asb.com (Keith Knipschild) writes:

> ATTENTION ATTENTION ATTENTION ATTENTION

> CableVision Of Hauppauge Subscribers

>On Sept 1,1995 Cablevision will DROP Broadcasting the NASA SELECT TV Service
>that is on channel 1/52 from 10am-4pm 12am-6am.....

>I think the only way to save NASA SELECT is by calling Cablevision
>and telling them to keep NASA SELECT.. Even if you don't have
>CABLE TV or CableVision of Hauppauge you should call. I heard
>that they are dropping NASA SELECT because they never get calls
>praising there REBroadcasting of NASA SELECT..

It has been my experience that cable companies DO NOT listen to
call-ins. They can't quantify it to their management. But letters
in hand they can! Don't call, Write to your cable company or you
may be fighting a losing battle from the start...

Megan Gentry
Former RT-11 Developer

1608. Re: NASA SELECT TV on LongIsland CATV

Newsgroup: rec.radio.amateur.space
Date: 1995-07-27 00:00:00 UTC
From: Keith@unix.asb.com
Message-ID: <Keith.219.00104212@unix.asb.com>
Source record: 24318

In article <DCCwwK.J4r@world.std.com> mbg@world.std.com (Megan) writes:
>From: mbg@world.std.com (Megan)
>Subject: Re: NASA SELECT TV on LongIsland CATV

>> ATTENTION ATTENTION ATTENTION ATTENTION

>> CableVision Of Hauppauge Subscribers

>>On Sept 1,1995 Cablevision will DROP Broadcasting the NASA SELECT TV Service
>>that is on channel 1/52 from 10am-4pm 12am-6am.....

>>I think the only way to save NASA SELECT is by calling Cablevision
>>and telling them to keep NASA SELECT.. Even if you don't have

>It has been my experience that cable companies DO NOT listen to
>call-ins. They can't quantify it to their management. But letters
>in hand they can! Don't call, Write to your cable company or you
>may be fighting a losing battle from the start...

DO BOTH !!! Call in and Write a letter....We can't lose NASA SELECT !!!

Thanks,
Keith

1609. Re: NASA SELECT TV on LongIsland CATV

Newsgroup: rec.radio.amateur.space
Date: 1995-07-27 00:00:00 UTC
From: dlarson@UWYO.EDU
Message-ID: <1995Jul27.150132.13291@roper.uwyo.edu>
Source record: 24319

In article <DCCwwK.J4r@world.std.com>, mbg@world.std.com (Megan) writes:
>
>It has been my experience that cable companies DO NOT listen to
>call-ins. They can't quantify it to their management. But letters
>in hand they can! Don't call, Write to your cable company or you
>may be fighting a losing battle from the start...
>
> Megan Gentry
> Former RT-11 Developer
>
This goes for Congress too.

Sorry for the off topic... 73 KC7EGB
---Donald Larson---
---Laramie Wyoming---

1610. Best frequencies for meteor scatter

Newsgroup: rec.radio.amateur.space
Date: 1995-07-27 00:00:00 UTC
From: jos_beck@euronet.nl
Message-ID: <jos_beck.3.0015B601@euronet.nl>
Source record: 24320

Can anyone tell me the best frequencies for meteor scatter communications.
The frequencies listed do no necessarily have to be within the amateur bands.

Jos. PE1CGE

1611. FOR SALE OR TRADE: MICROWAVE AMPS & ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-27 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <3v7sg5$2hp@ixnews6.ix.netcom.com>
Source record: 24513
Cross-posted to: rec.radio.swap,rec.radio.amateur.space

Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 404-925-2779 404-925-2887

1612. Re: FOR SALE OR TRADE: MICROWAVE AMPS & ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-27 00:00:00 UTC
From: craigs@ti.com
Message-ID: <3v8lpi$6cm@superb.csc.ti.com>
Source record: 24514
Cross-posted to: rec.radio.swap,rec.radio.amateur.space

In article <3v7sg5$2hp@ixnews6.ix.netcom.com>, ando1@ix.netcom.com
says...
>
> Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
>$16,000.
>Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
>(new)$13,000.
>Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
>hrs.)$7,500.

Are you a ham?
Do you not understand how cheap and poor most hams are?
Or how we have "significant others" to deal with?

"Honey, I know you want a new car, but I NEED 200 watts on 10 gig
for moonbounce,,,,"

Craig, KA5BOU
Dirt Cheap Ham Microwave Geek

--

Craig S. Young "I speak only for me, not TI"
Texas Instruments Incorporated
2501 W. University, MS 8041 email: craigs@ti.com
McKinney, TX 75070 phone: (214) 952-4616

1613. Re: NASA SELECT TV on LongIsland CATV

Newsgroup: rec.radio.amateur.space
Date: 1995-07-28 00:00:00 UTC
From: ken.thompson@KS.Symbios.COM
Message-ID: <ken.thompson.768.0008D37F@KS.Symbios.COM>
Source record: 24321

In article <1995Jul27.150132.13291@roper.uwyo.edu> dlarson@UWYO.EDU (D. Larson) writes:
>Subject: Re: NASA SELECT TV on LongIsland CATV
>From: dlarson@UWYO.EDU (D. Larson)
>Date: 27 Jul 95 15:01:32 MDT

>In article <DCCwwK.J4r@world.std.com>, mbg@world.std.com (Megan) writes:
>>
>>It has been my experience that cable companies DO NOT listen to
>>call-ins. They can't quantify it to their management. But letters
>>in hand they can! Don't call, Write to your cable company or you
>>may be fighting a losing battle from the start...
>>
>> Megan Gentry
>> Former RT-11 Developer
>>
>This goes for Congress too.

Lets write Congress and get them to mandate NASA Select be on Larson's cable
system.

.

1614. Re: FOR SALE OR TRADE: MICROWAVE AMPS & ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-28 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3vbdc1$1rju@ns2-1.CC.Lehigh.EDU>
Source record: 24322

>
>"Honey, I know you want a new car, but I NEED 200 watts on 10 gig
>for moonbounce,,,,"
>

i love it :)

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1615. 7/29 Atlanta Balloon with ATV/Packet/GPS/2 meters/10 Meters/70cm

Newsgroup: rec.radio.amateur.space
Date: 1995-07-28 00:00:00 UTC
From: rwf@mindspring.com
Message-ID: <rwf.242.007EC417@mindspring.com>
Source record: 24323

ATLANTA BALLOONATICS
Atlanta Balloon Update on 28 July 1995:

All equipment for all packages on hand.
Payloads modules tested. Final integration underway.

DATE/TIME : Saturday July 29th or Sunday July 30th
: Release 0930EDT (1330Z) 0930EDT (1330Z)
: Weather conditions will control exact time of release

*** Launch site now appears to be favoring Dallas GA.

RELEASE SITE:

** : Dallas, GA 30 miles NW of Atlanta, GA
: Coordinates ??

: Payload weight : 5-pounds
: Balloon : TOTEX TA-1200
: Helium : 180 cu ft
: Ascent rate : 750 fpm
: Max altitude : 110,000ft
: Max radio range: 470sm

FREQUENCIES AND MODES

: Packet Radio Downlink 441.0 MHz 2W
: Retransmitted from ground into APRS net on
145.79 MHz and on 14.105 MHz LSB
: Standard AX.25 1200BPS AFSK FM
: Sending APRS-compatible NMEA-183 GPS navigation data
: No Open digipeating. No receiver. Don't try.

: Altitude, Inside & Outside Temperature telemetry on:
146.575 MHz , 28.322 MHz , & 438.5 MHz (wide band TV
audio)

**** : Charts for decoding of C.W. telemetry may be
found on WorldWide Web at address
http://www.mindspring.com/~rwf

*** : ATV camera (B&W) with 1 watt AM transmitter on 434.0 MHz

: All antennas vertically polarized

EXPERIMENTS : More experiments in BASIC stamp control of balloon payloads.
Stamp controlled servo/mirror for multiple
camera views, 12 bit altimetry and 2,

8 bit temp probes.

Possible HF net on 3.780MHz before and during mission. Still do not have a Net Control. Anyone wanna come do it?

For more details about this project, see the WWW address:

http://www.mindspring.com/~rwf

Ralph Fowler, N4NEQ S.E.R.A. ATV Technical Advisor

rwf@mindspring.com Atlanta, GA USA
Web: http://www.mindspring.com/~rwf for ATV, Balloon, and Ham info
FTP: ftp.mindspring.com/users/rwf for ATV, GPS, APRS info
ATV and GPS Balloon Flight coming up July 29th from Atlanta, GA
APRS web page: http://www.mindspring.com/~rwf/aprs.html

1616. Re: sts-73 up????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-28 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3vbdgv$212m@ns2-1.CC.Lehigh.EDU>
Source record: 24324

>No, STS-73 is not up now. What do you consider useful? Only SAREX,
>sat. repairs, dockings, discovering if mouse terds in microgravity
>are round or cylindrical?
>

well there was alot of sts-73 stuff on NASA sel. TV this past week, i was
justa wonderin'

usefull? putting P3D in the shuttle to take it up!!! i don't want it messed up
by sending it on a araine <sp??????> rocket.

anyway

DAViud
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1617. PB and PG Computer Program and TNC Configuration Files

Newsgroup: rec.radio.amateur.space
Date: 1995-07-28 00:00:00 UTC
From: tgliang@eskimo.com
Message-ID: <DCG5I3.9Av@eskimo.com>
Source record: 24325

I wonder if someone has their PB and PG programs up and running with the AEA-2232 or AEA-1232 TNCs. Could he/she send me a copy of their pb.cfg, pg.cfg, and pg.tnc files? Thanks.

1618. POSTPONED ! Atlanta Balloon (1 week)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-28 00:00:00 UTC
From: rwf@mindspring.com
Message-ID: <rwf.245.002A913F@mindspring.com>
Source record: 24326

ATLANTA BALLOONATICS

Atlanta Balloon Update on 28 July 1995 at 21:00Z

Poor weather outlook for Saturday and Sunday has forced us to reschedule launch
for next Saturday, August 5, 1995. All other details are the same.

> Ralph Fowler, N4NEQ S.E.R.A. ATV Technical Advisor
>
> rwf@mindspring.com Atlanta, GA USA
> Web: http://www.mindspring.com/~rwf for ATV, Balloon, and Ham info
> FTP: ftp.mindspring.com/users/rwf for ATV, GPS, APRS info
> ATV and GPS Balloon Flight coming up August 5th from Atlanta, GA
> APRS web page: http://www.mindspring.com/~rwf/aprs.html
>
>
>

1619. Re: sts-73 up????

Newsgroup: rec.radio.amateur.space
Date: 1995-07-28 00:00:00 UTC
From: kc5btl@amsat.org
Message-ID: <kc5btl-2807952118240001@dial63.phoenix.net>
Source record: 24327

In article <3v607h$2ctn@ns3-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> is sts-73 actully up now?

No, what you saw was a sim. They are testing Fast scan on non-ham freq.
(something called ground to air tv). Something we have done already.
(Except theirs is compressed).

SAREX is not scheduled until STS-74.

--
Matt Bordelon KC5BTL
SAREX Principal Investigator

1620. Two-Line Orbital Element Sets (TLE647)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-29 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.807044030@dolphin>
Source record: 24328

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #647 -
Alouette 1
1 00424U 62049A 95207.55583727 .00000018 00000-0 10279-4 0 1237
2 00424 80.4657 246.0315 0023833 151.5478 208.6977 13.67846280637687
ATS 1
1 02608U 66110A 95208.10503128 .00000072 00000-0 10000-3 0 9391
2 02608 14.6413 356.2810 0010395 63.7677 296.4026 1.00338980 21594
ATS 3
1 03029U 67111A 95207.34112156 -.00000115 00000-0 10000-3 0 3824
2 03029 14.8432 3.2772 0008806 262.9449 54.7382 1.00272832101485
Cosmos 398
1 04966U 71016A 95208.87353963 .00132735 89751-5 12705-3 0 9509
2 04966 51.4118 37.7081 0520742 234.5628 120.5690 15.10522793831317
Starlette
1 07646U 75010A 95208.76014559 -.00000135 00000-0 46652-5 0 9030
2 07646 49.8292 352.9018 0206180 235.6272 122.4969 13.82188860 33959
LAGEOS
1 08820U 76039A 95205.23217023 .00000004 00000-0 10000-3 0 1231
2 08820 109.8534 273.3088 0043931 199.4078 160.5010 6.38664716192821
ETS-2
1 09852U 77014A 95193.33958817 -.00000194 00000-0 10000-3 0 321
2 09852 12.7799 36.8161 0004751 61.1656 298.9378 1.00021583 14234
GOES 2
1 10061U 77048A 95208.46591758 .00000051 00000-0 10000-3 0 5573
2 10061 11.8709 40.8604 0012345 124.9313 130.1250 1.00280135 11178
IUE
1 10637U 78012A 95208.51002428 -.00000265 00000-0 00000+0 0 1525
2 10637 35.2704 88.3321 1332799 47.9447 306.8522 1.00316754 16666
GPS BI-01
1 10684U 78020A 95208.14545249 -.00000017 00000-0 10000-3 0 3711
2 10684 64.8660 33.5128 0061296 162.9344 197.3262 1.98069435112959
```

```
GPS BI-02
1 10893U 78047A 95208.45588531 .00000027 00000-0 10000-3 0 1760
2 10893 63.3044 271.4469 0223547 14.0466 346.6626 2.01627423126245
GOES 3
1 10953U 78062A 95205.65866608 .00000109 00000-0 10000-3 0 5133
2 10953 10.8503 43.7372 0006032 110.1778 224.9732 1.00331517 15757
SeaSat 1
1 10967U 78064A 95206.03663998 .00000003 00000-0 45450-4 0 4163
2 10967 107.9997 215.8061 0002910 248.1210 111.9626 14.38046170894270
GPS BI-03
1 11054U 78093A 95201.16810026 -.00000034 00000-0 10000-3 0 3401
2 11054 63.0212 269.9928 0045378 180.6411 179.4330 1.93505366122213
Nimbus 7
1 11080U 78098A 95206.13955867 -.00000065 00000-0 -21241-4 0 5171
2 11080 98.9934 78.5009 0009618 126.9900 233.2130 13.83707762845807
GPS BI-04
1 11141U 78112A 95207.72808546 -.00000016 00000-0 10000-3 0 9914
2 11141 64.8482 35.4186 0049059 27.9397 332.3712 1.92894879 11586
GPS BI-05
1 11690U 80011A 95199.79948070 -.00000051 00000-0 10000-3 0 9276
2 11690 65.1949 35.3665 0143913 196.1450 163.5559 2.00565159127498
GPS BI-06
1 11783U 80032A 95205.04556750 .00000022 00000-0 10000-3 0 894
2 11783 62.4391 264.7242 0218807 29.3338 331.9550 2.03456694112131
GOES 5
1 12472U 81049A 95207.49248681 -.00000286 00000-0 10000-3 0 8690
2 12472 7.5986 53.5659 0007828 33.2901 326.8291 1.00260699 9822
Cosmos 1383
1 13301U 82066A 95208.86849780 .00000119 00000-0 12167-3 0 4226
2 13301 82.9358 12.3168 0028724 59.0347 301.3625 13.68067596652898
LandSat 4
1 13367U 82072A 95209.16552408 .00000124 00000-0 37408-4 0 7390
2 13367 98.1243 264.0369 0008567 75.1666 285.0481 14.57152490693189
DMSP B5D2-1
1 13736U 82118A 95208.95343133 .00000041 00000-0 35799-4 0 8132
2 13736 98.6290 37.5164 0007631 258.0886 101.9438 14.25743810654721
IRAS
1 13777U 83004A 95208.50629050 -.00000200 00000-0 -10768-3 0 317
2 13777 98.9657 35.9267 0012249 272.6735 87.3030 13.99226382307829
Cosmos 1447
1 13916U 83021A 95209.07879738 .00000048 00000-0 34480-4 0 5191
2 13916 82.9447 71.5116 0038110 340.6796 19.2914 13.74328202619087
TDRS 1
1 13969U 83026B 95207.41187368 .00000073 00000-0 10000-3 0 4436
2 13969 8.4466 46.9211 0007860 131.7592 125.9998 1.00733240 18103
GOES 6
1 14050U 83041A 95208.33607303 -.00000088 00000-0 10000-3 0 4294
2 14050 6.4247 56.8927 0004851 27.8295 232.1929 1.00326989102923
OSCAR 10
1 14129U 83058B 95209.03342820 .00000085 00000-0 10000-3 0 3652
```

```
2 14129 26.4477 256.1390 5995039 296.7835 14.9822 2.05877850 63170
LandSat 5
1 14780U 84021A 95206.93516708 .00001017 00000-0 23518-3 0 3025
2 14780 98.1085 262.3301 0006252 87.7958 272.3947 14.57161714606271
UoSat 2
1 14781U 84021B 95208.97653023 .00000088 00000-0 22634-4 0 8159
2 14781 97.7832 209.5999 0012923 53.7426 306.4996 14.69362757609895
GPS BI-09
1 15039U 84059A 95207.68230402 -.00000024 00000-0 10000-3 0 3515
2 15039 64.5284 29.8061 0082242 18.1648 342.1624 1.92302309 81157
Cosmos 1574
1 15055U 84062A 95207.26961557 .00000024 00000-0 96314-5 0 7206
2 15055 82.9580 127.0551 0027174 168.1536 192.0263 13.73624120556101
GPS BI-10
1 15271U 84097A 95207.94664948 .00000036 00000-0 10000-3 0 328
2 15271 62.1146 264.9713 0155565 353.8839 6.0367 2.00600396 78728
Cosmos 1602
1 15331U 84105A 95207.11812380 .00000173 00000-0 17567-4 0 4062
2 15331 82.5330 59.4363 0019400 314.2703 45.6917 14.84645383584443
NOAA 9
1 15427U 84123A 95208.86530146 -.00000013 00000-0 16825-4 0 3427
2 15427 98.9956 267.8295 0015045 149.8841 210.3206 14.13719527547668
GPS BI-11
1 16129U 85093A 95208.47075433 -.00000018 00000-0 10000-3 0 6677
2 16129 65.1978 32.9726 0155392 86.6146 275.2185 1.89368048 15757
Mir
1 16609U 86017A 95209.21117715 .00003507 00000-0 54108-4 0 1713
2 16609 51.6497 312.3266 0003945 295.3850 64.6734 15.57143053539328
SPOT 1
1 16613U 86019A 95207.21648861 .00000090 00000-0 62356-4 0 8354
2 16613 98.6483 277.6947 0001270 45.2987 314.8293 14.20064816173906
Cosmos 1766
1 16881U 86055A 95208.78791863 .00000174 00000-0 18203-4 0 3221
2 16881 82.5201 115.7101 0019061 336.0663 23.9659 14.83644429485594
EGP
1 16908U 86061A 95207.21627321 -.00000083 00000-0 10000-3 0 168
2 16908 50.0125 282.2547 0011455 259.4999 100.4545 12.44412488 75696
NOAA 10
1 16969U 86073A 95208.95511749 .00000036 00000-0 33742-4 0 2502
2 16969 98.5115 210.6067 0011963 223.9225 136.1002 14.24949252460284
MOS-1
1 17527U 87018A 95209.18074314 -.00000043 00000-0 00000+0 0 2326
2 17527 98.9833 273.2733 0000508 147.3459 212.7719 13.94887035429548
GOES 7
1 17561U 87022A 95208.43090694 .00000080 00000-0 10000-3 0 4827
2 17561 2.4036 71.9241 0002273 2.5107 249.7045 1.00279287 14035
Kvant-1
1 17845U 87030A 95208.76195635 .00003276 00000-0 50998-4 0 3312
2 17845 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757539194
DMSP B5D2-3
```

```
1 18123U 87053A 95208.92265807 .00000039 00000-0 42401-4 0 786
2 18123 98.7776 39.4394 0015128 99.8403 260.4509 14.15412193418485
RS-10/11
1 18129U 87054A 95208.88056751 .00000034 00000-0 21272-4 0 939
2 18129 82.9234 28.9874 0011881 346.1824 13.9006 13.72354776405559
Meteor 2-16
1 18312U 87068A 95206.18954762 .00000054 00000-0 35081-4 0 4139
2 18312 82.5502 252.2241 0014151 63.4993 296.7612 13.84060246400802
Meteor 2-17
1 18820U 88005A 95209.25088654 .00000037 00000-0 19542-4 0 6816
2 18820 82.5408 305.5787 0017708 115.8482 244.4520 13.84741287378559
DMSP B5D2-4
1 18822U 88006A 95208.17897503 -.00000008 00000-0 14953-4 0 319
2 18822 98.4025 50.4923 0005131 237.7675 122.3002 14.23159820388207
Glonass 34
1 19163U 88043A 95207.92156135 .00000001 00000-0 10000-3 0 73
2 19163 65.1452 96.8260 0007748 158.3076 201.8027 2.13102546 55286
Glonass 36
1 19165U 88043C 95207.03948984 -.00000008 00000-0 10000-3 0 4058
2 19165 65.1245 96.8140 0002747 318.1271 41.9314 2.13102128 55886
METEOSAT 3
1 19215U 88051A 95208.47599456 -.00000277 00000-0 10000-3 0 1503
2 19215 2.5909 69.7418 0002414 65.4779 271.9909 1.00262378 13975
AO-13
1 19216U 88051B 95209.02333835 -.00000273 00000-0 -41183-3 0 684
2 19216 57.5040 173.7107 7313321 14.8174 358.1855 2.09724730 23029
OKEAN 1
1 19274U 88056A 95206.07817411 .00000237 00000-0 26512-4 0 219
2 19274 82.5126 218.6785 0021169 120.4255 239.9049 14.82360685380767
Meteor 3-2
1 19336U 88064A 95208.54901501 .00000051 00000-0 10000-3 0 4116
2 19336 82.5377 36.8522 0017060 334.5333 25.4948 13.16973977336614
Glonass 39
1 19503U 88085C 95207.53705217 -.00000066 00000-0 10000-3 0 3025
2 19503 65.6852 335.7235 0009254 168.4210 191.5991 2.13101727 53380
NOAA 11
1 19531U 88089A 95208.94756091 -.00000041 00000-0 32938-5 0 1490
2 19531 99.1968 213.3985 0012934 72.7000 287.5590 14.13057915352517
TDRS 2
1 19548U 88091B 95207.69670862 -.00000196 00000-0 10000-3 0 1364
2 19548 1.8265 74.2530 0004046 109.7631 96.0257 1.00271489 12254
Glonass 40
1 19749U 89001A 95202.88296000 -.00000052 00000-0 10000-3 0 5144
2 19749 65.0986 96.5571 0004347 259.3003 100.7120 2.13101377 50796
Glonass 41
1 19750U 89001B 95207.63102899 -.00000002 00000-0 10000-3 0 4274
2 19750 65.1130 96.4516 0006520 239.2040 120.7996 2.13101839 50911
GPS BII-01
1 19802U 89013A 95208.07221110 -.00000018 00000-0 10000-3 0 770
2 19802 55.2218 123.6115 0026499 175.8777 184.1696 2.00551824 47177
```

```
Akebono
1 19822U 89016A 95207.27243532 .00005947 00000-0 27938-3 0 5440
2 19822 75.0912 312.6682 3779929 351.7048 3.5141 7.86851419140895
Meteor 2-18
1 19851U 89018A 95206.87899696 .00000505 00000-0 43788-3 0 4116
2 19851 82.5182 182.0502 0014898 167.4818 192.6728 13.84394428323543
MOP-1
1 19876U 89020B 95204.66479167 .00000053 00000-0 00000+0 0 1276
2 19876 1.2615 74.1530 0002245 45.2680 70.1013 1.00275029 3388
TDRS 3
1 19883U 89021B 95207.59656326 -.00000270 00000-0 00000+0 0 1018
2 19883 0.0986 103.8767 0002894 53.0755 320.6801 1.00271265195845
GPS BII-02
1 20061U 89044A 95208.41406454 -.00000045 00000-0 10000-3 0 946
2 20061 54.4260 299.8296 0146543 215.4260 143.6811 2.00563983 44929
Nadezhda 1
1 20103U 89050A 95208.88618359 .00000030 00000-0 16122-4 0 4635
2 20103 82.9582 348.5702 0036235 239.6003 120.1570 13.73855133304016
GPS BII-03
1 20185U 89064A 95208.75140001 -.00000011 00000-0 10000-3 0 1130
2 20185 55.0177 124.1344 0016968 324.2648 35.6107 2.00572463 43504
GMS 4
1 20217U 89070A 95201.63942877 -.00000374 00000-0 10000-3 0 2216
2 20217 1.1034 76.0883 0010052 83.6618 128.5591 1.00130542 22084
INTERCOSMOS 24
1 20261U 89080A 95208.74203082 .00000152 00000-0 37823-4 0 4277
2 20261 82.5962 118.6025 1243326 61.6393 310.4390 12.47263175265334
GPS BII-04
1 20302U 89085A 95208.28852306 .00000048 00000-0 10000-3 0 891
2 20302 53.3681 239.8334 0022703 183.7058 176.3440 2.00558310 42299
Meteor 3-3
1 20305U 89086A 95209.14117723 .00000044 00000-0 10000-3 0 3606
2 20305 82.5332 349.2777 0009201 25.8164 334.3065 13.04411994275826
COBE
1 20322U 89089A 95208.07442796 -.00000319 00000-0 -17573-3 0 1393
2 20322 98.9614 223.5204 0008069 222.3089 137.7454 14.03449214291189
Kvant-2
1 20335U 89093A 95208.76195635 .00003276 00000-0 50998-4 0 3377
2 20335 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757322406
GPS BII-05
1 20361U 89097A 95208.30037788 -.00000019 00000-0 00000+0 0 9535
2 20361 55.7890 66.1822 0081587 123.2849 237.3436 2.00562543 31774
COSMOS 2054 (Altair-1)
1 20391U 89101A 95206.44759259 -.00000141 00000-0 00000+0 0 1933
2 20391 3.2088 65.6291 0005197 47.1885 334.7865 1.00266260 20711
SPOT 2
1 20436U 90005A 95208.75290697 -.00000044 00000-0 00000+0 0 9558
2 20436 98.7341 282.3192 0000915 114.4817 245.6455 14.20025998285654
UO-14
1 20437U 90005B 95205.72933462 .00000002 00000-0 17729-4 0 1137
```

```
2 20437 98.5669 289.4955 0011862 85.9188 274.3341 14.29892483287113
UO-15
1 20438U 90005C 95206.76573153 -.00000093 00000-0 -19648-4 0 9109
2 20438 98.5646 288.9744 0011161 91.4196 268.8409 14.29210140287153
PACSAT
1 20439U 90005D 95206.74928397 -.00000026 00000-0 68431-5 0 9124
2 20439 98.5780 292.2189 0012179 84.1882 276.0686 14.29946460287277
DO-17
1 20440U 90005E 95206.24420961 -.00000038 00000-0 22152-5 0 9128
2 20440 98.5799 292.2005 0012333 84.8666 275.3925 14.30087482287220
WO-18
1 20441U 90005F 95205.24770656 -.00000021 00000-0 86548-5 0 9162
2 20441 98.5796 291.1877 0012848 88.2513 272.0140 14.30058706287087
LO-19
1 20442U 90005G 95205.75760017 -.00000047 00000-0 -14666-5 0 9126
2 20442 98.5791 292.0616 0013134 85.2644 275.0043 14.30161625287175
GPS BII-06
1 20452U 90008A 95202.21011385 .00000055 00000-0 10000-3 0 578
2 20452 54.0217 180.2906 0056764 82.6248 278.0075 2.00576606 40159
MOS-1B
1 20478U 90013A 95207.71992507 .00000091 00000-0 10000-3 0 8091
2 20478 98.9916 276.1942 0000943 57.0664 303.0588 13.94928412199043
DEBUT
1 20479U 90013B 95205.20127475 -.00000010 00000-0 45221-4 0 9118
2 20479 99.0720 287.0755 0540727 149.0171 214.4045 12.83334960255701
FO-20
1 20480U 90013C 95205.21056842 .00000010 00000-0 90336-4 0 8081
2 20480 99.0722 286.9300 0540936 149.4180 213.9661 12.83231892255691
MOS-1B R/B
1 20491U 90013D 95208.80106889 -.00000418 00000-0 -71922-3 0 1556
2 20491 99.0502 345.0762 0470196 336.5160 21.5088 13.02993727259486
LACE
1 20496U 90015A 95209.24886832 .00001112 00000-0 40763-4 0 5627
2 20496 43.0996 256.9696 0008474 109.0555 251.1216 15.34687971303886
Nadezhda 2
1 20508U 90017A 95208.93377968 .00000005 00000-0 -11097-4 0 4621
2 20508 82.9553 123.1202 0043797 189.6363 170.3958 13.73495846271245
OKEAN 2
1 20510U 90018A 95208.86331928 -.00000760 00000-0 -10705-3 0 4288
2 20510 82.5285 168.0550 0019069 319.3750 40.6200 14.78497326291609
GPS BII-07
1 20533U 90025A 95208.60736668 -.00000044 00000-0 10000-3 0 786
2 20533 54.8105 300.4283 0046003 80.6176 279.9506 2.00566796 39055
PegSat
1 20546U 90028A 95208.85685760 .00003087 00000-0 63561-4 0 8256
2 20546 94.1154 167.2850 0065021 178.3130 181.8350 15.43843769294752
HST
1 20580U 90037B 95209.26464744 .00015755 00000-0 15440-2 0 6958
2 20580 28.4688 146.9077 0006094 17.2379 342.8405 14.90921146 90041
MACSAT 2
```

```
1 20608U 90043B 95208.85570115 .00000136 00000-0 20216-4 0 1131
2 20608 89.9274 176.1370 0107955 112.3492 248.9208 14.64848769278660
Glonass 44
1 20619U 90045A 95205.59770117 -.00000077 00000-0 10000-3 0 2075
2 20619 65.2615 335.1903 0024602 208.7336 151.1343 2.13102443 40307
Glonass 45
1 20620U 90045B 95204.30870800 -.00000079 00000-0 10000-3 0 2145
2 20620 65.2850 335.2262 0008508 55.2606 304.8283 2.13102528 40316
Glonass 46
1 20621U 90045C 95207.66009222 -.00000066 00000-0 10000-3 0 8108
2 20621 65.2995 335.1688 0012105 190.1574 169.8275 2.13101700 40387
Kristall
1 20635U 90048A 95208.76195635 .00003276 00000-0 50998-4 0 1280
2 20635 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757539140
ROSAT
1 20638U 90049A 95207.74903641 -.00000177 00000-0 73431-5 0 4789
2 20638 52.9915 328.9329 0012409 207.3257 152.7086 15.07214695283080
Meteor 2-19
1 20670U 90057A 95208.61163315 .00000011 00000-0 -35705-5 0 9118
2 20670 82.5427 246.4492 0017572 87.6074 272.7099 13.84161528256705
CRRES
1 20712U 90065A 95208.95380951 .00000251 00000-0 41898-3 0 1269
2 20712 18.0692 22.5955 7192129 134.0865 313.9375 2.35451033 35449
GPS BII-08
1 20724U 90068A 95206.93373878 -.00000032 00000-0 10000-3 0 9224
2 20724 54.8602 121.8103 0119068 174.7881 185.3459 2.00565602 34883
Feng Yun1-2
1 20788U 90081A 95208.02110065 .00000092 00000-0 89335-4 0 4440
2 20788 98.8188 219.7054 0016336 327.4852 32.5301 14.01381526250414
Meteor 2-20
1 20826U 90086A 95206.97756316 .00000041 00000-0 23557-4 0 9224
2 20826 82.5227 184.6882 0013849 3.7860 356.3400 13.83611178243595
GPS BII-09
1 20830U 90088A 95204.98362740 -.00000042 00000-0 10000-3 0 9314
2 20830 55.7322 64.2924 0067965 99.4836 261.3398 2.00559198 35489
GPS BIIA-10
1 20959U 90103A 95207.88798124 -.00000020 00000-0 10000-3 0 8994
2 20959 55.0769 123.7586 0098570 230.8565 128.2756 2.00574460 34139
DMSP B5D2-5
1 20978U 90105A 95208.63261930 .00000061 00000-0 37245-4 0 2800
2 20978 98.6355 276.7258 0080340 50.7309 310.0962 14.32565341243105
Glonass 47
1 21006U 90110A 95207.68572141 -.00000001 00000-0 10000-3 0 7799
2 21006 65.0738 95.7263 0059536 188.1440 171.8354 2.13102918 36056
Glonass 48
1 21007U 90110B 95206.93604950 -.00000009 00000-0 10000-3 0 9094
2 21007 65.0992 95.8277 0034640 178.6508 181.4359 2.13101292 36026
Glonass 49
1 21008U 90110C 95206.35790661 -.00000016 00000-0 00000+0 0 1035
2 21008 65.0675 95.7995 0008979 277.7425 82.2181 2.13099141 36004
```

```
AO-21
1 21087U 91006A 95206.01086712 .00000094 00000-0 82657-4 0 6162
2 21087 82.9400 204.5819 0037319 40.9805 319.4144 13.74557058224921
RS-12/13
1 21089U 91007A 95208.69092582 .00000034 00000-0 19414-4 0 8182
2 21089 82.9220 70.7452 0031120 59.6768 300.7454 13.74059143224332
MOP-2
1 21140U 91015B 95202.16898148 -.00000012 00000-0 00000+0 0 799
2 21140 0.1705 286.2935 0001808 194.8352 238.3405 1.00279392 18273
Nadezhda 3
1 21152U 91019A 95208.90319184 .00000399 00000-0 40982-3 0 1539
2 21152 82.9240 26.7169 0042686 165.7139 194.5236 13.73522408219093
Glonass 50
1 21216U 91025A 95207.70437725 -.00000066 00000-0 10000-3 0 4258
2 21216 65.0219 334.7655 0007982 194.0521 165.9220 2.13102700 33566
Glonass 51
1 21217U 91025B 95205.42705620 -.00000078 00000-0 10000-3 0 8356
2 21217 65.0153 334.8543 0009160 240.5231 119.3907 2.13101521 33505
Glonass 52
1 21218U 91025C 95201.78481826 -.00000075 00000-0 10000-3 0 3072
2 21218 65.0364 334.9523 0031871 79.5524 280.8236 2.13102946 33431
GRO
1 21225U 91027B 95205.53373164 .00001524 00000-0 27918-4 0 2822
2 21225 28.4604 314.9884 0003414 97.7872 262.3065 15.42818115119109
Meteor 3-4
1 21232U 91030A 95207.57153705 .00000050 00000-0 10000-3 0 8212
2 21232 82.5391 243.6932 0011798 256.6006 103.3790 13.16468137204560
NOAA 12
1 21263U 91032A 95208.70168407 .00000124 00000-0 74719-4 0 5755
2 21263 98.5850 231.7252 0012890 134.9233 225.2990 14.22544135218188
OKEAN 3
1 21397U 91039A 95209.21367722 .00000185 00000-0 23258-4 0 1214
2 21397 82.5250 80.9442 0024155 19.6054 340.6085 14.76387670223412
GPS BIIA-11
1 21552U 91047A 95207.15617490 -.00000025 00000-0 10000-6 0 8772
2 21552 56.0171 61.9093 0064325 242.4492 116.9610 2.00564016 29719
ERS-1
1 21574U 91050A 95207.80156342 .00000013 00000-0 21106-4 0 1794
2 21574 98.5492 281.5622 0001272 61.9759 298.1535 14.32247878210724
UO-22
1 21575U 91050B 95205.67820684 -.00000014 00000-0 96043-5 0 6188
2 21575 98.3896 276.0655 0007447 161.5330 198.6134 14.36983626210886
ORBCOMM-X
1 21576U 91050C 95205.71171168 .00000018 00000-0 20686-4 0 7138
2 21576 98.3905 274.4744 0003525 162.7561 197.3742 14.36392314210790
TUBSAT-A
1 21577U 91050D 95206.68041952 -.00000015 00000-0 92664-5 0 6125
2 21577 98.3904 275.9506 0006205 160.2607 199.8820 14.36489142210963
SARA
1 21578U 91050E 95209.20116543 .00000151 00000-0 62977-4 0 8132
```

```
2 21578 98.4101 284.0845 0004969 145.5223 214.6289 14.39035853211590
TDRS 4
1 21639U 91054B 95203.21567708 .00000076 00000-0 00000+0 0 9177
2 21639 0.0320 254.5127 0003869 210.5749 97.7500 1.00274311108576
Meteor 3-5
1 21655U 91056A 95208.48463437 .00000051 00000-0 10000-3 0 8194
2 21655 82.5503 190.4869 0012029 269.0429 90.9314 13.16839948189801
UARS
1 21701U 91063B 95206.48383379 -.00000136 00000-0 92264-5 0 6892
2 21701 56.9844 343.1633 0005479 100.4889 259.6761 14.96408404211300
DMSP B5D2-6
1 21798U 91082A 95208.94421003 .00000073 00000-0 62208-4 0 9288
2 21798 98.9613 220.7855 0013904 69.2263 291.0397 14.13907956188967
Glonass 53
1 21853U 92005A 95205.75085773 -.00000023 00000-0 10000-3 0 270
2 21853 65.0173 95.4882 0006432 185.8166 174.2349 2.13102158 27124
Glonass 54
1 21854U 92005B 95208.38668645 .00000005 00000-0 00000+0 0 1644
2 21854 65.0133 95.3866 0016498 16.9524 343.1764 2.13103870 27161
Glonass 55
1 21855U 92005C 95206.57388001 -.00000013 00000-0 00000+0 0 1571
2 21855 65.0085 95.4556 0007070 204.0293 156.0025 2.13102165 27116
JERS-1
1 21867U 92007A 95206.90272551 .00001126 00000-0 98614-4 0 6297
2 21867 97.7170 283.2996 0002370 83.2879 276.8612 14.98665687188846
GPS BIIA-12
1 21890U 92009A 95208.11983454 .00000050 00000-0 10000-3 0 6793
2 21890 53.9199 240.0784 0056494 182.3739 177.6826 2.00573676 25105
GPS BIIA-13
1 21930U 92019A 95206.32954404 -.00000079 00000-0 10000-3 0 6526
2 21930 55.6823 1.7151 0039381 174.3826 185.6835 2.00566113 23999
EUVE
1 21987U 92031A 95205.25058387 .00000647 00000-0 20373-4 0 4701
2 21987 28.4326 233.9181 0009780 55.4158 304.7355 15.19351867173591
SAMPEX
1 22012U 92038A 95208.77147898 .00000437 00000-0 35784-4 0 6480
2 22012 81.6726 102.8631 0118742 154.1884 206.5320 14.91403689166729
GPS BIIA-14
1 22014U 92039A 95202.88142540 .00000055 00000-0 10000-3 0 5712
2 22014 54.8542 181.8087 0089860 313.8958 45.3319 2.00570844 15764
Glonass 56
1 22056U 92047A 95207.88108248 -.00000065 00000-0 00000+0 0 711
2 22056 64.8601 334.8775 0004182 260.0442 99.9050 2.13103119 23235
Glonass 57
1 22057U 92047B 95208.17642935 -.00000064 00000-0 00000+0 0 642
2 22057 64.8746 334.8960 0006265 324.0835 35.8803 2.13102777 23215
Glonass 58
1 22058U 92047C 95208.58581660 -.00000061 00000-0 10000-3 0 300
2 22058 64.8793 334.8749 0006894 269.9510 89.9687 2.13102929 23273
TOPEX
```

```
1 22076U 92052A 95207.86310975 -.00000061 00000-0 00000+0 0 8948
2 22076 66.0397 170.4575 0008437 265.9919 94.0131 12.80930177138325
KO-23
1 22077U 92052B 95206.84430141 -.00000037 00000-0 10000-3 0 5095
2 22077 66.0763 154.8257 0005029 188.5498 171.5432 12.86291494138707
S80/T
1 22078U 92052C 95209.17318201 -.00000037 00000-0 10000-3 0 5075
2 22078 66.0805 148.8030 0004843 171.1777 188.9323 12.86576068139084
GPS BIIA-15
1 22108U 92058A 95208.32521114 .00000049 00000-0 00000+0 0 5909
2 22108 54.1421 240.8553 0123871 154.5331 206.1618 2.00569061 21054
FREJA
1 22161U 92064A 95208.87255367 -.00000192 00000-0 -31388-4 0 5335
2 22161 62.9941 345.6784 0813048 350.3438 8.2711 13.21842081135426
LAGEOS II
1 22195U 92070B 95206.43090670 -.00000009 00000-0 10000-3 0 4199
2 22195 52.6386 198.8163 0138157 293.2948 65.3126 6.47294275 65054
GPS BIIA-16
1 22231U 92079A 95209.00710103 .00000034 00000-0 10000-3 0 5733
2 22231 54.6330 182.6872 0031553 285.2297 74.4094 2.00563102 19646
GPS BIIA-17
1 22275U 92089A 95208.16177182 .00000028 00000-0 10000-3 0 5915
2 22275 54.6291 180.2775 0051880 248.6426 110.7820 2.00562801 19037
TDRS 5
1 22314U 93003B 95208.28134375 -.00000284 00000-0 10000-3 0 5416
2 22314 1.9596 71.7440 0001301 112.3710 175.8994 1.00275777 9319
GPS BIIA-18
1 22446U 93007A 95208.23322224 -.00000047 00000-0 10000-3 0 5803
2 22446 54.4199 300.6918 0085658 358.5830 1.4443 2.00578597 18023
Glonass 59
1 22512U 93010A 95202.93669849 -.00000052 00000-0 10000-3 0 7177
2 22512 65.0289 95.4367 0007885 195.3403 164.6849 2.13102021 18639
Glonass 60
1 22513U 93010B 95207.56852492 -.00000002 00000-0 00000+0 0 7888
2 22513 65.0223 95.2801 0006492 192.0497 168.0034 2.13102401 18927
Glonass 61
1 22514U 93010C 95206.45421827 -.00000014 00000-0 00000+0 0 7849
2 22514 65.0393 95.3130 0010446 186.7637 173.2866 2.13102869 18909
ASTRO-D
1 22521U 93011A 95205.79586520 .00000904 00000-0 57983-4 0 4241
2 22521 31.1041 358.0948 0056448 151.4270 208.9495 15.02340630133039
UFO F1
1 22563U 93015A 95205.00000000 .00000060 00000-0 00000+0 0 4368
2 22563 25.9287 293.7672 0006970 238.3536 356.2911 1.00275322 12823
GPS BIIA-19
1 22581U 93017A 95207.37672490 -.00000078 00000-0 10000-3 0 4477
2 22581 55.2201 1.2321 0057946 37.7083 322.6961 2.00574374 17068
ARSENE
1 22654U 93031B 95204.97220130 -.00000146 00000-0 10000-3 0 3225
2 22654 2.6421 83.1567 2893311 215.6815 120.7444 1.42203031 6915
```

```
GPS BIIA-20
1 22657U 93032A 95207.50853964 -.00000078 00000-0 10000-3 0 4896
2 22657 55.2538 1.0576 0069554 215.5377 144.0299 2.00560481 12390
RADCAL
1 22698U 93041A 95206.24425997 .00000011 00000-0 -52645-6 0 4185
2 22698 89.5449 288.5388 0091073 316.1511 43.2469 14.21348635107843
GPS BIIA-21
1 22700U 93042A 95207.47587964 .00000051 00000-0 10000-3 0 4447
2 22700 54.3140 241.6902 0038622 342.3909 17.5657 2.00565368 15197
NOAA 13
1 22739U 93050A 95208.85101566 -.00000033 00000-0 64399-5 0 8549
2 22739 98.9968 157.7441 0010791 59.7526 300.4720 14.10937876101177
GPS BIIA-22
1 22779U 93054A 95207.06069552 -.00000055 00000-0 10000-3 0 4994
2 22779 54.5541 300.7385 0020636 245.6802 114.1519 2.00573595 13948
Meteor 2-21
1 22782U 93055A 95207.56528509 .00000004 00000-0 -97826-5 0 4184
2 22782 82.5470 245.9800 0022163 168.6412 191.5260 13.83035224 95985
UFO F2
1 22787U 93056A 95208.32340856 -.00000061 00000-0 00000+0 0 4930
2 22787 4.4537 325.2123 0003450 146.3955 20.8048 1.00275331 5564
SPOT 3
1 22823U 93061A 95208.22994056 -.00000327 00000-0 -13308-3 0 4589
2 22823 98.7383 281.8392 0000666 72.1157 288.0092 14.20020321 94974
STELLA
1 22824U 93061B 95205.63352161 -.00000045 00000-0 -52681-6 0 4045
2 22824 98.6151 281.1685 0006991 104.9349 255.2611 14.27101811 95075
AO-27
1 22825U 93061C 95209.16954606 -.00000006 00000-0 15239-4 0 4075
2 22825 98.6157 285.0030 0009392 98.3545 261.8701 14.27668081 95611
IO-26
1 22826U 93061D 95208.20935463 -.00000028 00000-0 61737-5 0 4068
2 22826 98.6161 284.1596 0009747 101.0186 259.2089 14.27775699 95480
HEATHSAT
1 22827U 93061E 95208.71726327 -.00000015 00000-0 11580-4 0 4675
2 22827 98.6132 284.5923 0010031 88.6976 271.5350 14.27900142 95562
ITAMSAT
1 22828U 93061F 95208.75712098 -.00000014 00000-0 12005-4 0 3840
2 22828 98.6116 284.7373 0011117 87.4762 272.7692 14.28106664 63668
PO-28
1 22829U 93061G 95207.64831328 -.00000008 00000-0 14237-4 0 3983
2 22829 98.6127 283.6814 0010892 90.8876 269.3556 14.28086086 95427
KO-25
1 22830U 93061H 95205.18649736 -.00000032 00000-0 42885-5 0 4161
2 22830 98.5120 274.0351 0012580 77.4133 282.8455 14.28093557 95074
GPS BIIA-23
1 22877U 93068A 95207.61639127 -.00000025 00000-0 10000-3 0 2940
2 22877 55.4658 62.2117 0037729 292.2974 67.3742 2.00577077 12842
METEOSAT 6
1 22912U 93073B 95201.96892940 -.00000099 00000-0 00000+0 0 3444
```

```
2 22912 0.7450 277.8460 0001155 135.2046 223.4965 1.00260156 4524
HST Array
1 22920U 90037C 95209.10218734 .00003437 00000-0 24700-3 0 3497
2 22920 28.4687 104.2815 0004067 245.0480 114.9686 15.01472807 90462
Meteor 3-6
1 22969U 94003A 95205.88733794 .00000051 00000-0 10000-3 0 1840
2 22969 82.5594 132.1391 0015615 343.6952 16.3627 13.16730220 71843
TUBSAT-B
1 22970U 94003B 95208.80986279 .00000051 00000-0 10000-3 0 1766
2 22970 82.5631 130.0146 0016255 335.2403 24.7936 13.16825738 72230
GPS BIIA-24
1 23027U 94016A 95207.69404308 -.00000076 00000-0 10000-3 0 2341
2 23027 55.0949 3.0858 0064194 197.2563 162.5341 2.00558401 10153
Glonass 62
1 23043U 94021A 95206.06305830 -.00000076 00000-0 00000+0 0 2328
2 23043 64.7448 335.3459 0006517 179.5222 180.4901 2.13102891 10018
Glonass 63
1 23044U 94021B 95207.82273994 -.00000066 00000-0 00000+0 0 2104
2 23044 64.7506 335.2858 0029636 201.9575 157.9211 2.13103152 10052
Glonass 64
1 23045U 94021C 95207.06054293 -.00000071 00000-0 00000+0 0 2151
2 23045 64.7357 335.3181 0010277 37.4052 322.6728 2.13102895 10035
GOES 8
1 23051U 94022A 95209.15838196 -.00000258 00000-0 10000-3 0 3527
2 23051 0.1114 85.7647 0003545 61.5371 140.5718 1.00271809 12105
MSTI 2
1 23101U 94028A 95208.51637828 .00003146 00000-0 56015-4 0 2172
2 23101 97.0977 41.1823 0013332 87.4963 272.7775 15.50792669 68771
STRV-1A
1 23125U 94034B 95208.34475736 .00001157 00000-0 52347-3 0 1828
2 23125 7.4894 14.7610 7262614 152.3999 280.6227 2.30034179 8578
STRV-1B
1 23126U 94034C 95200.33043351 .00001604 00000-0 53595-3 0 1625
2 23126 7.4959 18.1279 7265935 145.6386 296.0334 2.29647787 8432
Nadezhda 4
1 23179U 94041A 95207.25318045 .00000064 00000-0 50203-4 0 1188
2 23179 82.9475 118.9174 0036177 319.7221 40.1251 13.75670387 51847
Glonass 65
1 23203U 94050A 95207.20081391 .00000081 00000-0 00000+0 0 1759
2 23203 64.7953 215.1018 0006859 163.6001 198.4734 2.13102257 7432
Glonass 66
1 23204U 94050B 95206.49372211 .00000085 00000-0 00000+0 0 1792
2 23204 64.7833 215.1559 0015146 339.3765 20.6072 2.13102398 7413
Glonass 67
1 23205U 94050C 95205.90735243 .00000088 00000-0 00000+0 0 1676
2 23205 64.7938 215.1653 0003461 281.1094 78.8972 2.13102375 7409
DMSP B5D2-7
1 23233U 94057A 95208.62817780 .00000085 00000-0 69551-4 0 4281
2 23233 98.8770 266.3471 0013412 27.5875 332.5996 14.12623754 46864
OKEAN 1-7
```

```
1 23317U 94066A 95207.84882620 .00000078 00000-0 83462-5 0 828
2 23317 82.5414 359.2117 0028173 61.7169 298.6881 14.73946866 42463
ELEKTRO
1 23327U 94069A 95207.78260950 -.00000102 00000-0 10000-3 0 826
2 23327 0.7135 259.4195 0006473 191.0373 211.0550 1.00274469 2722
RESURS 1-3
1 23342U 94074A 95209.16111038 .00000084 00000-0 22111-4 0 2215
2 23342 98.0135 268.0863 0001015 82.3486 359.0319 14.69756337 39062
Glonass 68
1 23396U 94076A 95206.22002896 -.00000017 00000-0 00000+0 0 1282
2 23396 64.9585 95.4072 0029450 190.1558 169.8389 2.13102485 5250
Glonass 69
1 23397U 94076B 95207.33404142 -.00000005 00000-0 00000+0 0 1317
2 23397 64.9425 95.3771 0013087 323.5706 36.4103 2.13102502 5270
Glonass 70
1 23398U 94076C 95208.15602196 .00000003 00000-0 00000+0 0 1416
2 23398 64.9365 95.3391 0002838 298.1787 61.8653 2.13102664 5305
LUCH (Altair-2)
1 23426U 94082A 95206.67738326 -.00000272 00000-0 00000+0 0 1425
2 23426 2.1339 272.6970 0002624 178.7696 190.1009 1.00261303 2220
RS-15
1 23439U 94085A 95207.43886190 -.00000039 00000-0 10000-3 0 661
2 23439 64.8148 191.5067 0167843 255.4490 102.7770 11.27524963 23943
NOAA 14
1 23455U 94089A 95208.78965825 .00000096 00000-0 77296-4 0 2615
2 23455 98.9036 150.9882 0010633 78.9490 281.2856 14.11524377 29546
ODERACS II A
1 23471U 95004C 95207.23778692 .00020810 00000-0 89292-4 0 1618
2 23471 51.6488 292.0933 0011925 252.1922 107.8088 15.84971394 27361
ODERACS II B
1 23472U 95004D 95209.20269653 .00061008 12798-4 14410-3 0 1748
2 23472 51.6445 274.2650 0009589 299.1785 60.7598 15.97010180 27773
Glonass 71
1 23511U 95009A 95207.29517872 -.00000069 00000-0 00000+0 0 748
2 23511 64.7545 335.5740 0004691 320.8821 39.0831 2.13102431 3000
Glonass 72
1 23512U 95009B 95206.18081115 -.00000075 00000-0 00000+0 0 794
2 23512 64.7666 335.6353 0013438 197.0016 162.9519 2.13102989 2988
Glonass 73
1 23513U 95009C 95208.58555809 -.00000061 00000-0 00000+0 0 804
2 23513 64.7661 335.5280 0006724 206.0548 153.9159 2.13103127 3035
Soyuz TM-21
1 23519U 95010A 95208.76195635 .00003276 00000-0 50998-4 0 1480
2 23519 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757 21151
SFU
1 23521U 95011A 95208.90884698 .00001610 00000-0 47908-4 0 839
2 23521 28.4606 156.8746 0020037 314.6823 45.2189 15.28617492 20171
GMS 5
1 23522U 95011B 95196.94331429 -.00000304 00000-0 00000+0 0 386
2 23522 0.8512 296.6027 0001611 216.4957 259.6284 1.00264668 1074
```

```
DMSP B5D2-8
1 23533U 95015A 95208.92468282 -.00000016 00000-0 14921-4 0 1554
2 23533 98.8329 210.7388 0006009 263.8081 96.2402 14.12694286 17700
Microlab 1
1 23547U 95017C 95209.05611610 .00000288 00000-0 98725-4 0 385
2 23547 69.9782 204.4941 0015150 274.3719 85.5678 14.45386514 16684
OFEQ 3
1 23549U 95018A 95206.17889495 .00006509 00000-0 17039-3 0 791
2 23549 143.3698 40.0210 0254342 271.6991 85.4634 15.07751501 16707
GFZ-1
1 23558U 86017JE 95204.75773902 .00001879 00000-0 28992-4 0 456
2 23558 51.6533 332.8240 0007286 74.1951 285.9839 15.60112004538549
ERS-2
1 23560U 95021A 95208.80159604 -.00000010 00000-0 12434-4 0 1015
2 23560 98.5486 282.5605 0001134 95.9981 264.1319 14.32247655 13993
Spektr
1 23579U 95024A 95208.76195635 .00003276 00000-0 50998-4 0 884
2 23579 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757 10717
GOES 9
1 23581U 95025A 95208.45573862 -.00000186 00000-0 00000+0 0 417
2 23581 0.4727 269.0741 0000325 217.3854 251.9203 1.00280779 668
Cosmos 2314
1 23601U 95031A 95208.92004992 .00573211 58102-5 14982-3 0 740
2 23601 67.1251 80.9821 0129293 66.9577 294.5301 16.10282173 4683
1995031B
1 23602U 95031B 95185.12604097 .50703518 63517-5 19757-3 0 302
2 23602 67.1297 160.7071 0016154 110.2574 250.1052 16.57018846 872
Cosmos 2315
1 23603U 95032A 95208.42999465 .00012139 00000-0 13259-1 0 229
2 23603 82.9054 341.4087 0027243 221.0338 138.8768 13.72238252 3063
1995032B
1 23604U 95032B 95208.84406001 .00000015 00000-0 00000+0 0 166
2 23604 82.9008 341.0568 0022531 204.9023 155.0978 13.73595024 3113
Helios 1A
1 23605U 95033A 95209.18944942 .02999963 00000-0 51951+0 0 529
2 23605 98.0713 145.1485 0001898 70.6340 289.4519 14.64301080 3008
CERISE
1 23606U 95033B 95208.12875622 -.00000039 00000-0 15521-5 0 166
2 23606 98.0694 144.1780 0007131 127.2888 232.8975 14.66883811 2923
UPM LBSAT 1
1 23607U 95033C 95206.42051825 -.00000272 00000-0 -39755-4 0 107
2 23607 98.0766 142.5035 0009298 132.9873 227.2111 14.67126298 2663
1995033D
1 23608U 95033D 95205.25263774 .00000278 00000-0 56988-4 0 130
2 23608 98.0413 141.4169 0028469 162.6749 197.5436 14.67881666 2477
TDRS 6
1 23613U 95035B 95208.51148362 .00000070 00000-0 00000+0 0 190
2 23613 0.0091 337.0261 0002921 184.8252 176.4448 1.00985185 116
1995035C
1 23614U 95035C 95208.48666940 .00000284 00000-0 35829-3 0 80
```

```
2 23614 26.2799 319.6019 7262353 8.2449 358.9453 2.27687343 310
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
Progress M-28
1 23617U 95036A 95208.76195635 .00003276 00000-0 50998-4 0 172
2 23617 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757 1204
1995036B
1 23618U 95036B 95204.05906086 .29958245 12725-4 29504-3 0 200
2 23618 51.6301 337.1649 0007753 75.2045 286.7848 16.50549978 485
Glonass 74
1 23620U 95037 A 95208.48454718 .00000088 00000-0 99999-4 0 22
2 23620 064.8254 214.9110 0006375 213.3368 146.6595 02.13259898000068
Glonass 75
1 23621U 95037 B 95208.48478964 .00000086 00000-0 99999-4 0 42
2 23621 064.8017 214.9059 0007874 222.4877 137.4878 02.13234707000063
Glonass 76
1 23622U 95037 C 95208.48471604 .00000081 00000-0 99999-4 0 31
2 23622 064.8163 214.9022 0008611 230.6774 129.2827 02.13237325000065
1995037D
1 23623U 95037D 95206.20798611 .14391761 78694-5 10991-3 0 47
2 23623 64.8547 213.0520 0008335 271.4613 119.6698 16.52366825 91
1995037E
1 23624U 95037E 95205.89922234 .00388584 77671-5 10000-4 0 31
2 23624 64.8214 214.2845 0007283 77.2458 281.8629 16.45405797 41
1995037F
1 23625U 95037F 95207.07672749 .00000081 00000-0 00000+0 0 20
2 23625 64.8512 214.9499 0008933 246.1459 113.8016 2.13425776 38
1995037G
1 23626U 95037 G 95207.35685102 .08292106 00000-0 17695-3 0 42
2 23626 064.8501 209.1390 0230257 053.5306 308.6775 16.01358170000277
1995037H
1 23627U 95037 H 95208.35977691 .11875576 00000-0 11821-3 0 26
2 23627 064.9833 205.9815 0193251 054.4409 307.4530 16.15959152000446
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1621. ARLK036 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-07-29 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk036.1995@ampr.org>
Source record: 24329
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK036
ARLK036 Keplerian data

ZCZC SK61
QST de W1AW
Keplerian Bulletin 36 ARLK036
From ARRL Headquarters
Newington, CT July 29, 1995
To all radio amateurs

SB KEP ARL ARLK036
ARLK036 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-69
1 99969U 95217.66545253 .00006972 00000-0 61643-4 0 14
2 99969 28.4660 5.0912 0004838 274.0067 85.9975 15.64893589 29
AO-10
1 14129U 83058B 95209.03342820 .00000085 00000-0 10000-3 0 03663
2 14129 026.4477 256.1390 5995039 296.7835 014.9822 02.05877850063170
RS-10/11
1 18129U 87054A 95208.88056751 .00000034 00000-0 21272-4 0 00939
2 18129 082.9234 028.9874 0011881 346.1824 013.9006 13.72354776405559
UO-11
1 14781U 84021B 95208.97653023 .00000088 00000-0 22634-4 0 08418
2 14781 097.7832 209.5999 0012923 053.7426 306.4996 14.69362757609895
RS-12/13
1 21089U 91007A 95209.12783336 .00000037 00000-0 23196-4 0 08203
2 21089 082.9220 070.4211 0031115 058.5691 301.8500 13.74059187224397
AO-13
1 19216U 88051B 95209.02333835 -.00000273 00000-0 -41183-3 0 00695
2 19216 057.5040 173.7107 7313321 014.8174 358.1855 02.09724730023029
UO-14
1 20437U 90005B 95209.15812349 -.00000018 00000-0 97120-5 0 01286
2 20437 098.5669 292.8693 0011949 076.7720 283.4795 14.29892507287601
RS-15
1 23439U 94085A 95209.03535053 -.00000039 00000-0 10000-3 0 00747
2 23439 064.8148 188.9246 0167821 255.1984 103.0286 11.27525034024120
```

```
AO-16
1 20439U 90005D 95209.19832565 -.00000021 00000-0 87785-5 0 09259
2 20439 098.5781 294.6326 0012217 077.4375 282.8174 14.29946538287624
DO-17
1 20440U 90005E 95209.18276876 -.00000003 00000-0 15647-4 0 09243
2 20440 098.5798 295.0969 0012359 076.8441 283.4122 14.30087964287649
WO-18
1 20441U 90005F 95208.74606249 -.00000014 00000-0 11456-4 0 09321
2 20441 098.5795 294.6357 0012940 078.9188 281.3444 14.30058983287586
LO-19
1 20442U 90005G 95206.17737271 -.00000044 00000-0 00000-0 0 09138
2 20442 098.5791 292.4754 0013130 084.0130 276.2551 14.30161654287231
FO-20
1 20480U 90013C 95209.18703244 -.00000023 00000-0 13179-4 0 08238
2 20480 099.0724 290.1676 0540998 140.4355 223.7570 12.83231598256208
AO-21
1 21087U 91006A 95208.99531797 .00000094 00000-0 82657-4 0 06349
2 21087 082.9394 202.3703 0037207 033.1418 327.1999 13.74557269225335
UO-22
1 21575U 91050B 95209.15973112 -.00000007 00000-0 12024-4 0 06335
2 21575 098.3902 279.4609 0007538 150.8586 209.3025 14.36983889211381
KO-23
1 22077U 92052B 95208.94357075 -.00000037 00000-0 10000-3 0 05238
2 22077 066.0761 150.4305 0004839 187.9475 172.1461 12.86291447138973
KO-25
1 22828U 93061F 95209.17749691 -.00000008 00000-0 14284-4 0 03862
2 22828 098.6116 285.1521 0011107 086.2487 273.9967 14.28106735063722
IO-26
1 22826U 93061D 95209.19045901 -.00000010 00000-0 13435-4 0 04091
2 22826 098.6161 285.1276 0009758 098.3441 261.8848 14.27775882095622
AO-27
1 22825U 93061C 95209.16954606 -.00000006 00000-0 15239-4 0 04299
2 22825 098.6157 285.0030 0009392 098.3545 261.8701 14.27668081095611
PO-28
1 22829U 93061G 95209.18971400 -.00000001 00000-0 17256-4 0 04089
2 22829 098.6127 285.2017 0010908 086.6759 273.5673 14.28086253095648
Mir
1 16609U 86017A 95209.21117715 .00003507 00000-0 54108-4 0 02208
2 16609 051.6497 312.3266 0003945 295.3850 064.6734 15.57143053539328

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
August 1, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1622. EOSS-24: July 30 CENTRAL COLORADO BALLOON LAUNCH

Newsgroup: rec.radio.amateur.space
Date: 1995-07-29 00:00:00 UTC
From: au156@yfn.ysu.edu
Message-ID: <3ve4eh$m0e@news.ysu.edu>
Source record: 24330

EOSS-24: CENTRAL COLORADO REPEATER/ATV BALLOON LAUNCH

Region: Central Colorado

Date/Time: July 30 / 9:00 AM MDT, 15:00 UTC

Location: Monument, Colorado (20 miles north of
Colorado Springs)
Site Coordinates: 39.09 North Lat.
104.87 West Long.
ATV: 426.25 MHz AM (1 watt output) NTSC color
video
VHF/UHF Repeater: 446.000 MHz FM Input
147.555 MHz FM Output
(note change as of 7/16/95)
Beacons: a) 147.555 MHz carrier from repeater always
on; (periodic Morse ID audio on FM)
b) 144.34 MHz Morse ID audio on FM
(periodic; frequency shared with packet
telemetry)
Telemetry: 144.340 MHz FM (1 Watt output) - AX.25, 1200
baud mostly plain english text; includes APRS
position data string.
Foxhunters: Pikes Peak FM Association, 448.450 MHz
(tentative)

For additional launch data and general Edge of Space Sciences (EOSS)
information:

http://www.usa.net/~rickvg/eoss.htm
maintained by Rick von Glahn
rickvg@usa.net
---
posted by Hank Riley, N1LTV

Please email news of upcoming balloon launches and post-flight
reports for distribution on the Net.

h1riley@umassd.edu
au156@yfn.ysu.edu

1623. Two-Line Orbital Element Sets (TLE647)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-29 00:00:00 UTC
From: ts.kelso@wem.org
Message-ID: <950729200128477@wem.org>
Source record: 24331

Path: holonet!colossus.holonet.net!news.sprintlink.net!gatech!usenet.eel.ufl.edu!news.ultranet.com!zombie.ncsc.mil!blackbird.afit.af.mil!dolphin!tkelso
From: tkelso@afit.af.mil (TS Kelso)
Newsgroups: rec.radio.amateur.space
Subject: Two-Line Orbital Element Sets (TLE647)
Date: 29 Jul 95 18:53:50 GMT
Organization: Air Force Institute of Technology
Message-ID: <tkelso.807044030@dolphin>

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #647 -
Alouette 1
1 00424U 62049A 95207.55583727 .00000018 00000-0 10279-4 0 1237
2 00424 80.4657 246.0315 0023833 151.5478 208.6977 13.67846280637687
ATS 1
1 02608U 66110A 95208.10503128 .00000072 00000-0 10000-3 0 9391
2 02608 14.6413 356.2810 0010395 63.7677 296.4026 1.00338980 21594
ATS 3
1 03029U 67111A 95207.34112156 -.00000115 00000-0 10000-3 0 3824
2 03029 14.8432 3.2772 0008806 262.9449 54.7382 1.00272832101485
Cosmos 398
1 04966U 71016A 95208.87353963 .00132735 89751-5 12705-3 0 9509
2 04966 51.4118 37.7081 0520742 234.5628 120.5690 15.10522793831317
Starlette
1 07646U 75010A 95208.76014559 -.00000135 00000-0 46652-5 0 9030
2 07646 49.8292 352.9018 0206180 235.6272 122.4969 13.82188860 33959
LAGEOS
1 08820U 76039A 95205.23217023 .00000004 00000-0 10000-3 0 1231
2 08820 109.8534 273.3088 0043931 199.4078 160.5010 6.38664716192821
ETS-2
1 09852U 77014A 95193.33958817 -.00000194 00000-0 10000-3 0 321
```

```
2 09852 12.7799 36.8161 0004751 61.1656 298.9378 1.00021583 14234
GOES 2
1 10061U 77048A 95208.46591758 .00000051 00000-0 10000-3 0 5573
2 10061 11.8709 40.8604 0012345 124.9313 130.1250 1.00280135 11178
IUE
1 10637U 78012A 95208.51002428 -.00000265 00000-0 00000+0 0 1525
2 10637 35.2704 88.3321 1332799 47.9447 306.8522 1.00316754 16666
GPS BI-01
1 10684U 78020A 95208.14545249 -.00000017 00000-0 10000-3 0 3711
2 10684 64.8660 33.5128 0061296 162.9344 197.3262 1.98069435112959
GPS BI-02
1 10893U 78047A 95208.45588531 .00000027 00000-0 10000-3 0 1760
2 10893 63.3044 271.4469 0223547 14.0466 346.6626 2.01627423126245
GOES 3
1 10953U 78062A 95205.65866608 .00000109 00000-0 10000-3 0 5133
2 10953 10.8503 43.7372 0006032 110.1778 224.9732 1.00331517 15757
SeaSat 1
1 10967U 78064A 95206.03663998 .00000003 00000-0 45450-4 0 4163
2 10967 107.9997 215.8061 0002910 248.1210 111.9626 14.38046170894270
GPS BI-03
1 11054U 78093A 95201.16810026 -.00000034 00000-0 10000-3 0 3401
2 11054 63.0212 269.9928 0045378 180.6411 179.4330 1.93505366122213
Nimbus 7
1 11080U 78098A 95206.13955867 -.00000065 00000-0 -21241-4 0 5171
2 11080 98.9934 78.5009 0009618 126.9900 233.2130 13.83707762845807
GPS BI-04
1 11141U 78112A 95207.72808546 -.00000016 00000-0 10000-3 0 9914
2 11141 64.8482 35.4186 0049059 27.9397 332.3712 1.92894879 11586
GPS BI-05
1 11690U 80011A 95199.79948070 -.00000051 00000-0 10000-3 0 9276
2 11690 65.1949 35.3665 0143913 196.1450 163.5559 2.00565159127498
GPS BI-06
1 11783U 80032A 95205.04556750 .00000022 00000-0 10000-3 0 894
2 11783 62.4391 264.7242 0218807 29.3338 331.9550 2.03456694112131
GOES 5
1 12472U 81049A 95207.49248681 -.00000286 00000-0 10000-3 0 8690
2 12472 7.5986 53.5659 0007828 33.2901 326.8291 1.00260699 9822
Cosmos 1383
1 13301U 82066A 95208.86849780 .00000119 00000-0 12167-3 0 4226
2 13301 82.9358 12.3168 0028724 59.0347 301.3625 13.68067596652898
LandSat 4
1 13367U 82072A 95209.16552408 .00000124 00000-0 37408-4 0 7390
2 13367 98.1243 264.0369 0008567 75.1666 285.0481 14.57152490693189
DMSP B5D2-1
1 13736U 82118A 95208.95343133 .00000041 00000-0 35799-4 0 8132
2 13736 98.6290 37.5164 0007631 258.0886 101.9438 14.25743810654721
IRAS
1 13777U 83004A 95208.50629050 -.00000200 00000-0 -10768-3 0 317
2 13777 98.9657 35.9267 0012249 272.6735 87.3030 13.99226382307829
Cosmos 1447
```

```
1 13916U 83021A 95209.07879738 .00000048 00000-0 34480-4 0 5191
2 13916 82.9447 71.5116 0038110 340.6796 19.2914 13.74328202619087
TDRS 1
1 13969U 83026B 95207.41187368 .00000073 00000-0 10000-3 0 4436
2 13969 8.4466 46.9211 0007860 131.7592 125.9998 1.00733240 18103
GOES 6
1 14050U 83041A 95208.33607303 -.00000088 00000-0 10000-3 0 4294
2 14050 6.4247 56.8927 0004851 27.8295 232.1929 1.00326989102923
OSCAR 10
1 14129U 83058B 95209.03342820 .00000085 00000-0 10000-3 0 3652
2 14129 26.4477 256.1390 5995039 296.7835 14.9822 2.05877850 63170
LandSat 5
1 14780U 84021A 95206.93516708 .00001017 00000-0 23518-3 0 3025
2 14780 98.1085 262.3301 0006252 87.7958 272.3947 14.57161714606271
UoSat 2
1 14781U 84021B 95208.97653023 .00000088 00000-0 22634-4 0 8159
2 14781 97.7832 209.5999 0012923 53.7426 306.4996 14.69362757609895
GPS BI-09
1 15039U 84059A 95207.68230402 -.00000024 00000-0 10000-3 0 3515
2 15039 64.5284 29.8061 0082242 18.1648 342.1624 1.92302309 81157
Cosmos 1574
1 15055U 84062A 95207.26961557 .00000024 00000-0 96314-5 0 7206
2 15055 82.9580 127.0551 0027174 168.1536 192.0263 13.73624120556101
GPS BI-10
1 15271U 84097A 95207.94664948 .00000036 00000-0 10000-3 0 328
2 15271 62.1146 264.9713 0155565 353.8839 6.0367 2.00600396 78728
Cosmos 1602
1 15331U 84105A 95207.11812380 .00000173 00000-0 17567-4 0 4062
2 15331 82.5330 59.4363 0019400 314.2703 45.6917 14.84645383584443
NOAA 9
1 15427U 84123A 95208.86530146 -.00000013 00000-0 16825-4 0 3427
2 15427 98.9956 267.8295 0015045 149.8841 210.3206 14.13719527547668
GPS BI-11
1 16129U 85093A 95208.47075433 -.00000018 00000-0 10000-3 0 6677
2 16129 65.1978 32.9726 0155392 86.6146 275.2185 1.89368048 15757
Mir
1 16609U 86017A 95209.21117715 .00003507 00000-0 54108-4 0 1713
2 16609 51.6497 312.3266 0003945 295.3850 64.6734 15.57143053539328
SPOT 1
1 16613U 86019A 95207.21648861 .00000090 00000-0 62356-4 0 8354
2 16613 98.6483 277.6947 0001270 45.2987 314.8293 14.20064816173906
Cosmos 1766
1 16881U 86055A 95208.78791863 .00000174 00000-0 18203-4 0 3221
2 16881 82.5201 115.7101 0019061 336.0663 23.9659 14.83644429485594
EGP
1 16908U 86061A 95207.21627321 -.00000083 00000-0 10000-3 0 168
2 16908 50.0125 282.2547 0011455 259.4999 100.4545 12.44412488 75696
NOAA 10
1 16969U 86073A 95208.95511749 .00000036 00000-0 33742-4 0 2502
2 16969 98.5115 210.6067 0011963 223.9225 136.1002 14.24949252460284
```

```
MOS-1
1 17527U 87018A 95209.18074314 -.00000043 00000-0 00000+0 0 2326
2 17527 98.9833 273.2733 0000508 147.3459 212.7719 13.94887035429548
GOES 7
1 17561U 87022A 95208.43090694 .00000080 00000-0 10000-3 0 4827
2 17561 2.4036 71.9241 0002273 2.5107 249.7045 1.00279287 14035
Kvant-1
1 17845U 87030A 95208.76195635 .00003276 00000-0 50998-4 0 3312
2 17845 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757539194
DMSP B5D2-3
1 18123U 87053A 95208.92265807 .00000039 00000-0 42401-4 0 786
2 18123 98.7776 39.4394 0015128 99.8403 260.4509 14.15412193418485
RS-10/11
1 18129U 87054A 95208.88056751 .00000034 00000-0 21272-4 0 939
2 18129 82.9234 28.9874 0011881 346.1824 13.9006 13.72354776405559
Meteor 2-16
1 18312U 87068A 95206.18954762 .00000054 00000-0 35081-4 0 4139
2 18312 82.5502 252.2241 0014151 63.4993 296.7612 13.84060246400802
Meteor 2-17
1 18820U 88005A 95209.25088654 .00000037 00000-0 19542-4 0 6816
2 18820 82.5408 305.5787 0017708 115.8482 244.4520 13.84741287378559
DMSP B5D2-4
1 18822U 88006A 95208.17897503 -.00000008 00000-0 14953-4 0 319
2 18822 98.4025 50.4923 0005131 237.7675 122.3002 14.23159820388207
Glonass 34
1 19163U 88043A 95207.92156135 .00000001 00000-0 10000-3 0 73
2 19163 65.1452 96.8260 0007748 158.3076 201.8027 2.13102546 55286
Glonass 36
1 19165U 88043C 95207.03948984 -.00000008 00000-0 10000-3 0 4058
2 19165 65.1245 96.8140 0002747 318.1271 41.9314 2.13102128 55886
METEOSAT 3
1 19215U 88051A 95208.47599456 -.00000277 00000-0 10000-3 0 1503
2 19215 2.5909 69.7418 0002414 65.4779 271.9909 1.00262378 13975
AO-13
1 19216U 88051B 95209.02333835 -.00000273 00000-0 -41183-3 0 684
2 19216 57.5040 173.7107 7313321 14.8174 358.1855 2.09724730 23029
OKEAN 1
1 19274U 88056A 95206.07817411 .00000237 00000-0 26512-4 0 219
2 19274 82.5126 218.6785 0021169 120.4255 239.9049 14.82360685380767
Meteor 3-2
1 19336U 88064A 95208.54901501 .00000051 00000-0 10000-3 0 4116
2 19336 82.5377 36.8522 0017060 334.5333 25.4948 13.16973977336614
Glonass 39
1 19503U 88085C 95207.53705217 -.00000066 00000-0 10000-3 0 3025
2 19503 65.6852 335.7235 0009254 168.4210 191.5991 2.13101727 53380
NOAA 11
1 19531U 88089A 95208.94756091 -.00000041 00000-0 32938-5 0 1490
2 19531 99.1968 213.3985 0012934 72.7000 287.5590 14.13057915352517
TDRS 2
1 19548U 88091B 95207.69670862 -.00000196 00000-0 10000-3 0 1364
```

```
2 19548 1.8265 74.2530 0004046 109.7631 96.0257 1.00271489 12254
Glonass 40
1 19749U 89001A 95202.88296000 -.00000052 00000-0 10000-3 0 5144
2 19749 65.0986 96.5571 0004347 259.3003 100.7120 2.13101377 50796
Glonass 41
1 19750U 89001B 95207.63102899 -.00000002 00000-0 10000-3 0 4274
2 19750 65.1130 96.4516 0006520 239.2040 120.7996 2.13101839 50911
GPS BII-01
1 19802U 89013A 95208.07221110 -.00000018 00000-0 10000-3 0 770
2 19802 55.2218 123.6115 0026499 175.8777 184.1696 2.00551824 47177
Akebono
1 19822U 89016A 95207.27243532 .00005947 00000-0 27938-3 0 5440
2 19822 75.0912 312.6682 3779929 351.7048 3.5141 7.86851419140895
Meteor 2-18
1 19851U 89018A 95206.87899696 .00000505 00000-0 43788-3 0 4116
2 19851 82.5182 182.0502 0014898 167.4818 192.6728 13.84394428323543
MOP-1
1 19876U 89020B 95204.66479167 .00000053 00000-0 00000+0 0 1276
2 19876 1.2615 74.1530 0002245 45.2680 70.1013 1.00275029 3388
TDRS 3
1 19883U 89021B 95207.59656326 -.00000270 00000-0 00000+0 0 1018
2 19883 0.0986 103.8767 0002894 53.0755 320.6801 1.00271265195845
GPS BII-02
1 20061U 89044A 95208.41406454 -.00000045 00000-0 10000-3 0 946
2 20061 54.4260 299.8296 0146543 215.4260 143.6811 2.00563983 44929
Nadezhda 1
1 20103U 89050A 95208.88618359 .00000030 00000-0 16122-4 0 4635
2 20103 82.9582 348.5702 0036235 239.6003 120.1570 13.73855133304016
GPS BII-03
1 20185U 89064A 95208.75140001 -.00000011 00000-0 10000-3 0 1130
2 20185 55.0177 124.1344 0016968 324.2648 35.6107 2.00572463 43504
GMS 4
1 20217U 89070A 95201.63942877 -.00000374 00000-0 10000-3 0 2216
2 20217 1.1034 76.0883 0010052 83.6618 128.5591 1.00130542 22084
INTERCOSMOS 24
1 20261U 89080A 95208.74203082 .00000152 00000-0 37823-4 0 4277
2 20261 82.5962 118.6025 1243326 61.6393 310.4390 12.47263175265334
GPS BII-04
1 20302U 89085A 95208.28852306 .00000048 00000-0 10000-3 0 891
2 20302 53.3681 239.8334 0022703 183.7058 176.3440 2.00558310 42299
Meteor 3-3
1 20305U 89086A 95209.14117723 .00000044 00000-0 10000-3 0 3606
2 20305 82.5332 349.2777 0009201 25.8164 334.3065 13.04411994275826
COBE
1 20322U 89089A 95208.07442796 -.00000319 00000-0 -17573-3 0 1393
2 20322 98.9614 223.5204 0008069 222.3089 137.7454 14.03449214291189
Kvant-2
1 20335U 89093A 95208.76195635 .00003276 00000-0 50998-4 0 3377
2 20335 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757322406
GPS BII-05
```

```
1 20361U 89097A 95208.30037788 -.00000019 00000-0 00000+0 0 9535
2 20361 55.7890 66.1822 0081587 123.2849 237.3436 2.00562543 31774
COSMOS 2054 (Altair-1)
1 20391U 89101A 95206.44759259 -.00000141 00000-0 00000+0 0 1933
2 20391 3.2088 65.6291 0005197 47.1885 334.7865 1.00266260 20711
SPOT 2
1 20436U 90005A 95208.75290697 -.00000044 00000-0 00000+0 0 9558
2 20436 98.7341 282.3192 0000915 114.4817 245.6455 14.20025998285654
UO-14
1 20437U 90005B 95205.72933462 .00000002 00000-0 17729-4 0 1137
2 20437 98.5669 289.4955 0011862 85.9188 274.3341 14.29892483287113
UO-15
1 20438U 90005C 95206.76573153 -.00000093 00000-0 -19648-4 0 9109
2 20438 98.5646 288.9744 0011161 91.4196 268.8409 14.29210140287153
PACSAT
1 20439U 90005D 95206.74928397 -.00000026 00000-0 68431-5 0 9124
2 20439 98.5780 292.2189 0012179 84.1882 276.0686 14.29946460287277
DO-17
1 20440U 90005E 95206.24420961 -.00000038 00000-0 22152-5 0 9128
2 20440 98.5799 292.2005 0012333 84.8666 275.3925 14.30087482287220
WO-18
1 20441U 90005F 95205.24770656 -.00000021 00000-0 86548-5 0 9162
2 20441 98.5796 291.1877 0012848 88.2513 272.0140 14.30058706287087
LO-19
1 20442U 90005G 95205.75760017 -.00000047 00000-0 -14666-5 0 9126
2 20442 98.5791 292.0616 0013134 85.2644 275.0043 14.30161625287175
GPS BII-06
1 20452U 90008A 95202.21011385 .00000055 00000-0 10000-3 0 578
2 20452 54.0217 180.2906 0056764 82.6248 278.0075 2.00576606 40159
MOS-1B
1 20478U 90013A 95207.71992507 .00000091 00000-0 10000-3 0 8091
2 20478 98.9916 276.1942 0000943 57.0664 303.0588 13.94928412199043
DEBUT
1 20479U 90013B 95205.20127475 -.00000010 00000-0 45221-4 0 9118
2 20479 99.0720 287.0755 0540727 149.0171 214.4045 12.83334960255701
FO-20
1 20480U 90013C 95205.21056842 .00000010 00000-0 90336-4 0 8081
2 20480 99.0722 286.9300 0540936 149.4180 213.9661 12.83231892255691
MOS-1B R/B
1 20491U 90013D 95208.80106889 -.00000418 00000-0 -71922-3 0 1556
2 20491 99.0502 345.0762 0470196 336.5160 21.5088 13.02993727259486
LACE
1 20496U 90015A 95209.24886832 .00001112 00000-0 40763-4 0 5627
2 20496 43.0996 256.9696 0008474 109.0555 251.1216 15.34687971303886
Nadezhda 2
1 20508U 90017A 95208.93377968 .00000005 00000-0 -11097-4 0 4621
2 20508 82.9553 123.1202 0043797 189.6363 170.3958 13.73495846271245
OKEAN 2
1 20510U 90018A 95208.86331928 -.00000760 00000-0 -10705-3 0 4288
2 20510 82.5285 168.0550 0019069 319.3750 40.6200 14.78497326291609
```

```
GPS BII-07
1 20533U 90025A 95208.60736668 -.00000044 00000-0 10000-3 0 786
2 20533 54.8105 300.4283 0046003 80.6176 279.9506 2.00566796 39055
PegSat
1 20546U 90028A 95208.85685760 .00003087 00000-0 63561-4 0 8256
2 20546 94.1154 167.2850 0065021 178.3130 181.8350 15.43843769294752
HST
1 20580U 90037B 95209.26464744 .00015755 00000-0 15440-2 0 6958
2 20580 28.4688 146.9077 0006094 17.2379 342.8405 14.90921146 90041
MACSAT 2
1 20608U 90043B 95208.85570115 .00000136 00000-0 20216-4 0 1131
2 20608 89.9274 176.1370 0107955 112.3492 248.9208 14.64848769278660
Glonass 44
1 20619U 90045A 95205.59770117 -.00000077 00000-0 10000-3 0 2075
2 20619 65.2615 335.1903 0024602 208.7336 151.1343 2.13102443 40307
Glonass 45
1 20620U 90045B 95204.30870800 -.00000079 00000-0 10000-3 0 2145
2 20620 65.2850 335.2262 0008508 55.2606 304.8283 2.13102528 40316
Glonass 46
1 20621U 90045C 95207.66009222 -.00000066 00000-0 10000-3 0 8108
2 20621 65.2995 335.1688 0012105 190.1574 169.8275 2.13101700 40387
Kristall
1 20635U 90048A 95208.76195635 .00003276 00000-0 50998-4 0 1280
2 20635 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757539140
ROSAT
1 20638U 90049A 95207.74903641 -.00000177 00000-0 73431-5 0 4789
2 20638 52.9915 328.9329 0012409 207.3257 152.7086 15.07214695283080
Meteor 2-19
1 20670U 90057A 95208.61163315 .00000011 00000-0 -35705-5 0 9118
2 20670 82.5427 246.4492 0017572 87.6074 272.7099 13.84161528256705
CRRES
1 20712U 90065A 95208.95380951 .00000251 00000-0 41898-3 0 1269
2 20712 18.0692 22.5955 7192129 134.0865 313.9375 2.35451033 35449
GPS BII-08
1 20724U 90068A 95206.93373878 -.00000032 00000-0 10000-3 0 9224
2 20724 54.8602 121.8103 0119068 174.7881 185.3459 2.00565602 34883
Feng Yun1-2
1 20788U 90081A 95208.02110065 .00000092 00000-0 89335-4 0 4440
2 20788 98.8188 219.7054 0016336 327.4852 32.5301 14.01381526250414
Meteor 2-20
1 20826U 90086A 95206.97756316 .00000041 00000-0 23557-4 0 9224
2 20826 82.5227 184.6882 0013849 3.7860 356.3400 13.83611178243595
GPS BII-09
1 20830U 90088A 95204.98362740 -.00000042 00000-0 10000-3 0 9314
2 20830 55.7322 64.2924 0067965 99.4836 261.3398 2.00559198 35489
GPS BIIA-10
1 20959U 90103A 95207.88798124 -.00000020 00000-0 10000-3 0 8994
2 20959 55.0769 123.7586 0098570 230.8565 128.2756 2.00574460 34139
DMSP B5D2-5
1 20978U 90105A 95208.63261930 .00000061 00000-0 37245-4 0 2800
```

```
2 20978 98.6355 276.7258 0080340 50.7309 310.0962 14.32565341243105
Glonass 47
1 21006U 90110A 95207.68572141 -.00000001 00000-0 10000-3 0 7799
2 21006 65.0738 95.7263 0059536 188.1440 171.8354 2.13102918 36056
Glonass 48
1 21007U 90110B 95206.93604950 -.00000009 00000-0 10000-3 0 9094
2 21007 65.0992 95.8277 0034640 178.6508 181.4359 2.13101292 36026
Glonass 49
1 21008U 90110C 95206.35790661 -.00000016 00000-0 00000+0 0 1035
2 21008 65.0675 95.7995 0008979 277.7425 82.2181 2.13099141 36004
AO-21
1 21087U 91006A 95206.01086712 .00000094 00000-0 82657-4 0 6162
2 21087 82.9400 204.5819 0037319 40.9805 319.4144 13.74557058224921
RS-12/13
1 21089U 91007A 95208.69092582 .00000034 00000-0 19414-4 0 8182
2 21089 82.9220 70.7452 0031120 59.6768 300.7454 13.74059143224332
MOP-2
1 21140U 91015B 95202.16898148 -.00000012 00000-0 00000+0 0 799
2 21140 0.1705 286.2935 0001808 194.8352 238.3405 1.00279392 18273
Nadezhda 3
1 21152U 91019A 95208.90319184 .00000399 00000-0 40982-3 0 1539
2 21152 82.9240 26.7169 0042686 165.7139 194.5236 13.73522408219093
Glonass 50
1 21216U 91025A 95207.70437725 -.00000066 00000-0 10000-3 0 4258
2 21216 65.0219 334.7655 0007982 194.0521 165.9220 2.13102700 33566
Glonass 51
1 21217U 91025B 95205.42705620 -.00000078 00000-0 10000-3 0 8356
2 21217 65.0153 334.8543 0009160 240.5231 119.3907 2.13101521 33505
Glonass 52
1 21218U 91025C 95201.78481826 -.00000075 00000-0 10000-3 0 3072
2 21218 65.0364 334.9523 0031871 79.5524 280.8236 2.13102946 33431
GRO
1 21225U 91027B 95205.53373164 .00001524 00000-0 27918-4 0 2822
2 21225 28.4604 314.9884 0003414 97.7872 262.3065 15.42818115119109
Meteor 3-4
1 21232U 91030A 95207.57153705 .00000050 00000-0 10000-3 0 8212
2 21232 82.5391 243.6932 0011798 256.6006 103.3790 13.16468137204560
NOAA 12
1 21263U 91032A 95208.70168407 .00000124 00000-0 74719-4 0 5755
2 21263 98.5850 231.7252 0012890 134.9233 225.2990 14.22544135218188
OKEAN 3
1 21397U 91039A 95209.21367722 .00000185 00000-0 23258-4 0 1214
2 21397 82.5250 80.9442 0024155 19.6054 340.6085 14.76387670223412
GPS BIIA-11
1 21552U 91047A 95207.15617490 -.00000025 00000-0 10000-6 0 8772
2 21552 56.0171 61.9093 0064325 242.4492 116.9610 2.00564016 29719
ERS-1
1 21574U 91050A 95207.80156342 .00000013 00000-0 21106-4 0 1794
2 21574 98.5492 281.5622 0001272 61.9759 298.1535 14.32247878210724
UO-22
```

```
1 21575U 91050B 95205.67820684 -.00000014 00000-0 96043-5 0 6188
2 21575 98.3896 276.0655 0007447 161.5330 198.6134 14.36983626210886
ORBCOMM-X
1 21576U 91050C 95205.71171168 .00000018 00000-0 20686-4 0 7138
2 21576 98.3905 274.4744 0003525 162.7561 197.3742 14.36392314210790
TUBSAT-A
1 21577U 91050D 95206.68041952 -.00000015 00000-0 92664-5 0 6125
2 21577 98.3904 275.9506 0006205 160.2607 199.8820 14.36489142210963
SARA
1 21578U 91050E 95209.20116543 .00000151 00000-0 62977-4 0 8132
2 21578 98.4101 284.0845 0004969 145.5223 214.6289 14.39035853211590
TDRS 4
1 21639U 91054B 95203.21567708 .00000076 00000-0 00000+0 0 9177
2 21639 0.0320 254.5127 0003869 210.5749 97.7500 1.00274311108576
Meteor 3-5
1 21655U 91056A 95208.48463437 .00000051 00000-0 10000-3 0 8194
2 21655 82.5503 190.4869 0012029 269.0429 90.9314 13.16839948189801
UARS
1 21701U 91063B 95206.48383379 -.00000136 00000-0 92264-5 0 6892
2 21701 56.9844 343.1633 0005479 100.4889 259.6761 14.96408404211300
DMSP B5D2-6
1 21798U 91082A 95208.94421003 .00000073 00000-0 62208-4 0 9288
2 21798 98.9613 220.7855 0013904 69.2263 291.0397 14.13907956188967
Glonass 53
1 21853U 92005A 95205.75085773 -.00000023 00000-0 10000-3 0 270
2 21853 65.0173 95.4882 0006432 185.8166 174.2349 2.13102158 27124
Glonass 54
1 21854U 92005B 95208.38668645 .00000005 00000-0 00000+0 0 1644
2 21854 65.0133 95.3866 0016498 16.9524 343.1764 2.13103870 27161
Glonass 55
1 21855U 92005C 95206.57388001 -.00000013 00000-0 00000+0 0 1571
2 21855 65.0085 95.4556 0007070 204.0293 156.0025 2.13102165 27116
JERS-1
1 21867U 92007A 95206.90272551 .00001126 00000-0 98614-4 0 6297
2 21867 97.7170 283.2996 0002370 83.2879 276.8612 14.98665687188846
GPS BIIA-12
1 21890U 92009A 95208.11983454 .00000050 00000-0 10000-3 0 6793
2 21890 53.9199 240.0784 0056494 182.3739 177.6826 2.00573676 25105
GPS BIIA-13
1 21930U 92019A 95206.32954404 -.00000079 00000-0 10000-3 0 6526
2 21930 55.6823 1.7151 0039381 174.3826 185.6835 2.00566113 23999
EUVE
1 21987U 92031A 95205.25058387 .00000647 00000-0 20373-4 0 4701
2 21987 28.4326 233.9181 0009780 55.4158 304.7355 15.19351867173591
SAMPEX
1 22012U 92038A 95208.77147898 .00000437 00000-0 35784-4 0 6480
2 22012 81.6726 102.8631 0118742 154.1884 206.5320 14.91403689166729
GPS BIIA-14
1 22014U 92039A 95202.88142540 .00000055 00000-0 10000-3 0 5712
2 22014 54.8542 181.8087 0089860 313.8958 45.3319 2.00570844 15764
```

```
Glonass 56
1 22056U 92047A 95207.88108248 -.00000065 00000-0 00000+0 0 711
2 22056 64.8601 334.8775 0004182 260.0442 99.9050 2.13103119 23235
Glonass 57
1 22057U 92047B 95208.17642935 -.00000064 00000-0 00000+0 0 642
2 22057 64.8746 334.8960 0006265 324.0835 35.8803 2.13102777 23215
Glonass 58
1 22058U 92047C 95208.58581660 -.00000061 00000-0 10000-3 0 300
2 22058 64.8793 334.8749 0006894 269.9510 89.9687 2.13102929 23273
TOPEX
1 22076U 92052A 95207.86310975 -.00000061 00000-0 00000+0 0 8948
2 22076 66.0397 170.4575 0008437 265.9919 94.0131 12.80930177138325
KO-23
1 22077U 92052B 95206.84430141 -.00000037 00000-0 10000-3 0 5095
2 22077 66.0763 154.8257 0005029 188.5498 171.5432 12.86291494138707
S80/T
1 22078U 92052C 95209.17318201 -.00000037 00000-0 10000-3 0 5075
2 22078 66.0805 148.8030 0004843 171.1777 188.9323 12.86576068139084
GPS BIIA-15
1 22108U 92058A 95208.32521114 .00000049 00000-0 00000+0 0 5909
2 22108 54.1421 240.8553 0123871 154.5331 206.1618 2.00569061 21054
FREJA
1 22161U 92064A 95208.87255367 -.00000192 00000-0 -31388-4 0 5335
2 22161 62.9941 345.6784 0813048 350.3438 8.2711 13.21842081135426
LAGEOS II
1 22195U 92070B 95206.43090670 -.00000009 00000-0 10000-3 0 4199
2 22195 52.6386 198.8163 0138157 293.2948 65.3126 6.47294275 65054
GPS BIIA-16
1 22231U 92079A 95209.00710103 .00000034 00000-0 10000-3 0 5733
2 22231 54.6330 182.6872 0031553 285.2297 74.4094 2.00563102 19646
GPS BIIA-17
1 22275U 92089A 95208.16177182 .00000028 00000-0 10000-3 0 5915
2 22275 54.6291 180.2775 0051880 248.6426 110.7820 2.00562801 19037
TDRS 5
1 22314U 93003B 95208.28134375 -.00000284 00000-0 10000-3 0 5416
2 22314 1.9596 71.7440 0001301 112.3710 175.8994 1.00275777 9319
GPS BIIA-18
1 22446U 93007A 95208.23322224 -.00000047 00000-0 10000-3 0 5803
2 22446 54.4199 300.6918 0085658 358.5830 1.4443 2.00578597 18023
Glonass 59
1 22512U 93010A 95202.93669849 -.00000052 00000-0 10000-3 0 7177
2 22512 65.0289 95.4367 0007885 195.3403 164.6849 2.13102021 18639
Glonass 60
1 22513U 93010B 95207.56852492 -.00000002 00000-0 00000+0 0 7888
2 22513 65.0223 95.2801 0006492 192.0497 168.0034 2.13102401 18927
Glonass 61
1 22514U 93010C 95206.45421827 -.00000014 00000-0 00000+0 0 7849
2 22514 65.0393 95.3130 0010446 186.7637 173.2866 2.13102869 18909
ASTRO-D
1 22521U 93011A 95205.79586520 .00000904 00000-0 57983-4 0 4241
```

```
2 22521 31.1041 358.0948 0056448 151.4270 208.9495 15.02340630133039
UFO F1
1 22563U 93015A 95205.00000000 .00000060 00000-0 00000+0 0 4368
2 22563 25.9287 293.7672 0006970 238.3536 356.2911 1.00275322 12823
GPS BIIA-19
1 22581U 93017A 95207.37672490 -.00000078 00000-0 10000-3 0 4477
2 22581 55.2201 1.2321 0057946 37.7083 322.6961 2.00574374 17068
ARSENE
1 22654U 93031B 95204.97220130 -.00000146 00000-0 10000-3 0 3225
2 22654 2.6421 83.1567 2893311 215.6815 120.7444 1.42203031 6915
GPS BIIA-20
1 22657U 93032A 95207.50853964 -.00000078 00000-0 10000-3 0 4896
2 22657 55.2538 1.0576 0069554 215.5377 144.0299 2.00560481 12390
RADCAL
1 22698U 93041A 95206.24425997 .00000011 00000-0 -52645-6 0 4185
2 22698 89.5449 288.5388 0091073 316.1511 43.2469 14.21348635107843
GPS BIIA-21
1 22700U 93042A 95207.47587964 .00000051 00000-0 10000-3 0 4447
2 22700 54.3140 241.6902 0038622 342.3909 17.5657 2.00565368 15197
NOAA 13
1 22739U 93050A 95208.85101566 -.00000033 00000-0 64399-5 0 8549
2 22739 98.9968 157.7441 0010791 59.7526 300.4720 14.10937876101177
GPS BIIA-22
1 22779U 93054A 95207.06069552 -.00000055 00000-0 10000-3 0 4994
2 22779 54.5541 300.7385 0020636 245.6802 114.1519 2.00573595 13948
Meteor 2-21
1 22782U 93055A 95207.56528509 .00000004 00000-0 -97826-5 0 4184
2 22782 82.5470 245.9800 0022163 168.6412 191.5260 13.83035224 95985
UFO F2
1 22787U 93056A 95208.32340856 -.00000061 00000-0 00000+0 0 4930
2 22787 4.4537 325.2123 0003450 146.3955 20.8048 1.00275331 5564
SPOT 3
1 22823U 93061A 95208.22994056 -.00000327 00000-0 -13308-3 0 4589
2 22823 98.7383 281.8392 0000666 72.1157 288.0092 14.20020321 94974
STELLA
1 22824U 93061B 95205.63352161 -.00000045 00000-0 -52681-6 0 4045
2 22824 98.6151 281.1685 0006991 104.9349 255.2611 14.27101811 95075
AO-27
1 22825U 93061C 95209.16954606 -.00000006 00000-0 15239-4 0 4075
2 22825 98.6157 285.0030 0009392 98.3545 261.8701 14.27668081 95611
IO-26
1 22826U 93061D 95208.20935463 -.00000028 00000-0 61737-5 0 4068
2 22826 98.6161 284.1596 0009747 101.0186 259.2089 14.27775699 95480
HEATHSAT
1 22827U 93061E 95208.71726327 -.00000015 00000-0 11580-4 0 4675
2 22827 98.6132 284.5923 0010031 88.6976 271.5350 14.27900142 95562
ITAMSAT
1 22828U 93061F 95208.75712098 -.00000014 00000-0 12005-4 0 3840
2 22828 98.6116 284.7373 0011117 87.4762 272.7692 14.28106664 63668
PO-28
```

```
1 22829U 93061G 95207.64831328 -.00000008 00000-0 14237-4 0 3983
2 22829 98.6127 283.6814 0010892 90.8876 269.3556 14.28086086 95427
KO-25
1 22830U 93061H 95205.18649736 -.00000032 00000-0 42885-5 0 4161
2 22830 98.5120 274.0351 0012580 77.4133 282.8455 14.28093557 95074
GPS BIIA-23
1 22877U 93068A 95207.61639127 -.00000025 00000-0 10000-3 0 2940
2 22877 55.4658 62.2117 0037729 292.2974 67.3742 2.00577077 12842
METEOSAT 6
1 22912U 93073B 95201.96892940 -.00000099 00000-0 00000+0 0 3444
2 22912 0.7450 277.8460 0001155 135.2046 223.4965 1.00260156 4524
HST Array
1 22920U 90037C 95209.10218734 .00003437 00000-0 24700-3 0 3497
2 22920 28.4687 104.2815 0004067 245.0480 114.9686 15.01472807 90462
Meteor 3-6
1 22969U 94003A 95205.88733794 .00000051 00000-0 10000-3 0 1840
2 22969 82.5594 132.1391 0015615 343.6952 16.3627 13.16730220 71843
TUBSAT-B
1 22970U 94003B 95208.80986279 .00000051 00000-0 10000-3 0 1766
2 22970 82.5631 130.0146 0016255 335.2403 24.7936 13.16825738 72230
GPS BIIA-24
1 23027U 94016A 95207.69404308 -.00000076 00000-0 10000-3 0 2341
2 23027 55.0949 3.0858 0064194 197.2563 162.5341 2.00558401 10153
Glonass 62
1 23043U 94021A 95206.06305830 -.00000076 00000-0 00000+0 0 2328
2 23043 64.7448 335.3459 0006517 179.5222 180.4901 2.13102891 10018
Glonass 63
1 23044U 94021B 95207.82273994 -.00000066 00000-0 00000+0 0 2104
2 23044 64.7506 335.2858 0029636 201.9575 157.9211 2.13103152 10052
Glonass 64
1 23045U 94021C 95207.06054293 -.00000071 00000-0 00000+0 0 2151
2 23045 64.7357 335.3181 0010277 37.4052 322.6728 2.13102895 10035
GOES 8
1 23051U 94022A 95209.15838196 -.00000258 00000-0 10000-3 0 3527
2 23051 0.1114 85.7647 0003545 61.5371 140.5718 1.00271809 12105
MSTI 2
1 23101U 94028A 95208.51637828 .00003146 00000-0 56015-4 0 2172
2 23101 97.0977 41.1823 0013332 87.4963 272.7775 15.50792669 68771
STRV-1A
1 23125U 94034B 95208.34475736 .00001157 00000-0 52347-3 0 1828
2 23125 7.4894 14.7610 7262614 152.3999 280.6227 2.30034179 8578
STRV-1B
1 23126U 94034C 95200.33043351 .00001604 00000-0 53595-3 0 1625
2 23126 7.4959 18.1279 7265935 145.6386 296.0334 2.29647787 8432
Nadezhda 4
1 23179U 94041A 95207.25318045 .00000064 00000-0 50203-4 0 1188
2 23179 82.9475 118.9174 0036177 319.7221 40.1251 13.75670387 51847
Glonass 65
1 23203U 94050A 95207.20081391 .00000081 00000-0 00000+0 0 1759
2 23203 64.7953 215.1018 0006859 163.6001 198.4734 2.13102257 7432
```

```
Glonass 66
1 23204U 94050B 95206.49372211 .00000085 00000-0 00000+0 0 1792
2 23204 64.7833 215.1559 0015146 339.3765 20.6072 2.13102398 7413
Glonass 67
1 23205U 94050C 95205.90735243 .00000088 00000-0 00000+0 0 1676
2 23205 64.7938 215.1653 0003461 281.1094 78.8972 2.13102375 7409
DMSP B5D2-7
1 23233U 94057A 95208.62817780 .00000085 00000-0 69551-4 0 4281
2 23233 98.8770 266.3471 0013412 27.5875 332.5996 14.12623754 46864
OKEAN 1-7
1 23317U 94066A 95207.84882620 .00000078 00000-0 83462-5 0 828
2 23317 82.5414 359.2117 0028173 61.7169 298.6881 14.73946866 42463
ELEKTRO
1 23327U 94069A 95207.78260950 -.00000102 00000-0 10000-3 0 826
2 23327 0.7135 259.4195 0006473 191.0373 211.0550 1.00274469 2722
RESURS 1-3
1 23342U 94074A 95209.16111038 .00000084 00000-0 22111-4 0 2215
2 23342 98.0135 268.0863 0001015 82.3486 359.0319 14.69756337 39062
Glonass 68
1 23396U 94076A 95206.22002896 -.00000017 00000-0 00000+0 0 1282
2 23396 64.9585 95.4072 0029450 190.1558 169.8389 2.13102485 5250
Glonass 69
1 23397U 94076B 95207.33404142 -.00000005 00000-0 00000+0 0 1317
2 23397 64.9425 95.3771 0013087 323.5706 36.4103 2.13102502 5270
Glonass 70
1 23398U 94076C 95208.15602196 .00000003 00000-0 00000+0 0 1416
2 23398 64.9365 95.3391 0002838 298.1787 61.8653 2.13102664 5305
LUCH (Altair-2)
1 23426U 94082A 95206.67738326 -.00000272 00000-0 00000+0 0 1425
2 23426 2.1339 272.6970 0002624 178.7696 190.1009 1.00261303 2220
RS-15
1 23439U 94085A 95207.43886190 -.00000039 00000-0 10000-3 0 661
2 23439 64.8148 191.5067 0167843 255.4490 102.7770 11.27524963 23943
NOAA 14
1 23455U 94089A 95208.78965825 .00000096 00000-0 77296-4 0 2615
2 23455 98.9036 150.9882 0010633 78.9490 281.2856 14.11524377 29546
ODERACS II A
1 23471U 95004C 95207.23778692 .00020810 00000-0 89292-4 0 1618
2 23471 51.6488 292.0933 0011925 252.1922 107.8088 15.84971394 27361
ODERACS II B
1 23472U 95004D 95209.20269653 .00061008 12798-4 14410-3 0 1748
2 23472 51.6445 274.2650 0009589 299.1785 60.7598 15.97010180 27773
Glonass 71
1 23511U 95009A 95207.29517872 -.00000069 00000-0 00000+0 0 748
2 23511 64.7545 335.5740 0004691 320.8821 39.0831 2.13102431 3000
Glonass 72
1 23512U 95009B 95206.18081115 -.00000075 00000-0 00000+0 0 794
2 23512 64.7666 335.6353 0013438 197.0016 162.9519 2.13102989 2988
Glonass 73
1 23513U 95009C 95208.58555809 -.00000061 00000-0 00000+0 0 804
```

```
2 23513 64.7661 335.5280 0006724 206.0548 153.9159 2.13103127 3035
Soyuz TM-21
1 23519U 95010A 95208.76195635 .00003276 00000-0 50998-4 0 1480
2 23519 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757 21151
SFU
1 23521U 95011A 95208.90884698 .00001610 00000-0 47908-4 0 839
2 23521 28.4606 156.8746 0020037 314.6823 45.2189 15.28617492 20171
GMS 5
1 23522U 95011B 95196.94331429 -.00000304 00000-0 00000+0 0 386
2 23522 0.8512 296.6027 0001611 216.4957 259.6284 1.00264668 1074
DMSP B5D2-8
1 23533U 95015A 95208.92468282 -.00000016 00000-0 14921-4 0 1554
2 23533 98.8329 210.7388 0006009 263.8081 96.2402 14.12694286 17700
Microlab 1
1 23547U 95017C 95209.05611610 .00000288 00000-0 98725-4 0 385
2 23547 69.9782 204.4941 0015150 274.3719 85.5678 14.45386514 16684
OFEQ 3
1 23549U 95018A 95206.17889495 .00006509 00000-0 17039-3 0 791
2 23549 143.3698 40.0210 0254342 271.6991 85.4634 15.07751501 16707
GFZ-1
1 23558U 86017JE 95204.75773902 .00001879 00000-0 28992-4 0 456
2 23558 51.6533 332.8240 0007286 74.1951 285.9839 15.60112004538549
ERS-2
1 23560U 95021A 95208.80159604 -.00000010 00000-0 12434-4 0 1015
2 23560 98.5486 282.5605 0001134 95.9981 264.1319 14.32247655 13993
Spektr
1 23579U 95024A 95208.76195635 .00003276 00000-0 50998-4 0 884
2 23579 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757 10717
GOES 9
1 23581U 95025A 95208.45573862 -.00000186 00000-0 00000+0 0 417
2 23581 0.4727 269.0741 0000325 217.3854 251.9203 1.00280779 668
Cosmos 2314
1 23601U 95031A 95208.92004992 .00573211 58102-5 14982-3 0 740
2 23601 67.1251 80.9821 0129293 66.9577 294.5301 16.10282173 4683
1995031B
1 23602U 95031B 95185.12604097 .50703518 63517-5 19757-3 0 302
2 23602 67.1297 160.7071 0016154 110.2574 250.1052 16.57018846 872
Cosmos 2315
1 23603U 95032A 95208.42999465 .00012139 00000-0 13259-1 0 229
2 23603 82.9054 341.4087 0027243 221.0338 138.8768 13.72238252 3063
1995032B
1 23604U 95032B 95208.84406001 .00000015 00000-0 00000+0 0 166
2 23604 82.9008 341.0568 0022531 204.9023 155.0978 13.73595024 3113
Helios 1A
1 23605U 95033A 95209.18944942 .02999963 00000-0 51951+0 0 529
2 23605 98.0713 145.1485 0001898 70.6340 289.4519 14.64301080 3008
CERISE
1 23606U 95033B 95208.12875622 -.00000039 00000-0 15521-5 0 166
2 23606 98.0694 144.1780 0007131 127.2888 232.8975 14.66883811 2923
UPM LBSAT 1
```

```
1 23607U 95033C 95206.42051825 -.00000272 00000-0 -39755-4 0 107
2 23607 98.0766 142.5035 0009298 132.9873 227.2111 14.67126298 2663
1995033D
1 23608U 95033D 95205.25263774 .00000278 00000-0 56988-4 0 130
2 23608 98.0413 141.4169 0028469 162.6749 197.5436 14.67881666 2477
TDRS 6
1 23613U 95035B 95208.51148362 .00000070 00000-0 00000+0 0 190
2 23613 0.0091 337.0261 0002921 184.8252 176.4448 1.00985185 116
1995035C
1 23614U 95035C 95208.48666940 .00000284 00000-0 35829-3 0 80
2 23614 26.2799 319.6019 7262353 8.2449 358.9453 2.27687343 310
1995035D
1 23615U 95035D 95195.11431420 .00000068 00000-0 00000+0 0 11
2 23615 1.9737 153.2077 0011440 187.7744 171.5159 1.00541452 00
Progress M-28
1 23617U 95036A 95208.76195635 .00003276 00000-0 50998-4 0 172
2 23617 51.6492 314.5746 0004028 294.3585 65.8266 15.57139757 1204
1995036B
1 23618U 95036B 95204.05906086 .29958245 12725-4 29504-3 0 200
2 23618 51.6301 337.1649 0007753 75.2045 286.7848 16.50549978 485
Glonass 74
1 23620U 95037 A 95208.48454718 .00000088 00000-0 99999-4 0 22
2 23620 064.8254 214.9110 0006375 213.3368 146.6595 02.13259898000068
Glonass 75
1 23621U 95037 B 95208.48478964 .00000086 00000-0 99999-4 0 42
2 23621 064.8017 214.9059 0007874 222.4877 137.4878 02.13234707000063
Glonass 76
1 23622U 95037 C 95208.48471604 .00000081 00000-0 99999-4 0 31
2 23622 064.8163 214.9022 0008611 230.6774 129.2827 02.13237325000065
1995037D
1 23623U 95037D 95206.20798611 .14391761 78694-5 10991-3 0 47
2 23623 64.8547 213.0520 0008335 271.4613 119.6698 16.52366825 91
1995037E
1 23624U 95037E 95205.89922234 .00388584 77671-5 10000-4 0 31
2 23624 64.8214 214.2845 0007283 77.2458 281.8629 16.45405797 41
1995037F
1 23625U 95037F 95207.07672749 .00000081 00000-0 00000+0 0 20
2 23625 64.8512 214.9499 0008933 246.1459 113.8016 2.13425776 38
1995037G
1 23626U 95037 G 95207.35685102 .08292106 00000-0 17695-3 0 42
2 23626 064.8501 209.1390 0230257 053.5306 308.6775 16.01358170000277
1995037H
1 23627U 95037 H 95208.35977691 .11875576 00000-0 11821-3 0 26
2 23627 064.9833 205.9815 0193251 054.4409 307.4530 16.15959152000446
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1624. EOSS-24: July 30 CENTRAL COLORADO BALLOON LAUNCH

Newsgroup: rec.radio.amateur.space
Date: 1995-07-29 00:00:00 UTC
From: hank.riley@wem.org
Message-ID: <950729200129480@wem.org>
Source record: 24332

Path: holonet!colossus.holonet.net!news.sprintlink.net!gatech!paladin.
american.edu!news.ecn.uoknor.edu!news.ysu.edu!yfn.ysu.edu!au156
From: au156@yfn.ysu.edu (Hank Riley)
Newsgroups: rec.radio.amateur.space
Subject: EOSS-24: July 30 CENTRAL COLORADO BALLOON LAUNCH
Date: 29 Jul 1995 20:07:45 GMT
Organization: Youngstown State/Youngstown Free-Net
Message-ID: <3ve4eh$m0e@news.ysu.edu>

EOSS-24: CENTRAL COLORADO REPEATER/ATV BALLOON LAUNCH

Region: Central Colorado

Date/Time: July 30 / 9:00 AM MDT, 15:00 UTC

Location: Monument, Colorado (20 miles north of
Colorado Springs)
Site Coordinates: 39.09 North Lat.
104.87 West Long.
ATV: 426.25 MHz AM (1 watt output) NTSC color
video
VHF/UHF Repeater: 446.000 MHz FM Input
147.555 MHz FM Output
(note change as of 7/16/95)
Beacons: a) 147.555 MHz carrier from repeater always
on; (periodic Morse ID audio on FM)
b) 144.34 MHz Morse ID audio on FM
(periodic; frequency shared with packet
telemetry)
Telemetry: 144.340 MHz FM (1 Watt output) - AX.25, 1200
baud mostly plain english text; includes APRS
position data string.
Foxhunters: Pikes Peak FM Association, 448.450 MHz
(tentative)

For additional launch data and general Edge of Space Sciences (EOSS)
information:

http://www.usa.net/~rickvg/eoss.htm
maintained by Rick von Glahn
rickvg@usa.net
---
posted by Hank Riley, N1LTV

Please email news of upcoming balloon launches and post-flight
reports for distribution on the Net.

h1riley@umassd.edu
au156@yfn.ysu.edu

1625. STS-69 Element_Set (95217.665)

Newsgroup: rec.radio.amateur.space
Date: 1995-07-30 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95217.665@thomsoft.com>
Source record: 24333
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 99969U 95217.66545253 .00006972 00000-0 61643-4 0 14
2 99969 28.4660 5.0912 0004838 274.0067 85.9975 15.64893589 29

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1626. Re: FOR SALE OR TRADE: MICROWAVE AMPS & ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-07-30 00:00:00 UTC
From: rwham@aol.com
Message-ID: <3vgfko$5ud@newsbf02.news.aol.com>
Source record: 24334
Cross-posted to: rec.radio.swap,rec.radio.amateur.space

Prices are way out of line with amateur practices, but some hams are also Engineers. They (or more likely their business) may have use for the equipment, and a reasonable justification to purchase it. Meanwhile back at the shack, If you have any 20 watt Xband TWTAs, or 75 watt Sband amps (TWTA, Tube, or solid state) for ham prices I would sure like to know about them.

1627. LEO Operational Schedules - Sources?

Newsgroup: rec.radio.amateur.space
Date: 1995-07-30 00:00:00 UTC
From: jwhac4ca@mindspring.com
Message-ID: <jwhac4ca.9.0043CA95@mindspring.com>
Source record: 24335

Does anybody have a source for information about which polar weather satellites are operational? E.g. NOAA-9 appears to be off right now. I saw no notice anywhere that NOAA was turning it off. I would like to find some place on the net that publishes this kind of information for any and all polar weather satellites. Thanks in advance for the help.

1628. Re: Best frequencies for meteor scatter

Newsgroup: rec.radio.amateur.space
Date: 1995-07-30 00:00:00 UTC
From: jschanker@aol.com
Message-ID: <3vh3rr$c6e@newsbf02.news.aol.com>
Source record: 24336

Jos. wrote:

:Can anyone tell me the best frequencies for meteor scatter
communications.
:The frequencies listed do no necessarily have to be within the amateur
bands.

Generally speaking, the frequencies up to about 70 MHz are best. This
includes
frequencies usually considered HF such as 28 MHz. But there are a *lot* of
variables to consider - it also depends on what you are trying to
accomplish.

Jack W2STM
Jacob Z. Schanker, P.E., CPEng (Australia)
The Wireless Wizard of Winchmore Hill
E-mail: j.schanker@ieee.org

1629. ON THE JOB TRAINING IN LOCAL RADIO STATIONS

Newsgroup: rec.radio.amateur.space
Date: 1995-07-31 00:00:00 UTC
From: Jimi Petulla <musicbiz@earthlink.net>
Message-ID: <3vjkpc$g8c@mars.earthlink.net>
Source record: 24337

Learn how to become a professional
RECORDING ENGINEER OR RADIO ANNOUNCER!

* Hands-on professional internships/private tutoring available
* On The Job Training in Local Major Recording Studios/Radio Stations
* We have a network of over 10,000 Recording Studios/Radio Stations worldwide
* Part time, Nights, Weekends. No experience required.

CALL NOW for FREE Brochure and Information Package!
Recording tells how - CALL (310) 535-6805
EMAIL Address: musicbiz@earthlink.net

1630. * SpaceNews 31-Jul-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-07-31 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <$spc0731.1995@ampr.org>
Source record: 24338
Cross-posted to: rec.radio.amateur.space,rec.radio.info,sci.space.news

SB NEWS @ AMSAT $SPC0731
* SpaceNews 31-Jul-95 *

BID: $SPC0731

=========
SpaceNews
=========

MONDAY JULY 31, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* STRIKE AVERTED *
==================
Richard, G3RWL, reports that the underground strike that threatened
transportation to and from the annual Satellite Colloquium at the
University of Surrey has been cancelled by legal action. All services
are expected to operate normally throughout the duration of the Colloquium.

* STS-69 MISSION PROFILE *
==========================
This file summarizes the nominal mission profile for STS-69. This data
is very useful immediately after launch, before the first Keplerian
Two-Line Elements (TLEs) are released. This data is also useful when
real-time data (vectors and/or TLEs) are not available following an orbit
adjust. Each vector is listed with its associated event in the table.
Those events involving an orbit adjust are preceded by an asterisk (*).

The table lists pertinent information for the nominal Earth-Fixed
Greenwich (EFG) vector files included for STS-69. The applicable time
for each vector begins with the Mission Elapsed Time (MET) of the vector
and ends with the Mission Elapsed Time (MET) of the next vector. These
vector files may be read directly by VEC2TLE Version 9435 (see V2L9435.ZIP)
to compute the Keplerian Two-Line Elements (TLEs) for the Shuttle.

NOTE: The current scheduled launch date and time of STS-69 is:
05-AUG-95 / 14:45 UTC. This file will be updated with any significant
variations to the orbit profile.

By setting the scheduled launch time in VEC2TLE, you can compute the TLEs
corresponding to each vector. If the launch date and/or time changes, the
only change that needs to be made is the Launch date and time in VEC2TLE.
The vectors are Earth-Fixed (EFGs), so they are time-independent. Thus,
once the launch date/time is changed, these same vector files will compute

updated TLEs for the mission.

Mission Elapsed Time (MET)
DDD / HH:MM:SS.SSS Event Rev# Vector File
==========
000 / 00:44:54.810 * OMS-2 1 STS69N01.VIF
001 / 00:35:00.000 * Spartan Release 17 STS69N02.VIF
002 / 00:00:00.000 Daily Update 32 STS69N03.VIF
002 / 23:15:00.000 Spartan Grapple 47 STS69N04.VIF
003 / 03:01:00.000 * OMS-3 50 STS69N05.VIF
003 / 03:44:45.548 * OMS-4 50 STS69N06.VIF
003 / 18:33:00.000 * WSF Release 60 STS69N07.VIF
005 / 00:00:00.000 Daily Update 79 STS69N08.VIF
006 / 00:07:00.000 * WSF Grapple 95 STS69N09.VIF
007 / 00:10:00.000 * OMS-5 110 STS69N10.VIF
007 / 00:55:11.836 * OMS-6 111 STS69N11.VIF
008 / 12:00:00.000 Daily Update 134 STS69N12.VIF
010 / 00:00:00.000 Daily Update 157 STS69N13.VIF
011 / 00:00:00.000 Daily Update 173 STS69N14.VIF

Any questions regarding these files or the usage of VEC2TLE may be directed
to Ken Ernandes at:

Compuserve: 70511,3107
Internet: n2wwd@amsat.org
Packet Radio: N2WWD@KC2FD.#NLI.NY.USA.NOAM

* NORTH TEXAS BALLOON PROJECT NEWS *
==========
The North Texas balloon project will launch its seventh high altitude
balloon experiment carrying amateur radio payloads on the 19th of
August, 1995. The payload carries a variety of radios and instruments
that can be easily used by any Amateur with a Technician's license or
above.

The launch will be from Clifton, Texas (located 30 miles west of Hillsboro)
at approximately 9:30 AM. In the event of inclement whether, the launch
will be delayed to the next day, and then to the next Saturday (the 26th).
There will be a pre-launch net at 8:30 PM on the Ft. Worth 146.76 repeater
the evening before the launch. The morning of launch there will be an HF
net on 7.155 MHz +/- QRM. The Net control station will probably be W5IU.

Approximately two hours after launch, the balloon is expected to reach
an altitude of 95,000 feet before burst. At this altitude the area of
visibility will be about 370 miles in any direction for a total 740 mile
communications range. In past missions, there have been QSO's between
Corpus Christi, TX and Salina, Kansas.

The following is a list of the available experiments onboard:

Two Crossband FM Voice Repeaters:
There will be two crossband FM repeaters open to all.
Uplink #1 147.450 MHz Downlink #1 445.850 MHz

Uplink #2 147.570 MHz Downlink #2 445.970 MHz

Packet Telemetry on 144.290 MHz:
This GPS and telemetry information will be the data downlink
(downlink ONLY) of the mission. The packet format is the common
1200 baud AFSK found in all TNCs. The data will be presented in
an easy to read format with no conversions required and is NOT in
APRS format. Packet digipeating and packet connects to the package
will NOT be possible.

GPS:
Precise longitude, latitude and altitude data will be provided by
a donated Rockwell NavCore V GPS receiver. The following data
will be measured and can be seen on the 144.290 MHz downlink.
Six of the eight channels are used to measure the following:

* Inside Temperature * Outside Temperature
* Barometric Altitude * Main Battery Voltage
* ATV Battery Voltage * Summed Battery Voltage

Amateur Television (ATV)
There will be a live, full motion, Amateur Television camera
and 10 Watt transmitter onboard. The downlink frequency will be
439.250 MHz VERTICALLY Polarized. This frequency was chosen to
exactly correspond to Cable channel # 60. With a 440 MHz beam and
reasonable Low Noise Amplifier, a cable ready TV tuned to Cable
channel 60 should be able to receive an acceptable signal.
The camera will be remotely pointed via ground command to any of
256 possible positions.

Other Innovations On NTBP #7
Active package stabilization:
.....Remotely controlled air foils to cancel package spin.
Power distribution:
.....Non essential equipment turned off after touchdown and batteries
summed to provide power to essential DF'ing beacons.
Audio Distribution
.....Ground commands allow audio from crossband repeaters, packet
downlink, or command uplink to be piped through ATV audio.
Improved Parachute/Tow line
.....New spreader ring design, swivels and woven tow line should help
ensure that parachute does not tangle.

QSLs can be had through KG5OA via the Callbook address.

[Info via Doug Howard, KG5OA]

* LO-19 NEWS *
==========
Rudy Benner, VE3BDR, in Timmins, Ontario reports that the fileserver on
LUSAT-OSCAR-19 appears to be back in service.

* AO-27 NEWS *
==============
The AO-27 Amateur communications transponder schedule as of 25-Jul-95 is
as follows:

AO-27 Enters Sunlight, Transmitter is OFF
18 Minutes after Entering Sunlight, Transmitter is ON at 600 mW
20 Minutes Later, Transmitter Turns OFF

AO-27 is OFF for the entire Eclipse

For thoses who know about the TEPR states:

TEPR 1 Duration 15 Minutes, OFF
TEPR 2 Duration 15 Minutes, OFF
TEPR 3 Duration 3 Minutes, OFF
TEPR 4 Duration 18 Minutes, OFF
TEPR 5 Duration 20 Minutes, ON, Power 2 (Aprox 600 mW)
TEPR 6 Duration 28 Minutes, OFF

This gives coverage on the daylight passes from when the Satellite
subsat-point is between about North 74 degrees and North 5 Degrees.

Comments about changing the schedule can be sent to N4USI@amsat.org

[Info via Michael Wyrick, N4USI - AO-27 control operator]

* AO-13 OPERATING SCHEDULE *
============================
The following is the current AO-13 transponder schedule effective 31-Jul-95
through 30-Oct-95:

Mode-B : MA 0 to MA 140 |
Mode-BS : MA 140 to MA 240 |
Mode-B : MA 240 to MA 256 | Alon/Alat 225/0
Omnis : MA 250 to MA 140 | Move to attitude 180/0, Oct 30

[Info via James Miller, G3RUH]

* FEEDBACK/INPUT WELCOMED *
===========================
Comments and input for SpaceNews should be directed to the editor (John,
KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

1631. Free Ham Radio Test Simulators - Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-08-01 00:00:00 UTC
From: john@wd1v.mv.com
Message-ID: <john-0108950605310001@wd1v.mv.com>
Source record: 24339

The new Macintosh Ham Test Simulators are HERE!

Novice Ham Test 5.0 SA.sea
Technician Ham Test 5.0 SA.sea
General Ham Test 5.0 SA.sea
Advanced Ham Test 5.0 SA.sea
Extra Ham Test 5.0 SA.sea

The latest versions feature:

HyperCard 2.3 as a stand-alone application (SA) eliminating
the need to have HyperCard. All you need is a Mac with 4
Meg of memory and version System 7 or greater.

Each version 5 Ham Test Simulator has the latest questions
as prepared by the Question Pool Committee.

Each Ham Test Simulator is FREE OF CHARGE and work the
same way as the originals written by Diana, KC1SP.

You may obtain a Ham Test Simulator by mailing me a *FORMATTED
disk (1 per test) and include a Self Addressed and Stamped disk
mailer for the return.

Each Ham Test Simulator is also bundled with a shareware CW
program called MacMorse 1.4 written by Doug, WB0EON.

Also included are a collection of text files that relate an
interesting variety of ideas about the best way to study CW and
prepare for tests.

If you load these onto file servers where others can gain access
via Internet, please let me know so we can point others in that
direction.

Your comments and suggestions for future versions are always
welcome. Stay in touch and good luck with your next test!

73,

--

==
John D. Seney, WD1V Internet: john@wd1v.mv.com
144 Pepperidge Drive America On Line: jseney@aol.com
Manchester, NH 03103-6150 AX.25 Pkt: wd1v@wb1dsw.nh.usa.na
(H) 603-668-1096 Ampernet: wd1v@wd1v.ampr.org
(O) 603-627-6303 (F) 603-627-1623 (P) 800-SKYPAGE #5956779

```
* Source for Digital Scope.FAQ
*To obtain the latest copy automatically, simply send me an EMAIL
with "subscribe scope.faq" in the subject field.
================================================================
```

1632. Re: LEO Operational Schedules - Sources?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-01 00:00:00 UTC
From: tfugate@uklans.uky.edu
Message-ID: <3vl65n$89f@service1.uky.edu>
Source record: 24340

In article <jwhac4ca.9.0043CA95@mindspring.com>, jwhac4ca@mindspring.com (John Hueckstead) says:
>
>Does anybody have a source for information about which polar weather
>satellites are operational?
I know for certain that NOAA 12 and NOAA 14 are operational. NOAA 9
was operational last week but not up for the 9507.31 03:00Z pass. I
could not even get the tracking beacon.
The NOAA LEO WX SAT operation number is 301 457 5120.
NOAA has a web server with some st info. It is under construction
and I don not have the address handy, just do a web search. There is a
weather sat news group, you have to subsrcibe and I guess they email you
interesting things. I have tried to subscribe several times, but I think
there is something "strange" with our on campus system. I have not had
any sucess doing anytype of subscribe, to any service.
If you need the ng address just check through back posting in this ng or
drop me an Email and I will dig it out for you you.
Terry Fugate
WN4ISX

1633. half duplex internet connection

Newsgroup: rec.radio.amateur.space
Date: 1995-08-02 00:00:00 UTC
From: greenac@galaxy.galstar.com
Message-ID: <3vmn2j$60@mercury.galstar.com>
Source record: 24341

Any interest in a half duplex satellite internet connection, analog modem from computer to net and satellite from net to computer. I know that Planet Connections and others deliver Usenet via satellite, but I want 56K+ web connections and I can't get ISDN line

1634. RS-15 Power how much !!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-02 00:00:00 UTC
From: millerj@dnaco.net
Message-ID: <3vn8se$ntb@sisko.dnaco.net>
Source record: 24342

I ahve been tryning for weeks now to get on rs-15. I'm running 35
watts out on a vertical
any ideas
TIA.
millerj@dnaco.net

1635. once again...pk-900 of dsp2232 for sat.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-02 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3vo1ak$11mp@ns2-1.CC.Lehigh.EDU>
Source record: 24343

I have a catalog right now that says the AEA pk-900 has a satellite modem, yet
i was told to get the dsp-2232 <with is almost twice as much>
so...which one SHOULD i get?

thanks again

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1636. Re: once again...pk-900 of dsp2232 for sat.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-02 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0208951853190001@lia-b7.ip.realtime.net>
Source record: 24344

In article <3vo1ak$11mp@ns2-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> I have a catalog right now that says the AEA pk-900 has a satellite modem, yet
> i was told to get the dsp-2232 <with is almost twice as much>
> so...which one SHOULD i get?
>
>
> thanks again
>
> DAvid

Depends what you want to do. The PK-900 does NOT have a 9600 bps FSK modem
where most of the satellite digital stuff is. The DSP-2232 DOES have the
required modem for 9600 as well as a lot of other stuff.

What modes do you want to use?

Ron W5RKN

--
Ron W5RKN

1637. Re: AMSAT Freqs / formula

Newsgroup: rec.radio.amateur.space
Date: 1995-08-02 00:00:00 UTC
From: nextstep@kron.com
Message-ID: <nextstep-0208951844240001@dial-berk1-20.iway.aimnet.com>
Source record: 24345

In article <3uv9pq$nhq@warp.cris.com>, Darkmagi@cris.com (DARKMAGI) wrote:

> > A while back I saw a post that had a great list of frquencies of all the
> > birds
>
> AMEN! I've been looking for a list of this information for over a year now!
>
> -Jeff Crystal (KB8RNQ)

AMSAT has a site on the WWW: http://www.amsat.org

I haven't checked, but they might have just that information. If not,
they'll definitely have contacts who may be able to help.

--A

1638. Re: RS-15 Power how much !!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-03 00:00:00 UTC
From: zardoz@ornews.intel.com
Message-ID: <3vqs38$b8r@ornews.intel.com>
Source record: 24346

In article <3vn8se$ntb@sisko.dnaco.net>,
johnny miller <millerj@dnaco.net> wrote:
>I ahve been tryning for weeks now to get on rs-15. I'm running 35
>watts out on a vertical
>any ideas

I have made ONE SSB contact on RS-15 with my Icom 251A putting out
10 watts into a KLM 2M14C circular satellite antenna on AZ-EL mount.
Pointed at the satellite, this should be an effective power of 100 watts
or so. It was rough and I can't do it with the satellite near the
horizon although CW will probably work. I recommend you try a yagi
which will help a lot when the sat is near the horizon.
A good receiving antenna is also needed as I have heard several guys
on there that are getting in good but can't seem to hear themselves
or others. Again, I recommend a yagi, possibly with a pre-amp at the
antenna.
This satellite is over twice as high as RS-10 and RS-12 while also
having a weaker transponder and serious spin modulation. Try CW ;-}

--
zardoz@ornews.intel.com WA7LDV No plane, no gain.
I speak only for myself Go out and fly today!

1639. Minnesota Hams read

Newsgroup: rec.radio.amateur.space
Date: 1995-08-03 00:00:00 UTC
From: rayban3418@aol.com
Message-ID: <3vpjib$rfe@newsbf02.news.aol.com>
Source record: 24347

Would like to establish a forum on Galaxy SuperBoard....modem into 612-890-4828.....you will need Windows and 9600+.......this board has a nice ham radio area......try it

1640. Re: RS-15 Power how much !!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-03 00:00:00 UTC
From: timtj@aol.com
Message-ID: <3vpjq4$rhn@newsbf02.news.aol.com>
Source record: 24348

My suggestion is to try a different antenna. Although I have not tried to get into the RS-15 bird, I did have success with several of the earlier RS birds while running about 35 to 40 watts output into a crossed dipole antenna up about 20 feet. It didn't work well when the bird was on the horizon, but on overhead passes I had no trouble. I was using CW. You might need a bit more power if you're using SSB.

1641. ESTERLINE ANGUS???

Newsgroup: rec.radio.amateur.space
Date: 1995-08-03 00:00:00 UTC
From: aa679@ccn.cs.dal.ca
Message-ID: <DCptEH.Jr7@cs.dal.ca>
Source record: 24349

Could anyone please tell me if the CHART RECORDER guys, Esterline Angus,
are still in business, and where they are located?

I tried Directory Assistance, for Indianapolis, but they arn't listed.

Thanks

==========
Ralph J. Coppola
aa679@ccn.cs.dal.ca

Society for Amateur Scientists

Official WWW Site ... http://www.thesphere.com/SAS/
Secondary Site ..... http://www.ccn.cs.dal.ca/Science/SAS/sas-home.html

--

1642. unsubscribe

Newsgroup: rec.radio.amateur.space
Date: 1995-08-03 00:00:00 UTC
From: bsager@infi.NET
Message-ID: <199508031524.LAA26582@larry.infi.net>
Source record: 24350

```
unsubscribe

end
**************************************************************************
Ben Sager

KC4ASF @ KC4ASF.#NOVA.VA = Amateur Radio Packet
AFA2OS @ AFA2OS.VA = VA AF MARS Packet Manager
bsager@infi.net <-- This address no good after August 10th!!
bsager@interserf.net = Internet address

Fredericksburg, VA
**************************************************************************
```

1643. Re: once again...pk-900 of dsp2232 for sat.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-03 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3vrcm6$10mk@ns3-1.CC.Lehigh.EDU>
Source record: 24351

>> I have a catalog right now that says the AEA pk-900 has a satellite modem, ye
t
>> i was told to get the dsp-2232 <with is almost twice as much>
>> so...which one SHOULD i get?
>
>Depends what you want to do. The PK-900 does NOT have a 9600 bps FSK modem
>where most of the satellite digital stuff is. The DSP-2232 DOES have the
>required modem for 9600 as well as a lot of other stuff.

well, the 900 has a op. 9600bps add on, but i does state <in the
catalog...good for satellites>

>What modes do you want to use?

well, whatever is used in sat. work, fax, sstv, rtty, and cw

David
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1644. NORAD Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.807503353@dolphin>
Source record: 24352

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated daily) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1645. Re: once again...pk-900 of dsp2232 for sat.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <3vsfih$phj@maureen.teleport.com>
Source record: 24353

In article <3vrcm6$10mk@ns3-1.CC.Lehigh.EDU>, c002@Lehigh.EDU said...

>>What modes do you want to use?
>
>well, whatever is used in sat. work, fax, sstv, rtty, and cw

You won't find much of any of those on satellites. What you will find is primarily two types of packet. They are 1200 bps and 9600 bps. The 1200 bps uses phase shift keying, while 9600 bps uses a form of frequency shift keying.

Both require specific modems and connections to your transceiver. If you were to set up a PK-900 with a G3RUH modem afor 9600 bps and a psk modem, you would be up there in price with the DSP-2232. Also, the 9600 option for the PK-900 is not really a satellite modem, although it can be used as such with reduced performance.

I have a PK-900 which I use on my boat for HF work, but my satellite is done with a dsp. If you cannot afford the DSP-2232, you might want to check out the DSP-93 kit from Tapr. It is not a complete unit like the 2232, but is about half the $$$. This is definitely a kit, and is meant for experimenters.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1646. Altanta Balloon Launch Aug 5th

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: rwf@mindspring.com
Message-ID: <rwf.249.00232C0D@mindspring.com>
Source record: 24354

ATLANTA BALLOONATICS

Balloon #4 Mission Update as of Aug 4, 1995 at 12:00Z

As you probably know, last Saturday's balloon experiment (carrying a GPS, packet radio, and ATV camera and transmitter) was postponed due to weather. It was rescheduled to Saturday August 5th.

Lots of bad weather is still passing through this area due to Hurricane Erin. Many damaging thunderstorms occurred throughout last night.

A preliminary go/no go decision will be made this afternoon, around lunch time. I'll try to get the word out here as quickly as possible.

Bill Brown, WB8ELK, is almost a "local" now, living in Huntsville AL and has told us he will be attending this launch.

If you do not have EMAIL access at home, you can get an update from our info line at (404) 936-3737. The info on there at the moment is very stale, and I probably will not update it until after 17:00Z. today.

Ralph Fowler, N4NEQ S.E.R.A. ATV Technical Advisor

rwf@mindspring.com Atlanta, GA USA
Web: http://www.mindspring.com/~rwf for ATV, Balloon, and Ham info
FTP: ftp.mindspring.com/users/rwf for ATV, GPS, APRS info
ATV and GPS Balloon Flight coming up Aug 5th from Atlanta, GA
APRS web page: http://www.mindspring.com/~rwf/aprs.html

1647. Re: once again...pk-900 of dsp2232 for sat.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3vt9ta$2aj6@ns4-1.CC.Lehigh.EDU>
Source record: 24355

>>well, whatever is used in sat. work, fax, sstv, rtty, and cw
>
>You won't find much of any of those on satellites. What you will find is
>primarily two types of packet. They are 1200 bps and 9600 bps. The 1200 bps
>uses phase shift keying, while 9600 bps uses a form of frequency shift
>keying.

well, like i said, whatever is used on sats AND the other modes :)

>Both require specific modems and connections to your transceiver. If you were
>to set up a PK-900 with a G3RUH modem afor 9600 bps and a psk modem, you
>would be up there in price with the DSP-2232. Also, the 9600 option for the
>PK-900 is not really a satellite modem, although it can be used as such with
>reduced performance.

okokok, i'll forget about the 900

>I have a PK-900 which I use on my boat for HF work, but my satellite is done
>with a dsp. If you cannot afford the DSP-2232, you might want to check out
>the DSP-93 kit from Tapr. It is not a complete unit like the 2232, but is
>about half the $$$. This is definitely a kit, and is meant for experimenters.

is it the same modes and all, but in a kit form?

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1648. Re: once again...pk-900 of dsp2232 for sat.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0408951045020001@jake-5p.ip.realtime.net>
Source record: 24356

In article <3vt9ta$2aj6@ns4-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> >I have a PK-900 which I use on my boat for HF work, but my satellite is done
> >with a dsp. If you cannot afford the DSP-2232, you might want to check out
> >the DSP-93 kit from Tapr. It is not a complete unit like the 2232, but is
> >about half the $$$. This is definitely a kit, and is meant for experimenters.
>
> is it the same modes and all, but in a kit form?
>
> DAvid

The DSP-93 is a DSP processor developed by TAPR and AMSAT. It comes with
all the satellite and terrestrial modems (HF as well as VHF/UHF) as well
as other stuff (audio oscilloscope, audio spectrum analyzer, audio
function generator, (soon) W9GR-like audio procesing. Most modems require
an external TNC and connects via the modem disconnect header. See the TAPR
web page for a lot of additional info:

http://www.tapr.org/tapr/

Internal TNCs are under development by TAPR and others also.

Ron W5RKN

--
Ron W5RKN

1649. Re: DOVE ?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: I121171@amsat.org
Message-ID: <3vt8o0$5at@sgi.iunet.it>
Source record: 24357

>
> Is DOVE inactive at the time? I don't receive any signal from the satellite.
>
Dove is well and the signal is strong..
Try my new DUVTLM20.ZIP decoder program at the anonymous ftp site
promet12.cineca.it under the /pub/ham/sats directory
Best de Maurice I1-21171

1650. Re: RS-15 Power how much !!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: MIKSUORA@sara.cc.utu.fi
Message-ID: <DCsx8v.G0I@utu.fi>
Source record: 24358

In <3vpjq4$rhn@newsbf02.news.aol.com> timtj@aol.com writes:

> My suggestion is to try a different antenna. Although I have not tried to
> get into the RS-15 bird, I did have success with several of the earlier RS
> birds while running about 35 to 40 watts output into a crossed dipole

No problem to get into RS-15 with just 25 watts to
a 1/4 wave groundplane... in CW of course

With RS-10 just five watts is enough for 599 reports,
sometimes even have to be carefull no to became an
alligator with my 5W to a GP-ant, hi

73 Mika OH1NZQ @ OH1RBU.FIN.EU

1651. NORAD Two-Line Orbital Element Sets (TLE651)

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.807574406@dolphin>
Source record: 24359

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #651 -
Alouette 1
1 00424U 62049A 95211.57886502 .00000062 00000-0 62137-4 0 1241
2 00424 80.4652 242.0614 0024017 141.4036 218.8832 13.67846978638232
ATS 1
1 02608U 66110A 95210.09815052 .00000076 00000-0 10000-3 0 9400
2 02608 14.6412 356.2542 0010418 64.3986 295.7719 1.00339733 21612
ATS 3
1 03029U 67111A 95211.32352927 -.00000113 00000-0 10000-3 0 3849
2 03029 14.8451 3.2224 0008690 263.6965 51.6333 1.00272817101520
Cosmos 398
1 04966U 71016A 95214.82506776 .00105979 89554-5 10085-3 0 9569
2 04966 51.4117 9.6325 0515398 255.8065 98.5148 15.11849597832214
Starlette
1 07646U 75010A 95213.45965990 -.00000160 00000-0 -15198-4 0 9046
2 07646 49.8295 334.3590 0206103 251.1077 106.7370 13.82188529 34608
LAGEOS
1 08820U 76039A 95213.37492132 .00000011 00000-0 10000-3 0 1251
2 08820 109.8530 276.0984 0044000 197.6430 162.2862 6.38664720193349
ETS-2
1 09852U 77014A 95214.33447423 -.00000276 00000-0 10000-3 0 333
2 09852 12.8053 36.5608 0004806 80.5135 279.6781 1.00018091 14446
GOES 2
1 10061U 77048A 95214.54596220 .00000052 00000-0 10000-3 0 5603
2 10061 11.8827 40.7953 0012308 125.2407 164.8877 1.00282236 11232
IUE
1 10637U 78012A 95215.38535110 -.00000253 00000-0 10000-3 0 1541
2 10637 35.2870 88.1998 1333857 48.1952 269.7791 1.00316440 16733
GPS BI-01
1 10684U 78020A 95214.70883100 -.00000007 00000-0 10000-3 0 3743
2 10684 64.8673 33.3218 0061249 162.6008 197.6575 1.98069344113087
```

```
GPS BI-02
1 10893U 78047A 95208.45588531 .00000027 00000-0 10000-3 0 1760
2 10893 63.3044 271.4469 0223547 14.0466 346.6626 2.01627423126245
GOES 3
1 10953U 78062A 95214.62522229 .00000112 00000-0 10000-3 0 5176
2 10953 10.8648 43.6277 0006025 114.2309 219.8112 1.00335653 15847
SeaSat 1
1 10967U 78064A 95214.59281016 -.00000002 00000-0 43873-4 0 4189
2 10967 107.9994 233.5110 0002593 258.6858 101.3987 14.38047765895501
GPS BI-03
1 11054U 78093A 95212.53727145 .00000025 00000-0 10000-3 0 3413
2 11054 63.0081 269.6540 0045865 180.5640 179.5270 1.93505360122430
Nimbus 7
1 11080U 78098A 95214.59967241 -.00000050 00000-0 -77134-5 0 5198
2 11080 98.9933 86.5924 0009786 105.7903 254.4356 13.83707536846978
GPS BI-04
1 11141U 78112A 95215.50438363 -.00000003 00000-0 10000-3 0 9933
2 11141 64.8588 35.2053 0049042 27.7481 332.5579 1.92894774 11732
GPS BI-05
1 11690U 80011A 95211.76555972 -.00000013 00000-0 10000-3 0 9282
2 11690 65.2022 35.0113 0144202 194.5596 165.0719 2.00565390127730
GPS BI-06
1 11783U 80032A 95210.45212233 .00000035 00000-0 10000-3 0 906
2 11783 62.4364 264.5411 0219156 29.7297 331.6095 2.03456707112241
GOES 5
1 12472U 81049A 95212.47941840 -.00000282 00000-0 10000-3 0 8709
2 12472 7.6051 53.5081 0007753 34.4171 325.7422 1.00258880 9872
Cosmos 1383
1 13301U 82066A 95212.96414876 .00000023 00000-0 95678-5 0 4231
2 13301 82.9321 9.3134 0028754 47.4674 312.8898 13.68067166653459
LandSat 4
1 13367U 82072A 95215.75762362 .00000000 00000-0 10000-4 0 7420
2 13367 98.1243 270.4668 0008551 54.9788 305.2081 14.57127335694143
DMSP B5D2-1
1 13736U 82118A 95214.49754826 .00000008 00000-0 21735-4 0 8175
2 13736 98.6290 42.9732 0007656 240.2504 119.7915 14.25744237655518
IRAS
1 13777U 83004A 95215.51399747 .00000011 00000-0 37749-4 0 387
2 13777 98.9647 42.7822 0011911 252.4024 107.5852 13.99227893308807
Cosmos 1447
1 13916U 83021A 95213.08299109 .00000074 00000-0 62109-4 0 5205
2 13916 82.9441 68.5484 0037694 329.4548 30.4413 13.74328825619632
TDRS 1
1 13969U 83026B 95215.69385648 .00000076 00000-0 10000-3 0 4462
2 13969 8.4399 46.7817 0002834 193.8875 182.0207 1.00344012 18198
GOES 6
1 14050U 83041A 95215.24832319 -.00000098 00000-0 10000-3 0 4313
2 14050 6.4364 56.8117 0004982 28.6299 208.0683 1.00327277102999
OSCAR 10
1 14129U 83058B 95210.49039197 .00000246 00000-0 10000-3 0 3664
```

```
2 14129 26.4555 255.9109 5993547 297.1786 14.8191 2.05876811 63202
LandSat 5
1 14780U 84021A 95215.93058970 .00003443 00000-0 77249-3 0 3156
2 14780 98.1080 271.0876 0006143 63.0581 297.1243 14.57170037607585
UoSat 2
1 14781U 84021B 95212.99430099 .00000089 00000-0 22887-4 0 8164
2 14781 97.7832 213.4294 0012759 42.6485 317.5716 14.69363764610485
GPS BI-09
1 15039U 84059A 95214.96252100 -.00000009 00000-0 10000-3 0 3538
2 15039 64.5326 29.5967 0082035 18.3513 341.9726 1.92302350 81290
Cosmos 1574
1 15055U 84062A 95215.79205213 .00000040 00000-0 26164-4 0 7228
2 15055 82.9581 120.7721 0027780 144.5042 215.7967 13.73624244557274
GPS BI-10
1 15271U 84097A 95212.43308734 .00000031 00000-0 10000-3 0 343
2 15271 62.1127 264.8186 0155961 353.7745 6.1259 2.00601193 78812
Cosmos 1602
1 15331U 84105A 95215.61023152 .00000184 00000-0 18948-4 0 4085
2 15331 82.5320 51.4786 0018657 284.0032 75.9103 14.84647995585709
NOAA 9
1 15427U 84123A 95215.87199763 .00000026 00000-0 37596-4 0 3502
2 15427 98.9959 274.8768 0015316 130.3348 229.9168 14.13721252548653
GPS BI-11
1 16129U 85093A 95213.75147805 -.00000010 00000-0 10000-3 0 6680
2 16129 65.2035 32.8325 0155234 86.6472 275.1662 1.89367899 15856
Mir
1 16609U 86017A 95215.24388019 .00003655 00000-0 56107-4 0 1861
2 16609 51.6467 282.1228 0003243 314.1900 45.8819 15.57139486540269
SPOT 1
1 16613U 86019A 95213.69873117 .00000090 00000-0 62356-4 0 8379
2 16613 98.6478 284.0307 0001453 55.1447 304.9865 14.20065499174821
Cosmos 1766
1 16881U 86055A 95213.17171884 .00000197 00000-0 20907-4 0 3235
2 16881 82.5203 111.6037 0018550 321.3275 38.6615 14.83645792486249
EGP
1 16908U 86061A 95215.56888797 -.00000083 00000-0 10000-3 0 183
2 16908 50.0118 256.5747 0011387 281.1006 78.8548 12.44412682 76732
NOAA 10
1 16969U 86073A 95215.90669553 .00000046 00000-0 37641-4 0 2594
2 16969 98.5117 217.3481 0012039 202.6294 157.4340 14.24950538461275
MOS-1
1 17527U 87018A 95214.77564923 .00000092 00000-0 10000-3 0 2347
2 17527 98.9730 278.7346 0000739 118.4985 242.1563 13.95256924430323
GOES 7
1 17561U 87022A 95214.69123872 .00000079 00000-0 10000-3 0 4892
2 17561 2.4186 71.9226 0001989 359.5993 352.7109 1.00281739 14092
Kvant-1
1 17845U 87030A 95214.73032561 -.00013732 00000-0 -17934-3 0 3383
2 17845 51.6452 284.6934 0002591 312.6981 46.6209 15.57114552540128
DMSP B5D2-3
```

```
1 18123U 87053A 95215.77962441 .00000018 00000-0 31711-4 0 863
2 18123 98.7779 46.1893 0015318 81.6123 278.6787 14.15412662419454
RS-10/11
1 18129U 87054A 95215.00486707 .00000004 00000-0 -11848-4 0 968
2 18129 82.9233 24.4588 0011215 329.1387 30.9089 13.72354691406396
Meteor 2-16
1 18312U 87068A 95214.57540093 .00000043 00000-0 25400-4 0 4153
2 18312 82.5521 245.5732 0014070 41.9397 318.2839 13.84060583401965
Meteor 2-17
1 18820U 88005A 95215.24816802 .00000054 00000-0 34874-4 0 6865
2 18820 82.5412 300.8091 0017991 100.0280 260.2905 13.84741678379385
DMSP B5D2-4
1 18822U 88006A 95215.56113286 .00000004 00000-0 20012-4 0 373
2 18822 98.4021 57.5373 0005254 212.2549 147.8306 14.23160684389259
Glonass 34
1 19163U 88043A 95214.96043744 -.00000003 00000-0 10000-3 0 80
2 19163 65.1461 96.5905 0007582 159.1546 200.9419 2.13102529 55439
Glonass 36
1 19165U 88043C 95214.07841740 .00000002 00000-0 10000-3 0 4099
2 19165 65.1297 96.5794 0002275 320.7705 39.2823 2.13102125 56032
METEOSAT 3
1 19215U 88051A 95215.20182324 -.00000277 00000-0 10000-3 0 1559
2 19215 2.6015 69.7570 0002414 72.8038 172.3211 1.00260028 14042
AO-13
1 19216U 88051B 95215.22200310 .00000217 00000-0 -18635-3 0 711
2 19216 57.5021 172.5403 7315757 15.2583 358.1931 2.09719647 23158
OKEAN 1
1 19274U 88056A 95214.92088007 .00000209 00000-0 22969-4 0 236
2 19274 82.5125 210.4022 0021724 93.1867 267.1835 14.82363819382076
Meteor 3-2
1 19336U 88064A 95212.57551275 .00000051 00000-0 10000-3 0 4124
2 19336 82.5364 34.0010 0016947 324.2955 35.7023 13.16973602337143
Glonass 39
1 19503U 88085C 95212.69897132 -.00000040 00000-0 10000-3 0 3051
2 19503 65.6815 335.5444 0007711 162.3685 197.6527 2.13101853 53498
NOAA 11
1 19531U 88089A 95215.95750166 -.00000008 00000-0 20604-4 0 1563
2 19531 99.1950 220.5969 0012893 54.9589 305.2790 14.13058866353504
TDRS 2
1 19548U 88091B 95207.69670862 -.00000196 00000-0 10000-3 0 1364
2 19548 1.8265 74.2530 0004046 109.7631 96.0257 1.00271489 12254
Glonass 40
1 19749U 89001A 95212.26821331 .00000012 00000-0 10000-3 0 5165
2 19749 65.1036 96.2398 0004621 260.5427 99.4976 2.13101420 50990
Glonass 41
1 19750U 89001B 95211.85439453 .00000013 00000-0 10000-3 0 4284
2 19750 65.1144 96.3091 0006523 239.1895 120.8276 2.13101838 51005
GPS BII-01
1 19802U 89013A 95214.05545625 .00000003 00000-0 10000-3 0 802
2 19802 55.2249 123.3708 0026590 179.0956 180.9642 2.00552380 47299
```

```
Akebono
1 19822U 89016A 95213.62735363 .00003815 00000-0 17863-3 0 5475
2 19822 75.0943 309.0182 3779854 346.9675 5.5128 7.86906157141396
Meteor 2-18
1 19851U 89018A 95214.03418497 -.00000060 00000-0 -66571-4 0 4135
2 19851 82.5186 176.3445 0014670 147.6282 212.5772 13.84392568324536
MOP-1
1 19876U 89020B 95215.34366319 .00000057 00000-0 10000-3 0 1298
2 19876 1.2882 71.2819 0000759 190.8538 182.5882 1.00279496 3495
TDRS 3
1 19883U 89021B 95213.42652556 -.00000269 00000-0 10000-3 0 1033
2 19883 0.0703 96.4076 0003364 71.9438 253.7523 1.00268788195902
GPS BII-02
1 20061U 89044A 95212.40262708 -.00000037 00000-0 10000-3 0 987
2 20061 54.4270 299.6656 0148142 216.0185 143.0595 2.00563968 45004
Nadezhda 1
1 20103U 89050A 95215.87777565 .00000058 00000-0 46049-4 0 4706
2 20103 82.9601 343.4149 0036404 218.8600 140.9937 13.73855649304971
GPS BII-03
1 20185U 89064A 95214.73426592 -.00000003 00000-0 10000-3 0 1172
2 20185 55.0110 123.8881 0030185 331.6627 28.1937 2.00572854 43624
GMS 4
1 20217U 89070A 95212.58647361 -.00000358 00000-0 10000-3 0 2225
2 20217 1.1246 75.9771 0010035 83.5548 114.8305 1.00124834 22195
INTERCOSMOS 24
1 20261U 89080A 95213.15359579 .00000207 00000-0 55276-4 0 4285
2 20261 82.5968 115.7885 1243373 51.6183 319.0157 12.47264517265887
GPS BII-04
1 20302U 89085A 95214.27163165 .00000056 00000-0 10000-3 0 940
2 20302 53.3646 239.5873 0019814 182.4380 177.6001 2.00558046 42415
Meteor 3-3
1 20305U 89086A 95215.81431633 .00000044 00000-0 10000-3 0 3628
2 20305 82.5504 344.6905 0007942 16.2400 343.9007 13.04412934276699
COBE
1 20322U 89089A 95212.49455458 -.00000273 00000-0 -14624-3 0 1408
2 20322 98.9611 227.8740 0008133 209.2528 150.8185 14.03447354291801
Kvant-2
1 20335U 89093A 95214.73032561 -.00013732 00000-0 -17934-3 0 3427
2 20335 51.6452 284.6934 0002591 312.6981 46.6209 15.57114552323338
GPS BII-05
1 20361U 89097A 95214.78227638 -.00000023 00000-0 10000-3 0 9540
2 20361 55.7905 65.9305 0080970 123.0176 237.8554 2.00563290 31901
COSMOS 2054 (Altair-1)
1 20391U 89101A 95213.55999685 -.00000139 00000-0 10000-3 0 1967
2 20391 3.2207 65.6204 0005104 53.8759 15.4445 1.00266070 20783
SPOT 2
1 20436U 90005A 95215.23531119 .00000169 00000-0 10000-3 0 9570
2 20436 98.7321 288.7146 0001366 93.3767 266.7521 14.20028289286577
UO-14
1 20437U 90005B 95214.26631565 .00000017 00000-0 23583-4 0 1158
```

```
2 20437 98.5669 297.8958 0011996 63.3422 296.8985 14.29893117288331
UO-15
1 20438U 90005C 95215.72683257 -.00000038 00000-0 19895-5 0 9127
2 20438 98.5609 297.7771 0011040 63.4990 296.7318 14.29210842288437
PACSAT
1 20439U 90005D 95215.77574770 .00000006 00000-0 19254-4 0 9146
2 20439 98.5778 301.1120 0012292 59.6293 300.6103 14.29947253288560
DO-17
1 20440U 90005E 95214.78002243 .00000004 00000-0 18563-4 0 9149
2 20440 98.5799 300.6147 0012456 60.9740 299.2689 14.30088412288446
WO-18
1 20441U 90005F 95213.78369195 .00000006 00000-0 19271-4 0 9184
2 20441 98.5796 299.6014 0012931 64.4547 295.7970 14.30059628288302
LO-19
1 20442U 90005G 95214.78270480 -.00000002 00000-0 15919-4 0 9131
2 20442 98.5808 300.9609 0013185 60.1102 300.1389 14.30162611288464
GPS BII-06
1 20452U 90008A 95212.18098149 .00000055 00000-0 10000-3 0 589
2 20452 54.0159 179.8836 0054822 85.1060 275.2476 2.00573061 40351
MOS-1B
1 20478U 90013A 95214.17540016 .00000091 00000-0 10000-3 0 8116
2 20478 98.9896 282.4875 0000771 94.9533 265.1713 13.94926327199949
DEBUT
1 20479U 90013B 95213.69927576 -.00000018 00000-0 24711-4 0 9131
2 20479 99.0721 293.9947 0540954 129.8073 235.1954 12.83334927256792
FO-20
1 20480U 90013C 95213.70925612 -.00000032 00000-0 -66552-5 0 8107
2 20480 99.0721 293.8477 0541263 130.2270 234.7494 12.83231432256780
MOS-1B R/B
1 20491U 90013D 95213.86868468 -.00000803 00000-0 -14424-2 0 1579
2 20491 99.0507 349.3363 0470163 324.6151 32.4572 13.02983605260145
LACE
1 20496U 90015A 95215.17143770 .00000109 00000-0 11597-4 0 5643
2 20496 43.0999 223.2046 0008706 149.9853 210.1504 15.34691378304799
Nadezhda 2
1 20508U 90017A 95215.92721566 .00000007 00000-0 -88568-5 0 4692
2 20508 82.9548 117.9613 0044154 169.7846 190.4217 13.73495764272206
OKEAN 2
1 20510U 90018A 95215.90172912 .00000195 00000-0 23521-4 0 4323
2 20510 82.5275 161.5117 0017375 284.6276 75.2998 14.78512097292646
GPS BII-07
1 20533U 90025A 95214.59023664 -.00000042 00000-0 10000-3 0 807
2 20533 54.8208 300.1838 0046008 81.0369 279.5523 2.00567211 39177
PegSat
1 20546U 90028A 95214.88496570 .00002531 00000-0 52007-4 0 8273
2 20546 94.1155 170.7018 0066053 155.2472 205.1990 15.43871464295683
HST
1 20580U 90037B 95215.89198889 .00000311 00000-0 15646-4 0 6983
2 20580 28.4695 104.3253 0006345 84.8049 275.3262 14.90908962 91038
MACSAT 2
```

```
1 20608U 90043B 95212.88610811 .00000119 00000-0 17336-4 0 1148
2 20608 89.9277 176.1026 0108376 98.5617 262.7898 14.64849355279250
Glonass 44
1 20619U 90045A 95214.51367836 -.00000042 00000-0 10000-3 0 2091
2 20619 65.2549 334.8841 0024832 209.4393 150.4394 2.13102419 40497
Glonass 45
1 20620U 90045B 95213.69387681 -.00000040 00000-0 10000-3 0 2178
2 20620 65.2862 334.9026 0007043 47.8320 312.2388 2.13102506 40513
Glonass 46
1 20621U 90045C 95212.35273388 -.00000041 00000-0 10000-3 0 8110
2 20621 65.3007 335.0119 0012328 189.1489 170.8465 2.13101680 40481
Kristall
1 20635U 90048A 95214.73032561 -.00013732 00000-0 -17934-3 0 1330
2 20635 51.6452 284.6934 0002591 312.6981 46.6209 15.57114552540073
ROSAT
1 20638U 90049A 95214.31376299 -.00000288 00000-0 -12486-7 0 4805
2 20638 52.9920 299.3800 0011707 228.0867 131.9078 15.07217633284073
Meteor 2-19
1 20670U 90057A 95213.09339952 .00000038 00000-0 20616-4 0 9121
2 20670 82.5436 242.8897 0017611 76.4756 283.8361 13.84162158257325
CRRES
1 20712U 90065A 95214.89227189 .00000248 00000-0 36343-3 0 1290
2 20712 18.0775 20.1787 7192679 138.5543 307.5362 2.35456464 35583
GPS BII-08
1 20724U 90068A 95210.92235565 .00000005 00000-0 10000-3 0 9238
2 20724 54.8524 121.6501 0118598 174.7086 185.4537 2.00566041 34965
Feng Yun1-2
1 20788U 90081A 95215.87481796 .00000227 00000-0 17846-3 0 4507
2 20788 98.8194 227.2975 0015327 307.3100 52.6653 14.01384468251512
Meteor 2-20
1 20826U 90086A 95215.87233373 .00000016 00000-0 14203-5 0 9249
2 20826 82.5245 177.6122 0013229 339.3223 20.7403 13.83611401244828
GPS BII-09
1 20830U 90088A 95212.46264277 -.00000021 00000-0 10000-3 0 9342
2 20830 55.7319 63.9920 0067263 99.3417 261.4832 2.00556130 35636
GPS BIIA-10
1 20959U 90103A 95212.37503431 .00000009 00000-0 10000-3 0 9019
2 20959 55.0341 123.5953 0098445 230.6991 128.4502 2.00573391 34226
DMSP B5D2-5
1 20978U 90105A 95215.89642081 .00000039 00000-0 29736-4 0 2874
2 20978 98.6363 283.9634 0080199 29.5155 331.0521 14.32566419244143
Glonass 47
1 21006U 90110A 95215.66314638 -.00000007 00000-0 10000-3 0 7832
2 21006 65.0824 95.4633 0057554 183.7508 176.2328 2.13103373 36229
Glonass 48
1 21007U 90110B 95211.62867879 .00000014 00000-0 10000-3 0 9104
2 21007 65.1010 95.6694 0034661 178.6376 181.4534 2.13101287 36125
Glonass 49
1 21008U 90110C 95213.39693462 .00000006 00000-0 10000-3 0 1053
2 21008 65.0645 95.5645 0008914 274.7714 85.2059 2.13098966 36155
```

```
AO-21
1 21087U 91006A 95212.99885126 .00000094 00000-0 82657-4 0 6184
2 21087 82.9398 199.4084 0037164 22.9393 337.3412 13.74557379225882
RS-12/13
1 21089U 91007A 95213.06000010 .00000043 00000-0 28909-4 0 8194
2 21089 82.9217 67.5043 0031063 48.3352 312.0460 13.74059311224934
MOP-2
1 21140U 91015B 95214.39195926 -.00000004 00000-0 10000-3 0 832
2 21140 0.1489 293.9501 0001286 199.7327 318.5310 1.00282415 18403
Nadezhda 3
1 21152U 91019A 95215.89648905 -.00000007 00000-0 -23565-4 0 1606
2 21152 82.9233 21.5360 0042826 145.9906 214.4006 13.73521672220056
Glonass 50
1 21216U 91025A 95215.68179829 -.00000048 00000-0 10000-3 0 4285
2 21216 65.0294 334.4899 0009173 191.9336 168.0558 2.13102739 33739
Glonass 51
1 21217U 91025B 95213.40454848 -.00000041 00000-0 10000-3 0 8367
2 21217 65.0119 334.5773 0008712 241.4494 118.4872 2.13101543 33675
Glonass 52
1 21218U 91025C 95215.39332295 -.00000046 00000-0 10000-3 0 3101
2 21218 65.0136 334.4872 0018367 89.2340 270.9933 2.13105118 33729
GRO
1 21225U 91027B 95213.48985615 .00001183 00000-0 20370-4 0 2843
2 21225 28.4619 259.5996 0003647 177.7898 182.2718 15.42836626120337
Meteor 3-4
1 21232U 91030A 95211.59959047 .00000050 00000-0 10000-3 0 8223
2 21232 82.5379 240.8448 0011735 246.3506 113.6385 13.16467675205098
NOAA 12
1 21263U 91032A 95215.94634026 .00000115 00000-0 70671-4 0 5847
2 21263 98.5849 238.7823 0013449 114.9191 245.3383 14.22546382219219
OKEAN 3
1 21397U 91039A 95213.68677739 .00000187 00000-0 23589-4 0 1222
2 21397 82.5250 76.8038 0023933 5.6467 354.5010 14.76389059224071
GPS BIIA-11
1 21552U 91047A 95214.13632647 -.00000023 00000-0 10000-6 0 8799
2 21552 56.0245 61.6253 0063843 242.5914 116.8140 2.00563078 29859
ERS-1
1 21574U 91050A 95214.15885099 .00000022 00000-0 24232-4 0 1814
2 21574 98.5493 287.8281 0001144 52.1922 307.9366 14.32248537211632
UO-22
1 21575U 91050B 95214.17312322 .00000039 00000-0 27613-4 0 6203
2 21575 98.3906 284.3493 0007636 134.8848 225.2954 14.36984879212102
ORBCOMM-X
1 21576U 91050C 95214.21012137 .00000032 00000-0 25578-4 0 7156
2 21576 98.3900 282.7509 0003960 137.3864 222.7627 14.36393289212017
TUBSAT-A
1 21577U 91050D 95215.17825916 .00000012 00000-0 18769-4 0 6140
2 21577 98.3903 284.2298 0006578 134.5968 225.5761 14.36489819212188
SARA
1 21578U 91050E 95213.23397368 .00000166 00000-0 67777-4 0 8146
```

```
2 21578 98.4101 288.0386 0005160 133.7805 226.3805 14.39037598212170
TDRS 4
1 21639U 91054B 95214.45406050 .00000079 00000-0 00000+0 0 9215
2 21639 0.0129 88.3519 0003183 25.7220 185.6314 1.00270195108688
Meteor 3-5
1 21655U 91056A 95212.89144343 .00000051 00000-0 10000-3 0 8208
2 21655 82.5506 187.3746 0011840 256.2793 103.7025 13.16840073190383
UARS
1 21701U 91063B 95214.63399947 -.00000107 00000-0 11724-4 0 6918
2 21701 56.9838 310.5075 0005263 98.9670 261.1961 14.96410433212521
DMSP B5D2-6
1 21798U 91082A 95215.94997232 -.00000024 00000-0 11222-4 0 9353
2 21798 98.9580 227.8047 0013782 51.4241 308.8166 14.13907780189950
Glonass 53
1 21853U 92005A 95215.13603512 -.00000004 00000-0 10000-3 0 303
2 21853 65.0185 95.1710 0006727 191.0680 168.9906 2.13102261 27327
Glonass 54
1 21854U 92005B 95213.07924436 .00000007 00000-0 10000-3 0 1668
2 21854 65.0176 95.2254 0016598 17.9290 342.2107 2.13104350 27266
Glonass 55
1 21855U 92005C 95215.02056986 -.00000004 00000-0 10000-3 0 1604
2 21855 65.0107 95.1734 0006963 201.7860 158.2580 2.13102399 27298
JERS-1
1 21867U 92007A 95214.38072694 .00000057 00000-0 96079-5 0 6379
2 21867 97.7147 290.6961 0001804 95.5790 264.5694 14.98644081189966
GPS BIIA-12
1 21890U 92009A 95212.10819892 .00000048 00000-0 10000-3 0 6800
2 21890 53.9170 239.9150 0056855 182.8454 177.1856 2.00573762 25180
GPS BIIA-13
1 21930U 92019A 95214.30669256 -.00000054 00000-0 10000-3 0 6557
2 21930 55.6712 1.3934 0038397 181.1024 178.8931 2.00566541 24158
EUVE
1 21987U 92031A 95213.72406271 .00000448 00000-0 11163-4 0 4729
2 21987 28.4331 176.9934 0010353 146.8073 213.3159 15.19358388174883
SAMPEX
1 22012U 92038A 95213.19958057 .00000498 00000-0 41042-4 0 6491
2 22012 81.6712 98.1882 0119095 139.8744 221.1347 14.91407936167380
GPS BIIA-14
1 22014U 92039A 95215.84406637 .00000065 00000-0 10000-3 0 5746
2 22014 54.8497 181.2978 0089635 314.3227 44.9281 2.00570465 16023
Glonass 56
1 22056U 92047A 95214.91999410 -.00000045 00000-0 10000-3 0 737
2 22056 64.8652 334.6317 0004295 260.5765 99.3965 2.13103225 23382
Glonass 57
1 22057U 92047B 95215.68460647 -.00000048 00000-0 00000+0 0 680
2 22057 64.8790 334.6370 0006210 318.8724 41.0962 2.13102251 23374
Glonass 58
1 22058U 92047C 95214.68617313 -.00000044 00000-0 10000-3 0 326
2 22058 64.8764 334.6659 0006778 279.1517 80.7623 2.13102944 23401
TOPEX
```

```
1 22076U 92052A 95212.07920929 -.00000061 00000-0 00000+0 0 8954
2 22076 66.0413 161.7031 0008341 264.6676 95.3387 12.80930342138864
KO-23
1 22077U 92052B 95215.16362927 -.00000037 00000-0 10000-3 0 5119
2 22077 66.0757 137.4080 0004352 186.2263 173.8701 12.86291262139779
S80/T
1 22078U 92052C 95213.21532693 -.00000037 00000-0 10000-3 0 5089
2 22078 66.0794 140.3347 0004310 166.1238 193.9889 12.86575989139606
GPS BIIA-15
1 22108U 92058A 95214.30816688 .00000056 00000-0 10000-3 0 5944
2 22108 54.1290 240.6376 0121866 151.9659 208.7786 2.00569459 21173
FREJA
1 22161U 92064A 95213.41161015 .00000013 00000-0 48938-4 0 5347
2 22161 62.9928 334.1774 0813539 350.7283 7.9434 13.21842398136026
LAGEOS II
1 22195U 92070B 95214.61731661 -.00000009 00000-0 10000-3 0 4213
2 22195 52.6390 193.6367 0138103 296.8829 61.7675 6.47294211 65583
GPS BIIA-16
1 22231U 92079A 95214.99004371 .00000069 00000-0 10000-3 0 5761
2 22231 54.6413 182.4522 0026927 286.7684 72.9274 2.00562840 19767
GPS BIIA-17
1 22275U 92089A 95215.14177256 .00000066 00000-0 10000-3 0 5959
2 22275 54.6302 179.9935 0052169 251.7436 107.6501 2.00564399 19170
TDRS 5
1 22314U 93003B 95215.67069217 -.00000286 00000-0 10000-3 0 5455
2 22314 1.9707 71.5942 0001480 119.8508 316.0972 1.00273233 9391
GPS BIIA-18
1 22446U 93007A 95214.21572384 -.00000042 00000-0 10000-3 0 5830
2 22446 54.4180 300.4390 0081648 355.8462 4.1528 2.00578578 18147
Glonass 59
1 22512U 93010A 95215.60680041 -.00000007 00000-0 10000-3 0 7217
2 22512 65.0308 95.0103 0008308 175.2400 184.8448 2.13102122 18901
Glonass 60
1 22513U 93010B 95213.19963281 .00000007 00000-0 00000+0 0 7900
2 22513 65.0218 95.0935 0006603 192.0611 168.0074 2.13103075 19045
Glonass 61
1 22514U 93010C 95213.96236751 .00000002 00000-0 00000+0 0 7861
2 22514 65.0415 95.0593 0010302 186.3017 173.7598 2.13102926 19062
ASTRO-D
1 22521U 93011A 95215.56247833 .00000712 00000-0 44094-4 0 4266
2 22521 31.1051 295.8818 0056677 247.8709 111.5882 15.02354400134507
UFO F1
1 22563U 93015A 95211.85745068 .00000006 00000-0 00000+0 0 4380
2 22563 25.9090 293.6688 0006117 237.0369 287.8726 0.99251870 12893
GPS BIIA-19
1 22581U 93017A 95214.35653975 -.00000055 00000-0 10000-3 0 4497
2 22581 55.2196 0.9503 0057894 37.7954 322.6165 2.00573990 17203
ARSENE
1 22654U 93031B 95214.81591900 -.00000116 00000-0 10000-3 0 3244
2 22654 2.6578 82.8130 2891945 216.4221 119.9681 1.42203069 7051
```

```
GPS BIIA-20
1 22657U 93032A 95214.48857211 -.00000055 00000-0 10000-3 0 4929
2 22657 55.2495 0.7904 0071320 214.3181 145.2238 2.00563528 12534
RADCAL
1 22698U 93041A 95214.62187017 .00000052 00000-0 17654-4 0 4200
2 22698 89.5442 288.1042 0089804 288.5021 70.6432 14.21349459109038
GPS BIIA-21
1 22700U 93042A 95214.45585225 .00000057 00000-0 10000-3 0 4458
2 22700 54.3106 241.4017 0038914 342.2959 17.6372 2.00565663 15331
NOAA 13
1 22739U 93050A 95215.87150434 -.00000056 00000-0 -58819-5 0 8598
2 22739 98.9975 164.7759 0010817 41.8126 318.3858 14.10938357102167
GPS BIIA-22
1 22779U 93054A 95211.54770557 -.00000037 00000-0 10000-3 0 5009
2 22779 54.5510 300.5573 0020778 246.1821 113.6629 2.00573581 14037
Meteor 2-21
1 22782U 93055A 95215.59564156 .00000057 00000-0 38224-4 0 4198
2 22782 82.5457 239.6139 0023316 146.9010 213.3613 13.83036391 97094
UFO F2
1 22787U 93056A 95215.81347878 -.00000066 00000-0 10000-3 0 4999
2 22787 4.4370 325.2518 0003366 153.2199 197.8543 1.00276169 5633
SPOT 3
1 22823U 93061A 95212.17576118 -.00000031 00000-0 59294-5 0 4591
2 22823 98.7378 285.7353 0000695 75.4003 284.7253 14.20021807 95531
STELLA
1 22824U 93061B 95214.67796543 -.00000038 00000-0 21454-5 0 4061
2 22824 98.6131 290.0796 0007226 82.1525 278.0491 14.27101909 96360
AO-27
1 22825U 93061C 95213.72501755 -.00000008 00000-0 14300-4 0 4086
2 22825 98.6155 289.4938 0009564 86.6642 273.5633 14.27668303 96266
IO-26
1 22826U 93061D 95213.18495525 .00000013 00000-0 23045-4 0 4074
2 22826 98.6157 289.0654 0009954 86.6621 273.5704 14.27776416 96196
HEATHSAT
1 22827U 93061E 95213.20192142 -.00000014 00000-0 11793-4 0 4683
2 22827 98.6132 289.0145 0010119 76.9085 283.3242 14.27900394 96208
ITAMSAT
1 22828U 93061F 95213.17106710 .00000013 00000-0 22821-4 0 3856
2 22828 98.6112 289.0892 0011194 75.4837 284.7587 14.28107301 64298
PO-28
1 22829U 93061G 95211.71200478 .00000018 00000-0 24652-4 0 3995
2 22829 98.6124 287.6883 0011006 80.0899 280.1513 14.28086721 96003
KO-25
1 22830U 93061H 95213.80429296 -.00000037 00000-0 22837-5 0 4188
2 22830 98.5114 282.4340 0012506 53.7538 306.4790 14.28093770 96301
GPS BIIA-23
1 22877U 93068A 95212.10331628 -.00000022 00000-0 10000-3 0 2975
2 22877 55.4631 62.0345 0037260 293.3354 66.3345 2.00577122 12937
METEOSAT 6
1 22912U 93073B 95215.24679398 -.00000092 00000-0 10000-3 0 3505
```

```
2 22912 0.7190 276.9886 0000229 18.2521 94.5124 1.00271964 4664
HST Array
1 22920U 90037C 95213.28980464 .00002732 00000-0 19364-3 0 3517
2 22920 28.4708 76.9217 0003994 290.4116 69.6006 15.01492161 91092
Meteor 3-6
1 22969U 94003A 95214.24576240 .00000051 00000-0 10000-3 0 1863
2 22969 82.5639 126.2482 0014968 322.8562 37.1529 13.16730595 72943
TUBSAT-B
1 22970U 94003B 95213.21671659 .00000051 00000-0 10000-3 0 1771
2 22970 82.5606 126.9039 0015958 324.3364 35.6677 13.16825488 72810
GPS BIIA-24
1 23027U 94016A 95214.67432379 -.00000054 00000-0 10000-3 0 2364
2 23027 55.0928 2.8052 0064249 196.6861 163.1160 2.00559220 10299
Glonass 62
1 23043U 94021A 95214.04044590 -.00000042 00000-0 00000+0 0 2376
2 23043 64.7539 335.0709 0006802 182.8088 177.2050 2.13103522 10187
Glonass 63
1 23044U 94021B 95214.39237302 -.00000043 00000-0 00000+0 0 2124
2 23044 64.7498 335.0574 0030173 202.1001 157.7922 2.13103225 10193
Glonass 64
1 23045U 94021C 95213.63018805 -.00000041 00000-0 00000+0 0 2179
2 23045 64.7365 335.0938 0010227 36.9656 323.1246 2.13102883 10173
GOES 8
1 23051U 94022A 95215.24638111 -.00000259 00000-0 10000-3 0 3564
2 23051 0.1240 85.6830 0003545 61.7385 178.1074 1.00269848 12163
MSTI 2
1 23101U 94028A 95212.06527812 .00002613 00000-0 46757-4 0 2189
2 23101 97.0971 44.6805 0013346 76.5038 283.7700 15.50810840 69324
STRV-1A
1 23125U 94034B 95213.11392970 .00001813 00000-0 63361-3 0 1835
2 23125 7.4915 12.7951 7262334 156.3021 270.2232 2.30053651 8686
STRV-1B
1 23126U 94034C 95214.22971734 .00001804 00000-0 48007-3 0 1650
2 23126 7.4986 12.4109 7269755 156.9584 268.3350 2.29701065 8755
Nadezhda 4
1 23179U 94041A 95215.76290785 .00000004 00000-0 -11489-4 0 1204
2 23179 82.9478 112.6130 0035655 295.5751 64.1719 13.75669705 53010
Glonass 65
1 23203U 94050A 95214.23706450 .00000097 00000-0 00000+0 0 1780
2 23203 64.7934 214.8690 0006859 162.6474 197.3927 2.13102088 7586
Glonass 66
1 23204U 94050B 95215.40960767 .00000104 00000-0 00000+0 0 1839
2 23204 64.7825 214.8568 0015161 339.0674 20.8907 2.13102543 7605
Glonass 67
1 23205U 94050C 95213.41546373 .00000091 00000-0 00000+0 0 1691
2 23205 64.7904 214.9105 0003385 281.6376 78.3458 2.13102353 7561
DMSP B5D2-7
1 23233U 94057A 95215.85279321 .00000065 00000-0 59200-4 0 4364
2 23233 98.8768 273.5043 0013147 7.6838 352.4539 14.12625269 47889
OKEAN 1-7
```

```
1 23317U 94066A 95215.85942685 .00000119 00000-0 14681-4 0 840
2 23317 82.5424 351.8428 0027998 37.1687 323.1453 14.73948191 43646
ELEKTRO
1 23327U 94069A 95207.78260950 -.00000102 00000-0 10000-3 0 826
2 23327 0.7135 259.4195 0006473 191.0373 211.0550 1.00274469 2722
RESURS 1-3
1 23342U 94074A 95213.77515000 .00000030 00000-0 13083-4 0 2437
2 23342 98.0131 272.6152 0001128 74.9731 285.1582 14.69756115 39745
Glonass 68
1 23396U 94076A 95212.78968208 .00000009 00000-0 00000+0 0 1301
2 23396 64.9633 95.1846 0029489 190.0094 170.0124 2.13102696 5396
Glonass 69
1 23397U 94076B 95214.37295388 -.00000000 00000-0 00000+0 0 1336
2 23397 64.9419 95.1439 0012822 324.7046 35.2873 2.13102438 5424
Glonass 70
1 23398U 94076C 95215.37941942 -.00000006 00000-0 00000+0 0 1440
2 23398 64.9368 95.0905 0002805 297.3536 204.2370 2.13102466 5458
LUCH (Altair-2)
1 23426U 94082A 95215.70468132 -.00000278 00000-0 00000+0 0 1464
2 23426 2.1082 272.1023 0002017 229.7656 158.1553 1.00297375 2314
RS-15
1 23439U 94085A 95212.05094105 -.00000039 00000-0 10000-3 0 673
2 23439 64.8147 184.0472 0167672 254.7726 103.4602 11.27525210 24469
NOAA 14
1 23455U 94089A 95215.80725116 .00000067 00000-0 61232-4 0 2681
2 23455 98.9045 157.9514 0010707 60.1967 300.0270 14.11525091 30534
ODERACS II A
1 23471U 95004C 95214.48791189 .00017394 00000-0 74302-4 0 1630
2 23471 51.6489 254.2565 0011600 281.3228 78.6484 15.85226582 28512
ODERACS II B
1 23472U 95004D 95213.39449864 .00065711 13063-4 14999-3 0 1784
2 23472 51.6421 251.9964 0009957 315.6005 44.4204 15.97549623 28442
Glonass 71
1 23511U 95009A 95212.45704810 -.00000042 00000-0 00000+0 0 765
2 23511 64.7602 335.3978 0004633 317.5065 42.4748 2.13102700 3110
Glonass 72
1 23512U 95009B 95213.68899815 -.00000041 00000-0 00000+0 0 851
2 23512 64.7604 335.3704 0013795 197.0495 162.9277 2.13102548 3145
Glonass 73
1 23513U 95009C 95215.62447587 -.00000048 00000-0 00000+0 0 849
2 23513 64.7633 335.2788 0006817 206.4193 153.5673 2.13102561 3181
Soyuz TM-21
1 23519U 95010A 95214.73032561 -.00013732 00000-0 -17934-3 0 1530
2 23519 51.6452 284.6934 0002591 312.6981 46.6209 15.57114552 22083
SFU
1 23521U 95011A 95213.08722616 .00001697 00000-0 50926-4 0 845
2 23521 28.4593 128.4045 0019911 0.5996 359.4632 15.28628842 20819
GMS 5
1 23522U 95011B 95212.69736885 -.00000285 00000-0 10000-3 0 442
2 23522 0.8087 297.2666 0002594 144.0755 258.7049 1.00276693 1227
```

```
DMSP B5D2-8
1 23533U 95015A 95215.93647432 -.00000009 00000-0 18656-4 0 1640
2 23533 98.8341 217.6552 0005949 240.2191 119.8391 14.12695286 18695
Microlab 1
1 23547U 95017C 95213.41598981 .00000199 00000-0 73639-4 0 394
2 23547 69.9782 194.3788 0015290 269.2977 90.6401 14.45388385 17314
OFEQ 3
1 23549U 95018A 95213.59592071 .00005184 00000-0 13094-3 0 825
2 23549 143.3691 84.7094 0253822 333.2127 25.5734 15.07818323 17829
GFZ-1
1 23558U 86017JE 95213.59727125 .00001362 00000-0 22728-4 0 474
2 23558 51.6535 288.3667 0007432 102.9412 257.2413 15.60147264539923
ERS-2
1 23560U 95021A 95215.15888236 .00000049 00000-0 34376-4 0 1033
2 23560 98.5483 288.8258 0001270 95.2197 264.9132 14.32248964 14903
Spektr
1 23579U 95024A 95214.73032561 -.00013732 00000-0 -17934-3 0 934
2 23579 51.6452 284.6934 0002591 312.6981 46.6209 15.57114552 11649
GOES 9
1 23581U 95025A 95211.20946479 -.00000186 00000-0 00000+0 0 434
2 23581 0.4682 268.9932 0000408 216.4463 167.0816 1.00280413 680
Cosmos 2315
1 23603U 95032A 95212.65920440 .00000106 00000-0 10000-3 0 231
2 23603 82.9007 338.2680 0029367 204.6234 155.3522 13.72195599 3647
1995032B
1 23604U 95032B 95215.83704780 .00000108 00000-0 10000-3 0 212
2 23604 82.9040 335.8684 0024892 182.7878 177.3115 13.73586478 4071
Helios 1A
1 23605U 95033A 95215.95648002 .00008914 00000-0 17133-2 0 701
2 23605 98.0895 151.7833 0001911 79.8195 280.3215 14.63862804 3990
CERISE
1 23606U 95033B 95213.79040509 .00000001 00000-0 87869-5 0 187
2 23606 98.0724 149.7547 0007287 111.2942 248.9168 14.66884170 3758
UPM LBSAT 1
1 23607U 95033C 95212.28582663 -.00000028 00000-0 35750-5 0 130
2 23607 98.0748 148.2818 0008742 111.9352 248.2762 14.67128444 3523
1995033D
1 23608U 95033D 95214.86410279 .00000042 00000-0 15851-4 0 167
2 23608 98.0464 150.8701 0030817 132.3796 228.0033 14.67883733 3881
TDRS 6
1 23613U 95035B 95212.40000000 .00000127 00000-0 00000+0 0 215
2 23613 0.0280 90.8780 0000083 51.1530 160.5350 1.00260033 156
1995035C
1 23614U 95035C 95213.31754153 .00000324 00000-0 33643-3 0 90
2 23614 26.2678 317.8154 7262663 11.2446 358.6834 2.27691475 424
1995035D
1 23615U 95035D 95213.03682076 .00000128 00000-0 10000-3 0 54
2 23615 2.0607 156.6496 0007381 168.3038 191.1106 1.00488789 182
Progress M-28
1 23617U 95036A 95214.73032561 -.00013732 00000-0 -17934-3 0 222
```

```
2 23617 51.6452 284.6934 0002591 312.6981 46.6209 15.57114552 2136
1995036B
1 23618U 95036B 95204.05906086 .29958245 12725-4 29504-3 0 200
2 23618 51.6301 337.1649 0007753 75.2045 286.7848 16.50549978 485
Glonass 74
1 23620U 95037A 95215.99024462 .00000107 00000-0 00000+0 0 151
2 23620 64.8573 214.6378 0022103 133.0564 227.1723 2.12521414 229
Glonass 75
1 23621U 95037B 95216.03125000 .00000108 00000-0 00000+0 0 238
2 23621 64.8556 214.6431 0074339 83.1155 277.7635 2.10518639 226
Glonass 76
1 23622U 95037C 95215.48601852 .00000103 00000-0 00000+0 0 157
2 23622 64.8436 214.6671 0071599 247.2017 112.0773 2.15422144 218
1995037D
1 23623U 95037D 95206.20798611 .14391761 78694-5 10991-3 0 47
2 23623 64.8547 213.0520 0008335 271.4613 119.6698 16.52366825 91
1995037E
1 23624U 95037E 95205.89922234 .00388584 77671-5 10000-4 0 31
2 23624 64.8214 214.2845 0007283 77.2458 281.8629 16.45405797 41
1995037F
1 23625U 95037F 95215.97927083 .00000106 00000-0 00000+0 0 53
2 23625 64.8528 214.6495 0008174 247.6180 112.3259 2.13423035 222
1995037G
1 23626U 95037 G 95207.35685102 .08292106 00000-0 17695-3 0 42
2 23626 064.8501 209.1390 0230257 053.5306 308.6775 16.01358170000277
1995037H
1 23627U 95037 H 95208.35977691 .11875576 00000-0 11821-3 0 26
2 23627 064.9833 205.9815 0193251 054.4409 307.4530 16.15959152000446
1995037J
1 23630U 95037J 95214.22026554 .00000109 00000-0 00000+0 0 18
2 23630 64.8147 211.8928 5799143 297.0983 15.9629 4.23309337 09
1995037K
1 23631U 95037K 95215.40178893 .00000055 00000-0 -93772-4 0 29
2 23631 64.8854 211.3411 5797942 297.0615 15.9838 4.23292319 52
1995039A
1 23632U 95039A 95215.05103721 .00000252 00000-0 10000-4 0 11
2 23632 63.8240 259.6684 9332704 314.5662 1.9243 0.26200872 02
1995039B
1 23633U 95039B 95216.03798295 .00077128 80411-5 33731-3 0 51
2 23633 62.8280 257.3427 0387358 112.3112 251.9546 15.22242381 169
1995039C
1 23634U 95039C 95216.03976746 .00201208 67707-5 47094-3 0 59
2 23634 62.8062 257.3815 0435679 112.4038 252.3807 15.20083070 168
1995039D
1 23635U 95039D 95215.05103678 .00000254 00000-0 10000-4 0 28
2 23635 63.8306 259.6536 9336184 314.5884 1.9285 0.26007211 04
1995040A
1 23636U 95040A 95216.06037252 -.00000168 00000-0 00000+0 0 15
2 23636 4.1628 110.7453 7188882 179.2705 74.6335 2.26314908 00
1995040B
```

1 23637U 95040B 95215.97504380 -.00000178 00000-0 00000+0 0 17
2 23637 4.1663 111.0618 7252147 179.2403 4.8644 2.18377055 09
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1652. Navstar GPS Constellation Status (95-08-04)

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: lang@unb.ca
Message-ID: <ID9036.D950804.T134606.lang@unb.ca>
Source record: 24360
Cross-posted to: comp.infosystems.gis,rec.aviation.misc,rec.boats,rec.radio.amateur.space,sci.electronics,sci.engr.surveying,sci.geo.satellite-nav,sci.space.news

```
Navstar GPS Constellation Status
(95-08-04)

Blk NASA Orbit Launch
II PRN Internat. Catalog Plane Date
Seq SVN Code ID Number Pos'n (UT) Clock Available/Decommissioned
-------------------------------------------------------------------------------
Block I
01 04 1978-020A 10684 78-02-22 78-03-29 85-07-17
02 07 1978-047A 10893 78-05-13 78-07-14 81-07-16
03 06 1978-093A 11054 78-10-06 78-11-13 92-05-18
04 08 1978-112A 11141 78-12-10 79-01-08 89-10-14
05 05 1980-011A 11690 80-02-09 80-02-27 83-11-28
06 09 1980-032A 11783 80-04-26 80-05-16 91-03-06
07 81-12-18 Launch failure
08 11 1983-072A 14189 83-07-14 83-08-10 93-05-04
09 13 1984-059A 15039 84-06-13 84-07-19 94-06-20
10 12 1984-097A 15271 A-1 84-09-08 Rb 84-10-03
11 03 1985-093A 16129 85-10-09 85-10-30 94-04-13

Block II
II-1 14 14 1989-013A 19802 E-1 89-02-14 Cs 89-04-15 05:02 UT
II-2 13 02 1989-044A 20061 B-3 89-06-10 Cs 89-08-10 20:46 UT
II-3 16 16 1989-064A 20185 E-3 89-08-18 Cs 89-10-14 20:21 UT
II-4 19 19 1989-085A 20302 A-4 89-10-21 Rb 89-11-23 03:13 UT
II-5 17 17 1989-097A 20361 D-3 89-12-11 Cs 90-01-06 03:30 UT
II-6 18 18 1990-008A 20452 F-3 90-01-24 Cs 90-02-14 22:26 UT
II-7 20 20 1990-025A 20533 B-2 90-03-26 Rb 90-04-18 23:13 UT
II-8 21 21 1990-068A 20724 E-2 90-08-02 Cs 90-08-22 15:00 UT
II-9 15 15 1990-088A 20830 D-2 90-10-01 Cs 90-10-15 00:39 UT

Block IIA
II-10 23 23 1990-103A 20959 E-4 90-11-26 Cs 90-12-10 23:45 UT
II-11 24 24 1991-047A 21552 D-1 91-07-04 Rb 91-08-30 04:44 UT
II-12 25 25 1992-009A 21890 A-2 92-02-23 Cs 92-03-24 11:00 UT
II-13 28 28 1992-019A 21930 C-2 92-04-10 Cs 92-04-25 20:32 UT
II-14 26 26 1992-039A 22014 F-2 92-07-07 Cs 92-07-23 19:43 UT
II-15 27 27 1992-058A 22108 A-3 92-09-09 Cs 92-09-30 20:08 UT
II-16 32 01 1992-079A 22231 F-1 92-11-22 Rb 92-12-11 14:49 UT
II-17 29 29 1992-089A 22275 F-4 92-12-18 Cs 93-01-05 16:39 UT
II-18 22 22 1993-007A 22446 B-1 93-02-03 Cs 93-04-04 05:20 UT
II-19 31 31 1993-017A 22581 C-3 93-03-30 Rb 93-04-13 20:53 UT
II-20 37 07 1993-032A 22657 C-4 93-05-13 Cs 93-06-12 16:15 UT
```

```
II-21 39 09 1993-042A 22700 A-1 93-06-26 Cs 93-07-20 12:54 UT
II-22 35 05 1993-054A 22779 B-4 93-08-30 Cs 93-09-28 19:29 UT
II-23 34 04 1993-068A 22877 D-4 93-10-26 Cs 93-11-22 18:20 UT
II-24 36 06 1994-016A 23027 C-1 94-03-10 Cs 94-03-28 14:20 UT
38 To be launched on need in FY '95
33 To be launched on need in FY '95
40 To be launched on need in FY '96
30 To be launched on need in FY '96

Notes
-----
1. NASA Catalog Number is also known as NORAD or U.S. Space Command object
number.
2. No orbital plane position = satellite no longer operational.
3. Clock: Rb = Rubidium; Cs = Cesium.
4. Selective Availability (S/A) had been enabled on Block II satellites during
part of 1990; S/A off between about 10 August 1990 and 1 July 1991 due to
Gulf crisis; standard level re-implemented on 15 November 1991; occasionally
off for test and other purposes. Currently, PRN15 and PRN28 appear to have
little or no S/A imposed.
5. Anti-spoofing (A-S) was activated on 94-01-31 at 00:00 UT on all Block II
satellites (ref. NANU 050-94042); occasionally off for test and other
purposes. A-S was turned off on all satellites at 20:00 UT on 95-04-19 and
back on on 95-05-10 and was off again between 95-06-19 and 95-07-10. A-S
has been off on PRN28 since 95-02-21.
6. PRN number of SVN32 was changed from 32 to 01 on 93-01-28.
7. PRN05 and PRN06 are equipped with corner-cube reflectors for satellite laser
ranging (SLR). SLR tracking of the satellites will permit onboard clock
errors and satellite ephemeris errors in GPS tracking to be differentiated.
8. The decommissioning date for PRN06/SVN03 is the date of termination of
operations of this satellite (ref. USNO) and is about 3 weeks later than the
date GPSIC gives for "deactivation".

================================================================================
```
Richard B. Langley Internet: LANG@UNB.CA or SE@UNB.CA
Geodetic Research Laboratory BITnet: LANG@UNB or SE@UNB
Dept. of Geodesy and Geomatics Engineering Phone: (506) 453-5142
University of New Brunswick FAX: (506) 453-4943
Fredericton, N.B., Canada E3B 5A3 Telex: 014-46202
Fredericton? Where's that? See: http://degaulle.hil.unb.ca/NB/fredericton.html
```
================================================================================
```

1653. Re: once again...pk-900 of dsp2232 for sat.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <3vugpf$6iuf@ns3-1.CC.Lehigh.EDU>
Source record: 24361

>The DSP-93 is a DSP processor developed by TAPR and AMSAT. It comes with
>all the satellite and terrestrial modems (HF as well as VHF/UHF) as well
>as other stuff (audio oscilloscope, audio spectrum analyzer, audio
>function generator, (soon) W9GR-like audio procesing. Most modems require
>an external TNC and connects via the modem disconnect header. See the TAPR
>web page for a lot of additional info:
>
>http://www.tapr.org/tapr/
>
>Internal TNCs are under development by TAPR and others also.

ok, i'll look into it next web stop. thanks!!!

DAvid

|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	TechnoMage - BBS	
	N3SQE/SVARC - Ham V
HAmmy in IRC	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

1654. NOAA Space Environment Lab on WWW?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-04 00:00:00 UTC
From: okstein@primenet.com
Message-ID: <okstein.76.000745DF@primenet.com>
Source record: 24362

This lab used to have a phone BBS. Is there access now on the WWW? They used to have some interesting info on solar flares and geomagnetic phenomena. Might be useful to predict dx.

1655. Re: NOAA Space Environment Lab on WWW?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-05 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <3vvr4l$159@nnrp2.primenet.com>
Source record: 24363

In <okstein.76.000745DF@primenet.com>, okstein@primenet.com (Charles Okstein) writes:
>This lab used to have a phone BBS. Is there access now on the WWW? They used
>to have some interesting info on solar flares and geomagnetic phenomena.
>Might be useful to predict dx.

A place to start is:

http://www.ncdc.noaa.gov/noaa/noaa.html

NOAA seem to have a lot of sites.

Jim N7TCF

1656. ARLK037 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-08-05 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk037.1995@ampr.org>
Source record: 24364
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK037
ARLK037 Keplerian data

ZCZC SK62
QST de W1AW
Keplerian Bulletin 37 ARLK037
From ARRL Headquarters
Newington, CT August 5, 1995
To all radio amateurs

SB KEP ARL ARLK037
ARLK037 Keplerian data

Thanks to NASA, AMSAT and N3FKV for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95210.49039197 .00000246 00000-0 10000-3 0 3664
2 14129 26.4555 255.9109 5993547 297.1786 14.8191 2.05876811 63202
RS-10/11
1 18129U 87054A 95215.95267563 .00000024 00000-0 98719-5 0 01021
2 18129 082.9233 023.7582 0011180 326.5728 033.4722 13.72354865406523
UO-11
1 14781U 84021B 95215.99060256 .00000089 00000-0 22920-4 0 08350
2 14781 097.7834 216.2856 0012669 033.5894 326.6120 14.69364512610926
RS-12/13
1 21089U 91007A 95216.04553252 .00000033 00000-0 18578-4 0 08310
2 21089 082.9214 065.2892 0030922 040.6096 319.7362 13.74059334225347
AO-13
1 19216U 88051B 95215.22200310 .00000217 00000-0 -18635-3 0 00711
2 19216 057.5021 172.5403 7315757 015.2583 358.1931 02.09719647023158
UO-14
1 20437U 90005B 95216.22562152 .00000010 00000-0 20823-4 0 01271
2 20437 098.5667 299.8226 0011966 058.4197 301.8150 14.29893288288611
RS-15
1 23439U 94085A 95216.30824597 -.00000039 00000-0 10000-3 0 682
2 23439 64.8141 177.1611 0167615 254.0169 104.2231 11.27525125 24947
AO-16
1 20439U 90005D 95216.19558267 .00000024 00000-0 25994-4 0 09177
2 20439 098.5778 301.5257 0012305 058.0878 302.1499 14.29947465288629
```

```
DO-17
1 20440U 90005E 95216.17933581 -.00000023 00000-0 79691-5 0 09212
2 20440 098.5801 301.9946 0012477 057.4377 302.8012 14.30088225288646
WO-18
1 20441U 90005F 95216.16257254 .00000006 00000-0 19361-4 0 09305
2 20441 098.5795 301.9459 0013021 058.6957 301.5499 14.30059627288640
LO-19
1 20442U 90005G 95216.18194472 -.00000001 00000-0 16371-4 0 09236
2 20442 098.5808 302.3405 0013211 056.3577 303.8864 14.30162765288667
FO-20
1 20480U 90013C 95216.20426077 -.00000024 00000-0 99755-5 0 08242
2 20480 099.0719 295.8782 0541392 124.5935 240.7473 12.83231568257106
AO-21
1 21087U 91006A 95216.42004915 .00000094 00000-0 82657-4 0 6196
2 21087 82.9400 196.8767 0037108 13.3749 346.8381 13.74557639226354
UO-22
1 21575U 91050B 95216.19240560 .00000021 00000-0 21631-4 0 06295
2 21575 098.3903 286.3175 0007716 128.7655 231.4207 14.36985031212397
KO-23
1 22077U 92052B 95216.17438866 -.00000037 00000-0 10000-3 0 05173
2 22077 066.0756 135.2921 0004199 186.7320 173.3640 12.86291251139906
KO-25
1 22828U 93061F 95216.18375952 -.00000003 00000-0 16423-4 0 04038
2 22828 098.6110 292.0591 0011170 066.6468 293.5888 14.28107469064727
IO-26
1 22826U 93061D 95216.19834524 .00000023 00000-0 26880-4 0 04233
2 22826 098.6156 292.0365 0010049 079.4905 280.7405 14.27776769096627
AO-27
1 22825U 93061C 95216.17796280 .00000003 00000-0 18792-4 0 04248
2 22825 098.6156 291.9126 0009608 080.2016 280.0254 14.27668521096611
PO-28
1 22829U 93061G 95216.19607721 -.00000030 00000-0 55840-5 0 04275
2 22829 098.6124 292.1101 0011089 067.9911 292.2457 14.28086776096648

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
August 8, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1657. Feng Yun 1-2 Help

Newsgroup: rec.radio.amateur.space
Date: 1995-08-05 00:00:00 UTC
From: jwhac4ca@mindspring.com
Message-ID: <jwhac4ca.10.0012FECB@mindspring.com>
Source record: 24365

I receive a strong signal from FY1-21, but can detect no apparent modulation.
What scheme are they using? Thanks in advance for any help.

1658. Re: DOVE ?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-05 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <3vufl1$2b9@over.mhv.net>
Source record: 24366

I121171@amsat.org wrote:

: >
: > Is DOVE inactive at the time? I don't receive any signal from the satellite.
: >
: Dove is well and the signal is strong..
: Try my new DUVTLM20.ZIP decoder program at the anonymous ftp site
: promet12.cineca.it under the /pub/ham/sats directory
: Best de Maurice I1-21171

Thanks Maurice! I'll check out the program.

Tom
KB2SMS

1659. ATV/PACKET to the edge of Space 8/5/95

Newsgroup: rec.radio.amateur.space
Date: 1995-08-05 00:00:00 UTC
From: rwf@mindspring.com
Message-ID: <rwf.254.0035BBB5@mindspring.com>
Source record: 24367

Yes!! It looks like a GO

Atlanta Balloon Update as of 3 August 1995:

All equipment for all packages on hand.
Payloads modules tested. Final integration complete.
Launching from Crossroads, GA. (NW of Dallas)

ATLANTA BALLOONATICS

Balloon #4 Mission Status

DATE/TIME
: Saturday August 5th or Sunday August 6th
: Release 0930EDT (1330Z) 0930EDT (1330Z)
: Weather conditions will control exact time of release

RELEASE SITE:

: Crossroads Elementary School, North of Dallas, GA
WB8ELK (Bill Brown) will be in attendance
: Coordinates 3400.48N 08446.12W

: Payload weight : 2.27kg (5-pounds)
: Balloon : TOTEX TA-1200
: Helium : 180 cu ft.
: Ascent rate : 750 fpm
: Max altitude : 110,000ft
: Max radio range: 640km (400sm)

FREQUENCIES
AND MODES

: Packet Radio Downlink 441.0 MHz 2W
: Retransmitted from ground into APRS net on
145.79 MHz and on 10.151 MHz LSB
: Standard AX.25 1200BPS AFSK FM
: Sending APRS-compatible NMEA-183 GPS navigation data
: No Open digipeating. No receiver. Don't try.

: Altitude & Temperature telemetry on:
146.575 MHz , 28.322 MHz , & 438.5 MHz (wide band TV
audio)

: B&W ATV camera with 1 watt AM transmitter on 434.0 MHz

: All antennas vertically polarized

EXPERIMENTS : More experiments in BASIC stamp control of balloon payloads.
Basic Stamp controlled servo/mirror for multiple camera views.
1 12 bit altimeter and 2 8 bit temperature sensors (inside and outside)
data will be sent as CW on the 10 and 2 meter frequencies

For more details about this project, as well as telemetry decoding charts-
see the WWW addreess listed below

Ralph Fowler, N4NEQ S.E.R.A. ATV Technical Advisor

rwf@mindspring.com Atlanta, GA USA
Web: http://www.mindspring.com/~rwf for ATV, Balloon, and Ham info
FTP: ftp.mindspring.com/users/rwf for ATV, GPS, APRS info
ATV and GPS Balloon Flight coming up August 5th from Atlanta, GA
APRS web page: http://www.mindspring.com/~rwf/aprs.html

1660. RS-12 Robot QSL Route

Newsgroup: rec.radio.amateur.space
Date: 1995-08-06 00:00:00 UTC
From: tloll@news.epix.net
Message-ID: <402ks2$obk@grape.epix.net>
Source record: 24368

Does anyone have a QSL route for the robot on RS-12? The robot gave me a QSO number but not a route. I guess automation hasn't completely taken over. Any help would be appreciated.

TKS es 73 Tom Loll KB2MRZ

1661. Atlanta Balloon Flight Is Now History

Newsgroup: rec.radio.amateur.space
Date: 1995-08-06 00:00:00 UTC
From: rwf@mindspring.com
Message-ID: <rwf.260.0081F106@mindspring.com>
Source record: 24369

On August 5th, 1995, after a 1 hour weather hold,our balloon was launched
from Crossroads Elementary School near Dallas, GA. Bill Brown (WB8ELK) and
his girlfriend were there to lend a hand.

We even had an unplanned experiment: "Ants in Space" (with apologies to Gerry Creager's cows). Someone had set the
GPS payload down on an anthill, and we were going to have the first amateur
"Antronauts". :(

At liftoff, something caused the bottom payload (the GPS/TNC/TEKK Radio) to separate from the flight train.
This caused the balloon to ascend with only the ATV payload, Radar reflector,
parachute, and 10 and 2 meter beacons.

Those payloads worked flawlessly, and the fox hunters DF'ed the balloon with the aid of APRS and manual beam
headings, handi finders and Doppler units. A local fellow has a Company
(Directional Systems) that makes a NICE Doppler unit.

After a two hour flight, the package landed on a farm, in a 100 ft high Sweet Gum tree. The farmer tried to shoot down the
package for us with a rifle, but couldn't get all the strings. His son fi
nally felled the tree and we cut it up into logs and stacked it for him. The
payloads, including the video with servo controlled moving mirror all worked
while the balloon was in the tree and during the tree felling.

By the way, the first person to the balloon was WB8ELK. I know telemetry was received in Huntsville by KE4EER.
Any one else receive our beacons?

We'll post some images on the web site soon. And I will post the HST file of the DFing activities as well.

We have 1 balloon and 1 tank of helium left, so we'll fly it again soon (ALL of it, I hope)

For more details about this project, as well as telemetry decoding charts-
see the WWW address listed below

Ralph Fowler, N4NEQ S.E.R.A. ATV Technical Advisor

rwf@mindspring.com Atlanta, GA USA
Web: http://www.mindspring.com/~rwf for ATV, Balloon, and Ham info
FTP: ftp.mindspring.com/users/rwf for ATV, GPS, APRS info

APRS web page: http://www.mindspring.com/~rwf/aprs.html

1662. Help: AM-6676 Parametric Ampl.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-07 00:00:00 UTC
From: twsmith@netcom.com
Message-ID: <twsmithDCx9A0.I4F@netcom.com>
Source record: 24370

I have obtained a microwave parametric amplifier AM-6676/TSC-54 which
appears to operate in the range 6 - 10 GHz, and uses 3 ea. 42 GHz
Gunn diode oscillators as pumps. I need to get a schematic or better
yet a manual. Any clues or suggestions? Please reply to: twsmith@netcom.com

Regards, Terry K7YNO

--
twsmith@netcom.com

1663. Help w/ Noise levels

Newsgroup: rec.radio.amateur.space
Date: 1995-08-07 00:00:00 UTC
From: dstraumf@advtech.uswest.com
Message-ID: <dstraumf-070895142701@130.13.18.109>
Source record: 24371

I am in the process of setting up a new station (slowly)
and have been playing with a variety of antenna on 70cm
as well as 2m. I need some help on the description of noise
levels in the reciever. No preamps yet. Antennas are
Quadrifer Helix for 2m and a pair of twin QHelix's on 70cm (RHCP & LHCP).

I just need to know if this is good or bad and best of all what a
great signal should sound like. Maybe some suggestions on getting
to a great signal.

On 2m, beacons all over the place (SSB) all the way up the dial.
Some so loud they come in full quieting (5x9). On either side of the
beacons USB and LSB there are many different digital signals that vary
between 5x3 to 5x6 or so. There is really roughly 50% noise and
50% signal on the strongest ones. It seems there are even more signals
down lower. I have not tried to tune in the TNC yet. I am waiting on
a pre-amp. (Pin Diodes ?? noisy on XMIT ?)

On 70 cm, Crystal clear local signals repeaters etc. On going up the band
(from bottom)
the noise (back ground) increases at 440 to 443 and then back to normal
back ground.
Beacons are present but about 5x6 on the band as a whole. Near 440 (.0003~
FM) I can hear packet
booming in way above the noise but the signal has a little noise on it and
is not full quieting. (I may be off freq. a little). Should there be
signals all over
the place here too?
What does the increase in noise between 440 & 443 mean? Antenna mismatch ?
Match ? One antenna is not near as good as two.

Would you put a pre-amp on both 70cm antennas or join together.... ?

Its the pubescent pre-amp stage. Yuck.

KB0OTD

1664. * SpaceNews 07-Aug-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-08-07 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <$spc0807.1995@ampr.org>
Source record: 24372
Cross-posted to: rec.radio.amateur.space,rec.radio.info,sci.space.news

SB NEWS @ AMSAT $SPC0807
* SpaceNews 07-Aug-95 *

BID: $SPC0807

=========
SpaceNews
=========

MONDAY AUGUST 7, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* GROUND STATION VIA THE INTERNET *
==================================
For the past several months, Steve Bible, N7HPR, has been making a World Wide Web site available that carries up-to-date files and directories of some of the 9600 baud Amateur Pacsat satellites. Steve's site allows those without Pacsat groundstations the ability to explore the world of digital satellite communications on the Internet's World Wide Web.

Pacsat communications differs in many ways from terrestrial packet radio communications. One of the ways in which they differ is that Pacsat satellites are routinely used to pass image and software files between pacsat groundstations, in addition to text (e-mail) messages.

Steve recently added the capability of downloading images that have been uploaded to KO-23 and KO-25 from his World Wide Web Site. The images that are available are those that have been uploaded by other Amateurs around the world. Many of these images are interesting as they provide a look into the shacks and lives of those active on Amateur Satellites.

To see the directory listing of images, select either KO-23 or KO-25 from the home page (http://gndstn.sp.nps.navy.mil) and you will see the link to the image directory. Steve is currently working on making images from KO-23 and KO-25's CCD Earth imaging cameras available through his Web site.

Questions or suggestions regarding Steve's site may be directed directly to him at his e-mail address: srbible@cs.nps.navy.mil.

[Info via Steve Bible, N7HPR]

* NASA WEB SITE NEWS *
======================
NASA maintains an excellent World Wide Web site on the Internet. The URL is http://shuttle.nasa.gov. This site carries a wealth of information

on the Space Shuttle, including a link that provides images from NASA Television that are updated every few minutes during active Shuttle missions.

* OSCAR STATUS REPORT *
======================
UoSAT-OSCAR-11:
Normal ASCII/binary telemetry and ASCII news [145.826 MHz].

PACSAT-OSCAR-16:
Normal BBS activity.

DOVE-OSCAR-17:
Congratulations to DOVE for 400 days of uninterrupted service. S Band is currently OFF. TLM Rate may change as controllers continue to experiment with power settings. [Telemetry still every 30 secs]

WEBERSAT-OSCAR-18:
During the past week special wod collections have been taking place:

20:00 27-Jul-95 gathering/sending special WOD
0x16 battery 1
0x17 battery 2
0x18 battery 3
0x19 battery 4
0x21 BCR 10V
0x61 EDAC counter
digipeater on, uplink @ 145.9 MHz.

19:10 29-Jul-95 gathering/sending special WOD
0x1A battery 5
0x1B battery 6
0x1C battery 7
0x1D battery 8
0x21 BCR 10V
0x61 EDAC counter
digipeater on, uplink @ 145.9 MHz.

21:00 02-Aug-95
Collecting and Sending WOD Week4: Temps/Impact
0x14 rcvr +X temp
0x2F cell 1 temp
0x30 cell 2 temp
0x35 RC PSK HPA temp
0x3B impact counter
0x40 spect temp
Digipeater on, uplink on 145.9
73, KB7KCL
[currently broadcasting week4 temps/impact

LUSAT-OSCAR-19:
The BBS is open and available for normal use. The digipeater is OFF.

[Info via Graham, VK7ZO]

* STS-69 PRE-LAUNCH KEP DATA *
==============================
STS-69
1 99969U 95217.66545253 .00006972 00000-0 61643-4 0 14
2 99969 28.4660 5.0912 0004838 274.0067 85.9975 15.64893589 29

* THANKS! *
===========
Thanks to all those who sent messages of appreciation to SpaceNews,
especially:

KB2TIY DL3HA G4KGM SM5TGU

* FEEDBACK/INPUT WELCOMED *
===========================
Comments and input for SpaceNews should be directed to the editor (John,
KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD * /\/\ * Voice : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ KS4HR.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738 * \/\/ * Morse : -.- -.. ..--- -... -..

1665. unscribe

Newsgroup: rec.radio.amateur.space
Date: 1995-08-07 00:00:00 UTC
From: jonathan.ho@Xilinx.COM
Message-ID: <199508072057.NAA16661@clemenza.xilinx.com>
Source record: 24373

```
unscribe
```

1666. DL0ART/am launch #2

Newsgroup: rec.radio.amateur.space
Date: 1995-08-08 00:00:00 UTC
From: Oliver Welp <welp@uni-muenster.de>
Message-ID: <406g2e$tsc@majestix.uni-muenster.de>
Source record: 24374

The Nienberge Amateur Radio Group (Germany) performed its second balloon
launch on sunday, 07-16-95 (I apologize for this late report: QRL hr!).

This was our announcement:
> We planned to have another emergency beacon with our regular balloon
> equipment, and it now is ready for a launch. Since we have some (smaller) spare
> balloons, we plan to do a launch with only this rig: 2 m beacon - no data, no
> remote control, no gas valve; just launching and parachuting (hopefully) "home"
> after bursting.

It should be a 2 - 3 hours flight.

Yes, that's what we intended... but, of course, the actual flight was totally different!

ARTOB launch 07-16-95:

Launch: # 2
Launch date 07-16-95
Launch time: 1201 UTC
Launch site: Nienberge near Muenster, NW Germany, JO32SA
Call sign: DL0ART/am
QRG/mod.: 144.991 MHz F1A beacon: call sign and info in FM audio CW,
in between freq shift slow (- - - - - - = balloon lifts) or
fast (......... = balloon is descending) (using a quicksilver
switch)
Power: 100 mW
Antenna: groundplane
Diameter ballon: ca. 3 ft
Gas: hydrogen
Parachute: ca. 5 ft
Weight: 490 g (over all)
Lift rate: ca. 200 g

(UTC)
11:00 Meeting of the team at launch site
11:20 weather data:
ground wind 14 knots, 240 deg
12:01 launch
12:10 DF teams start to their dedicated areas

The author had a hard moment when the parachute of the launched balloon did
not open immediately - but after a few moments, it did...

So far, everything was on schedule.

But it turned out that the ballon was drifting E/SE with quite a high speed.
The DF teams had a very hard time following. At 14:30 the balloon left quit

the area of the maps used by the teams (we use a very special system for giving DF results to the coordinator). Furthermore, the main DF coordintor, Joachim, DL3YBQ), had to head home and left us alone... I guess that was the moment when we lost (just a little bit) control of the situation.
And: the beacon signal still indicated the balloon lifting!

The DF teams continued following the balloon, but soon it is obvious that its speed was to high for us - most of the teams were just driving on highways in this rural area where we found ourselves. These roads seemed to lead anywere except to the place were the balloon apparently was... so we finally switched over to interstates. At about 18:00 most of us were in the Goettingen area (160 km linear distance), and still the DF results were unanimous: east!

East of Goettingen, the Harz begins - a secondary chain of mountains (summits up to 3200 ft). Another old man located in these mountains told us that his QTE also was - east.

So we finally decided at 18:30 UTC - that was 20:30 local time and about the time of sun set - to finish our hunt and go home.

What has happened?
Obviously, the lift of the balloon was not sufficient to bring it to a height where it would burst. We ae not sure if the gaz filling was insufficient or if maybe the parachute had slowed the lift so much that the balloon already lost too much gaz on its way up. It also passed a thunderstorm area, so maybe the balloon and the payload were covered with ice during some parts of its journey.

There also was another (so far) unexplained effect: about 2 hours after the launch, the beacon freq increased by abt 4 or 5 kHz, but decreased after 30 min by abt 6 or 7 kHz, increased again and so on. The transmitter was crystal-controlled, and was thermically quite well isolated in a styrofoam box - so what could be the reason?

But there also were some very positive things to tell: Since we used the local 70 cm repeaters for talk back (and quite a few of them during our long journey, hi), we drew the attention of many OMs to us, or better the balloon. Many of them help us with triangular DF or just told which roads to use and so (how do I get right across through Bielefeld - quite a large city - as fast as possible?). Even some days later, we heard OMs on our local repeater asking what had happened to the balloon, did we recover the payload and so on. That by itself was probably the biggest success of this launch - consider that ballooning is not that popular in Germany as it apparently is in the US.

HAPPY END!
Wednesday morning, Armin (DF1QE) got a phone call! The balloon had been found (by a non-ham) who already had seen this balloon right next to a road he passed on his way to work on monday morning. He finally became curious - so we were lucky!
I almost forgot (not relly, hi): he lives in Krina near Bitterfeld (formerly East Germany), JO62DP. So our balloon travelled a distance of abt 330 km. And the balloon never bursted - this explains why we had the signal for lifting during the whole flight. About ten days later, we got the equipment back (by mail).

Conclusions:

We will never start again on a such a windy day - yes, 14 knots is not that much, but the upper wind normally is twice as much, and that is defintely too fast to follow in an area that does not provide appropriate roads (e.g. leading to the balloon, hi).

Besides that, on every upcoming launch we will add a receiver to the equipment for remote control of a relaese unit for the payload (Guess why?).

Meanwhile, we are happy that we got the payload back (even if its value is limited). We got reception reports even from Bremen - a distance of about 100 km.

Any suggestion or response is always welcome!
Please tell me if you want to be added to our mailing list!

Best 73,
Oliver

[Oliver Welp, DL9QJ, N3NSF
n3nsf@amsat.org
welp@uni-muenster.de
Tel./Fax: +49-2533-7312]

1667. ARLK038 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-08-08 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk038.1995@ampr.org>
Source record: 24375
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK038
ARLK038 Keplerian data

ZCZC SK63
QST de W1AW
Keplerian Bulletin 38 ARLK038
From ARRL Headquarters
Newington, CT August 8, 1995
To all radio amateurs

SB KEP ARL ARLK038
ARLK038 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95210.49039197 .00000246 00000-0 10000-3 0 3664
2 14129 26.4555 255.9109 5993547 297.1786 14.8191 2.05876811 63202
RS-10/11
1 18129U 87054A 95219.52518365 .00000032 00000-0 18418-4 0 976
2 18129 82.9229 21.1157 0011035 316.2766 43.7509 13.72355110407011
UO-11
1 14781U 84021B 95218.98690256 .00000075 00000-0 20499-4 0 08300
2 14781 097.7834 219.1417 0012605 024.2845 335.8961 14.69365123611367
RS-12/13
1 21089U 91007A 95219.03106442 .00000021 00000-0 56023-5 0 08312
2 21089 082.9213 063.0745 0030703 033.0709 327.2362 13.74059196225758
AO-13
1 19216U 88051B 95218.55975915 .00000032 00000-0 -50496-3 0 00727
2 19216 057.4891 171.9305 7316046 015.5976 358.1498 02.09720949023220
UO-14
1 20437U 90005B 95219.23455487 .00000001 00000-0 17204-4 0 01197
2 20437 098.5666 302.7829 0011936 050.5926 309.6305 14.29893439289047
RS-15
1 23439U 94085A 95219.05775572 -.00000039 00000-0 10000-3 0 00832
2 23439 064.8141 172.7142 0167456 253.6193 104.6270 11.27525218025257
AO-16
1 20439U 90005D 95219.20440199 -.00000007 00000-0 14026-4 0 09374
2 20439 098.5779 304.4902 0012290 050.5378 309.6892 14.29947444289058
```

```
DO-17
1 20440U 90005E 95219.18785739 .00000008 00000-0 20005-4 0 09155
2 20440 098.5799 304.9593 0012467 049.4854 310.7415 14.30088720289076
WO-18
1 20441U 90005F 95219.17115384 .00000037 00000-0 31257-4 0 09252
2 20441 098.5792 304.9103 0013044 049.5141 310.7174 14.30060401289077
LO-19
1 20442U 90005G 95219.19031011 -.00000000 00000-0 16749-4 0 9147
2 20442 98.5804 305.3052 0013267 48.2068 312.0246 14.30163057289099
FO-20
1 20480U 90013C 95219.16706371 -.00000014 00000-0 32005-4 0 08184
2 20480 099.0720 298.2900 0541345 117.8997 247.8010 12.83231614257486
AO-21
1 21087U 91006A 95218.96775006 .00000094 00000-0 82657-4 0 06373
2 21087 082.9396 194.9900 0036923 006.7612 353.4033 13.74557723226706
UO-22
1 21575U 91050B 95219.18651365 .00000013 00000-0 18621-4 0 06269
2 21575 098.3905 289.2368 0007925 120.3381 239.8584 14.36985198212823
KO-23
1 22077U 92052B 95219.20666627 -.00000037 00000-0 10000-3 0 5123
2 22077 66.0754 128.9432 0003988 186.8520 173.2439 12.86291209140290
KO-25
1 22828U 93061F 95219.19645054 -.00000009 00000-0 14046-4 0 04018
2 22828 098.6108 295.0290 0011229 058.7350 301.4927 14.28107740065153
IO-26
1 22826U 93061D 95219.21173453 .00000009 00000-0 21413-4 0 04204
2 22826 098.6153 295.0069 0010137 073.1768 287.0516 14.27776953097050
AO-27
1 22825U 93061C 95219.19157994 .00000007 00000-0 20455-4 0 04159
2 22825 098.6151 294.8818 0009676 072.2588 287.9651 14.27668945097041
PO-28
1 22829U 93061G 95219.20881038 .00000010 00000-0 21552-4 0 04195
2 22829 098.6122 295.0798 0011159 059.4980 300.7294 14.28087503097071
Mir
1 16609U 86017A 95219.22288154 .00002039 00000-0 34277-4 0 01940
2 16609 051.6489 262.1985 0004315 327.3742 032.6983 15.57156307540887

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
August 12, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1668. Problem with IC-820H

Newsgroup: rec.radio.amateur.space
Date: 1995-08-08 00:00:00 UTC
From: azki7lx@aztec.asu.edu
Message-ID: <4069ut$6u0@news.asu.edu>
Source record: 24376

I am having several problems with an Icom IC-820H. First, I am not getting any power out on SSB or CW. I have heard that two pins on the rear DIN connector might have to be jumpered. Does anyone know about this? Second, what is the key sequence to get the 'function' buttons to work.

John, KI7LX
ki7lx@amsat.org
or
azki7lx@aztec.asu.edu
--

1669. Help with MIR PBBS

Newsgroup: rec.radio.amateur.space
Date: 1995-08-09 00:00:00 UTC
From: wisznie@ecf.toronto.edu
Message-ID: <DD0z7y.JF@ecf.toronto.edu>
Source record: 24377

HI all. Thanx for reading this. Has any of you ever had a chance to hook up with MIR PBBS? If so, what frequency did you call on, what callsign is MIR PBBS, how easy is it to get on there and is any of that tracking software useful when trying to track MIR. I hear that because of the use of boosters to keep MIR in orbit, all calculations go screwy. Is that true?

Any help would be greatly appreciated.

--
o---o
| Sebastian Wiszniewski - CompEng - University of Toronto |
| Internet: wisznie@skule.ecf.toronto.edu |
o---o

1670. 4 ft Aluminum Snow Coasters

Newsgroup: rec.radio.amateur.space
Date: 1995-08-09 00:00:00 UTC
From: BDONALDSON@HNS.COM
Message-ID: <1995Aug9.175849.402@hns.com>
Source record: 24378
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.space

Anyone out there is Net-land know where someone from SoCal can find a NEW 4 ft (or so) Alunimum Snow Coaster? (it's for playing around with KU band)

Brian, KF6BL

,,, Waddayamean, it's NOT workin'?!
(o o)
==========oOO==(_)==OOo==========
Brian Donaldson Project Engineer, Customer Svc
Hughes Network Systems, Inc. TES, Terrestrial, et al...
10450 Pacific Center Ct. Email: bdonaldson@hns.com
San Diego, CA 92121 Phone: (619) 452-5175
Room 2077 Fax: (619) 452-4886
==========

1671. UPDOWN program

Newsgroup: rec.radio.amateur.space
Date: 1995-08-09 00:00:00 UTC
From: sufana@ceco.ceco.com
Message-ID: <DD1wFq.F40@ceco.ceco.com>
Source record: 24379

The other day I started to use the UPDOWN program (version 1.E) and noticed that the program may not be calculating the transmit frequency correctly when a Doppler shift is used. Can someone confirm if there is a problem or not?

Here is what the program produced when I entered the receive frequency and doppler shift frequency:

For RS-10 Mode A

Down Freq MHZ Up Freq MHZ Doppler KHZ

29.380 145.880 0
29.381 144.881 +1
29.379 146.879 -1

It is possible that I don't understand how to correctly take into account the doppler shift, but this looked real strange to me. I tried some other frequencies also and it seemed to put the transmit frequency out of band.

By way of test to see if I knew how to figure in doppler shift, I was on RS-15 the other day (close enough to RS-10 in frequency conversion) and made contact on 29.38048 MHz. Quiktrak indicated doppler of -202 HZ and my transmit ended up around 145.88470 MHz. This seemed to be what could be predicted by hand as
29.38048 + 116.504 - .202 = 145.884278. UPDOWN would have put me who knows where.

Thanks for any assistance.

73s,

Charlie Sufana AJ9N Internet sufana@ceco.ceco.com
ComEd - A Div. of Unicom (formerly Commonwealth Edison Co.)
Work address: ComEd, System Protection Dept. 1039E, 125 S. Clark St.,
P.O. Box 767, Chicago, Il. 60690
Work phone: (312) 394-2815, work fax: (312) 394-4583

Who are you going to call? Fault busters!

1672. RE: Help with MIR PBBS

Newsgroup: rec.radio.amateur.space
Date: 1995-08-09 00:00:00 UTC
From: Jim.Hansen@stpete.honeywell.COM
Message-ID: <3029202D@vax-flcgr.stpete.honeywell.com>
Source record: 24380

> HI all. Thanx for reading this. Has any of you ever had a chance to
>hook up with MIR PBBS? If so, what frequency did you call on,

145.55 simplex

>what callsign is MIR PBBS, how easy is it to get on there and is any of
>that tracking software useful when trying to track MIR. I hear that
>because of the use of boosters to keep MIR in orbit, all calculations
>go screwy. Is that true?

Yes, This happens about once a week.

For more info check out the following Web site:

http://www.amsat.org/amsat/intro/sats_faq.html

1673. rs12 contacts using 1 transceiver with split?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-09 00:00:00 UTC
From: okstein@primenet.com
Message-ID: <okstein.81.009E8CEE@primenet.com>
Source record: 24381

Can this be done with my Kenwood 440 with a tribander? Any sugestions from anyone who's accomplished this?

1674. Re: Problem with IC-820H

Newsgroup: rec.radio.amateur.space
Date: 1995-08-09 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0908951546390001@maria-5e.ip.realtime.net>
Source record: 24382

In article <4069ut$6u0@news.asu.edu>, azki7lx@aztec.asu.edu (JOHN M. STEENIS) wrote:

> I am having several problems with an Icom IC-820H. First, I am not
> getting any power out on SSB or CW. I have heard that two pins on
> the rear DIN connector might have to be jumpered. Does anyone know
> about this? Second, what is the key sequence to get the 'function'
> buttons to work.
>
> John, KI7LX
> ki7lx@amsat.org
> or
> azki7lx@aztec.asu.edu
> --

Have you tried e-mailing Icom Tech support: Gary KF7XV <75540.525@compuserve.com>

Gary is very responsive.

Ron W5RKN

--
Ron W5RKN

1675. FOR SALE OR TRADE VARIAN MICROWAVE AMPS@ ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-08-10 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <40biu9$nir@ixnews6.ix.netcom.com>
Source record: 24383
Cross-posted to: rec.radio.swap,rec.radio.amateur.space

FOR SALE- OR TRADE::
Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 404-925-2779 404-925-2887

1676. APT receiving

Newsgroup: rec.radio.amateur.space
Date: 1995-08-10 00:00:00 UTC
From: tobias@nari.ee.ethz.ch
Message-ID: <40cslo$cc7@elna.ethz.ch>
Source record: 24384

Hi everbody,

I'm trying to receive APT transmitting satellites like NOAAx or METEORx-x.
My question.:

. Which satellites are operational on which frequencies. (APT transmitter)?

. Are there other satellites than Noaa and Meteor, transmitting APT-pictures
on the 137 MHz band, in low orbits?

Thanks in advance es 73

Tobias, HB9CAM

tobias@nari.ee.ethz.ch
hb9cam@hb9ab.swiss-artg.ch

1677. Re: Help with MIR PBBS

Newsgroup: rec.radio.amateur.space
Date: 1995-08-10 00:00:00 UTC
From: mts@usa1.com
Message-ID: <40cadh$7qe@ns1.usa1.com>
Source record: 24385

Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40)) wrote:

>> HI all. Thanx for reading this. Has any of you ever had a chance to
>>hook up with MIR PBBS? If so, what frequency did you call on,

>145.55 simplex

>>what callsign is MIR PBBS, how easy is it to get on there and is any of
>>that tracking software useful when trying to track MIR. I hear that
>>because of the use of boosters to keep MIR in orbit, all calculations
>>go screwy. Is that true?

>Yes, This happens about once a week.

>For more info check out the following Web site:

> http://www.amsat.org/amsat/intro/sats_faq.html

Mir callsign for packet is R0MIR-1.
It is best to have a short text message prepared on your computer
before calling the R0MIR-1 station. It should L(O)(O)K something like
this:

SP R0MIR < [your_callsign]
Greetings [title_of_message]
Short message for reliable throughput
that you have stored on your system.
Your signature and home pbbs info's should
they decide at some point to reply. Ya' never know.
/EX [to_close_the_message]

Once you receive the prompt from the R0MIR-1 pbbs,
then use you plain ascii upload to send the example above.

Tune in early for the signal, and about five Khz low is average
for the start of the pass, then as spacecraft approaches, tune to
center frequency of 145.550 Mhz for best results.

NB: Most likely the crew is sleeping after 5 p.m. local (edt) until
wee hours of morning, somedays listening during day you will also here
them engage in voice conversation.... ..

Hope this helps OM.... ..

Many 73

Myrton T. Smith
- N1GKE -
__... ...__
Editor for Mystic Valley Amateur Radio Group
mts @ usa1.com
n1gke @ amsat.org
Amsat # 22044

1678. unsubscribe

Newsgroup: rec.radio.amateur.space
Date: 1995-08-10 00:00:00 UTC
From: jonathan.ho@Xilinx.COM
Message-ID: <199508101558.IAA01522@clemenza.xilinx.com>
Source record: 24386

```
unsubscribe
```

1679. PARSEID Meteor Shower Questions?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-10 00:00:00 UTC
From: lathrop <lathrop@azstarnet.com>
Message-ID: <40dbfi$6ag@news.azstarnet.com>
Source record: 24387

I'm look at trying meteor scatter for the first time. I have a 2 meter all mode radio.

Does is look like 2 meter contacts will be possible this weekend?

If so, when will each direction be possible from the southwest.
IE. What time of day do I work if I want to try the Midwest? Maybe North?

How strong of an outgoing signal is desired?

Does SSB work or is Dit Da necessary?

1680. Re: rs12 contacts using 1 transceiver with split?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-10 00:00:00 UTC
From: BDONALDSON@HNS.COM
Message-ID: <1995Aug10.184057.1643@hns.com>
Source record: 24388

In article <okstein.81.009E8CEE@primenet.com>,
okstein@primenet.com (Charles Okstein) wrote:
>Can this be done with my Kenwood 440 with a tribander? Any sugestions from
>anyone who's accomplished this?

I would guess that it could be done in CW, not phone.
Your CW would have to be set for QSK, xmit freq locked
and you would adjust your rcv freq to compensate for
the Doppler shift of the bird as it flies by.

I might try that on my TS-140 someday.

Thanks for the idea!

Brian, KF6BL

,,, Waddayamean, it's NOT workin'?!
(o o)
=================oOO==(_)==OOo=====================================
Brian Donaldson, KF6BL Project Engineer, Customer Svc
Hughes Network Systems, Inc. TES, Terrestrial, et al...
10450 Pacific Center Ct. Email: bdonaldson@hns.com
San Diego, CA 92121 Phone: (619) 452-5175
Room 2077 Fax: (619) 452-4886
==

1681. Re: rs12 contacts using 1 transceiver with spli

Newsgroup: rec.radio.amateur.space
Date: 1995-08-10 00:00:00 UTC
From: sufana@ceco.ceco.com
Message-ID: <DD3JG6.GMx@ceco.ceco.com>
Source record: 24389

In article 009E8CEE@primenet.com, okstein@primenet.com (Charles Okstein) writes:
> Can this be done with my Kenwood 440 with a tribander? Any sugestions from
> anyone who's accomplished this?

I have been getting on RS-12 with my Kenwood TS140S and a Butternut HF6V vertical.
I takes a little doing to operate split, but I am up to 15 states without really
trying (I've only been on maybe a 2 dozen times). See you on the bird.

73s,

Charlie Sufana AJ9N Internet sufana@ceco.ceco.com
ComEd - A Div. of Unicom (formerly Commonwealth Edison Co.)
Work address: ComEd, System Protection Dept. 1039E, 125 S. Clark St.,
P.O. Box 767, Chicago, Il. 60690
Work phone: (312) 394-2815, work fax: (312) 394-4583

Who are you going to call? Fault busters!

1682. Re: RS-15 frequencies anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-10 00:00:00 UTC
From: RusAnd@virginia.k12.mn.us
Message-ID: <NEWTNews.4503.808085916.RusAnd@RAnderson.virginia.k12.mn.us>
Source record: 24390

```
> uplink 145.858-145.898 usb/cw downlink 29.354-29.394 mode a
>
>
```

1683. RS-15 frequencies anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: wisznie@ecf.toronto.edu
Message-ID: <DD4Dru.8zG@ecf.toronto.edu>
Source record: 24391

```
--
o---------------------------------------------------------------------o
| Sebastian Wiszniewski - CompEng - University of Toronto |
| Internet: wisznie@skule.ecf.toronto.edu |
o---------------------------------------------------------------------o
```

1684. beginners setup

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: adamkern@tiac.net
Message-ID: <adamkern.3.00095562@tiac.net>
Source record: 24392

I'm a Ham that getting more an more interested in satellite operation every day. What would I need to get started on satelite, and what will I need when Phase 3d comes out. (That would probably be a good time for me to get involved in space communications)

I'm interested in phone and digital packet stuff, although I don't have a packet setup for anything, yet. I'd need to get the TNC and everything else required for computer operation when I get into satellite.

Does anyone have any suggestions? Is there any good way of getting onto pacsats and oscar cheap? Should I wait 'till Phase 3d microwave is available?

Thanks for the help!

73,

N1TYF
adamkern@tiac.net

1685. Re: RS-15 frequencies anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <40foq3$1cv@over.mhv.net>
Source record: 24393

WISZNIEWSKI SEBASTIAN (wisznie@ecf.toronto.edu) wrote:

: --
: o---o
: | Sebastian Wiszniewski - CompEng - University of Toronto |
: | Internet: wisznie@skule.ecf.toronto.edu |
: o---o

I believe RS-15 is between 29.345 and 29.395 rom what I'm told.

Tom Randall - KB2SMS

1686. Re: rs12 contacts using 1 transceiver with split?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: landisj@nad.com
Message-ID: <1995Aug11.105425.333@nad.com>
Source record: 24394

In article <1995Aug10.184057.1643@hns.com>, BDONALDSON@HNS.COM (Brian Donaldson) writes:
> In article <okstein.81.009E8CEE@primenet.com>,
> okstein@primenet.com (Charles Okstein) wrote:
>>Can this be done with my Kenwood 440 with a tribander? Any sugestions from
>>anyone who's accomplished this?
>
> I would guess that it could be done in CW, not phone.
> Your CW would have to be set for QSK, xmit freq locked
> and you would adjust your rcv freq to compensate for
> the Doppler shift of the bird as it flies by.
>

Hi, CW and SSB operation are both readily done with basic split freq operation.
I have worked RS12 with an FT747 (semi QSK) and dipole, both modes. Tune the
ant for the uplink. Keep in mind the uplink is in the 15M advanced phone
subband. I think you're better off with an omni antenna. A vertical would be
ideal, but the wire will work fine. You don't really need the gain and why
worry about aiming a tribander. You'll be busy enough following the doppler
shifted downlink with the rx.

Joe - AA3GN
--
Joe Landis - Systems and Network Manager - North American Drager - Telford, PA
landisj@nad.com

1687. Re: PARSEID Meteor Shower Questions?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Aug11.143205.7340@ke4zv.atl.ga.us>
Source record: 24395

In article <40dbfi$6ag@news.azstarnet.com> lathrop <lathrop@azstarnet.com> writes:
>I'm look at trying meteor scatter for the first time. I have a 2 meter all mode radio.
>
> Does is look like 2 meter contacts will be possible this weekend?

Yes, though 6 meters will work much better.

> If so, when will each direction be possible from the southwest.
>IE. What time of day do I work if I want to try the Midwest? Maybe North?

The meteors will seem to come from the constellation Perseus, this is
called the *radiant* of the shower, so you'll have the most active
results when that constellation is in the path between you and the
other station. Consult an astronomical almanac or program to determine
the RA of Perseus from your station during the times you will be active.

Note, however, that meteors from the shower can appear anywhere in
your sky, and strongest signals may be obtained when operating at
right angles to the radiant. That's because the maximum extent
of the trail of a meteor travelling the radiant will be exposed
to you when viewed from the side. The most intense trails are
likely a couple of hours either side of dawn when the Earth's
motion adds to the meteor's velocity.

> How strong of an outgoing signal is desired?

More is always better, and especially at 2 meters where the average
trail is going to be underdense, strong signals can help. At 6 meters
and 10 meters, where many of the trails will be overdense, low power
works fine. But even at 2 meters there will be overdense trails, mostly
around dawn, just not so many of them, so low power will work.

> Does SSB work or is Dit Da necessary?

The average trail lasts less than 10 seconds, so you want the fastest
information transfer possible. Unless you're a lightning Morse operator,
SSB will be better. However, you pay a price in SNR for using SSB, so
some of the weaker trails won't be usable. Better would be a higher
speed digital mode. Lots of stations are going to try 1200 baud packet
on 145.79 during the shower. However, you'll do better with a more
robust and bandwidth efficient digital mode. A Pacsat PSK modem might
be just the ticket.

High gain beams are likely to be counterproductive. Their narrow
beamwidths will illuminate only a tiny portion of the sky. A meteor
passing outside that cone will be missed. Something with a wider
beam, say about 60 degrees, should work much better. If you have

a 3 or 4 element yagi, or a quad, try that. Even a vertical may
be effective. (Signal polarization will be twisted by the orientation
of the trail, so antenna polarization on the ground isn't significant.)

I've been too busy to rig up something better, so I'll be using
160 watts, 1200 baud, on 145.79 MHz into a vertical for this
shower. I may get excited enough to arrange better for the next
one, or at least get set back up on 6 meters.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

1688. Re: RS-15 frequencies anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: Ed@Ed
Message-ID: <DD5MC6.vJo@bocanews.bocaraton.ibm.com>
Source record: 24396

In <DD4Dru.8zG@ecf.toronto.edu>, wisznie@ecf.toronto.edu (WISZNIEWSKI SEBASTIAN) writes:
uplink 2m LSB 145.858 to 145.898
downlink 10m USB 29.354 to 29.394

cw beacon on 29352.5 Khz

73 Ed

1689. Re: rs12 contacts using 1 transceiver with split?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: greg@core.rose.hp.com
Message-ID: <DD5z5q.1C5@icon.rose.hp.com>
Source record: 24397

This can be done, in fact, I worked someone a little while ago who as doing this rather successfully. The main problem is figuring out where to set the Tx and Rx knobs. He used a computer program to compute the doppler shift, and adjusted to what it said. He was a little off, but I could copy him without too much trouble. (This was SSB phone; CW should be easier.)

Satellite work is really intended to be done full-duplex (i.e. hearing yourself while you talk) so that doppler can be tracked accurately.

Greg KO6TH

1690. Re: APT receiving

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: Tom Woolner <Tom@woolner.demon.co.uk>
Message-ID: <808167919snz@woolner.demon.co.uk>
Source record: 24398

In article <40cslo$cc7@elna.ethz.ch>
tobias@nari.ee.ethz.ch "Tobias Meier" writes:

" I'm trying to receive APT transmitting satellites like NOAAx or METEORx-x.
" . Which satellites are operational on which frequencies. (APT transmitter)?
"

Hello Tobias,

At present NOAA 12 is on and uses 137.5 MHz, NOAA 14 is on and uses 137.62 MHz.
NOAA 9 is off at present due to polar coincidence with NOAA 14 because they
share the same APT channel. Unless something has gone wrong on NOAA 9, we
should expect it to return in a few days, as usual.

I hope this helps you,

regards
--- Tom Woolner --

1691. AZ/EL rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: art.jeyes@jhuapl.edu
Message-ID: <art.jeyes.1158537880A@128.220.101.100>
Source record: 24399

A friend and I have been active on PACSATS for about 1 year. I chose to use a G5400B rotor on my system and haven't had any problems with it. My friend chose separate rotors for AZ and EL. For elevation he chose a G500. Although this rotor seems to be the same as the elevation portion of the G5400 that has worked quite well for me, he has had a lot of problems with elevation. His setup is well balaced to each side of the rotor and in the rotational plane.... and his wind loading is well within the G500 spec...

He has gone through 2 motors already. Is this normal for a G500? All aspects of his setup appear normal to me... I would appreciate any comments that people have on AZ/EL rotors and setups... especially any recommendations for heavy duty rotors ......

Thanks and 73 ...

Art
AA3GU
Art.Jeyes@jhuapl.edu

1692. Re: RS-15 frequencies anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: BDONALDSON@HNS.COM
Message-ID: <1995Aug11.144651.2364@hns.com>
Source record: 24400

In article <DD4Dru.8zG@ecf.toronto.edu>,
wisznie@ecf.toronto.edu (WISZNIEWSKI SEBASTIAN) wrote:
>
Beacons 29.3525 MHz 29.3987 MHz
Uplink 145.858 - 145.898 MHz
Downlink 29.354 - 29.394 MHz

,,, Waddayamean, it's NOT workin'?!
(o o)
=================oOO==(_)==OOo=====================================
Brian Donaldson, KF6BL Project Engineer, Customer Svc
Hughes Network Systems, Inc. TES, Terrestrial, et al...
10450 Pacific Center Ct. Email: bdonaldson@hns.com
San Diego, CA 92121 Phone: (619) 452-5175
Room 2077 Fax: (619) 452-4886
===

1693. Re: AZ/EL rotors

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <40fu17$g8e@maureen.teleport.com>
Source record: 24401

In article <art.jeyes.1158537880A@128.220.101.100>, art.jeyes@jhuapl.edu said...
>For elevation he chose a G500.

>He has gone through 2 motors already. Is this normal for a G500? All
>aspects of his setup appear normal to me...

This may seem silly, but it isn't intended as such. Is the G-500 mounted right side up? Upside down mounting is the #1 cause of problems with them. Water gets in.

It might help to know what failures have happened.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1694. Re: rs12 contacts using 1 transceiver with split?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: Charlie Panek <charlier>
Message-ID: <DD5nHz.3tJ@hpcvsnz.cv.hp.com>
Source record: 24402

BDONALDSON@HNS.COM (Brian Donaldson) wrote:
>In article <okstein.81.009E8CEE@primenet.com>,
> okstein@primenet.com (Charles Okstein) wrote:
>>Can this be done with my Kenwood 440 with a tribander? Any sugestions from
>>anyone who's accomplished this?
>
>I would guess that it could be done in CW, not phone.
>Your CW would have to be set for QSK, xmit freq locked

Full QSK is probably NOT what you want. I've worked RS-12
quite a bit using my IC-735. If you try to use full break-in,
your're asking the rig to change bands in-between dits and dahs.
Relays clack, and I'm sure that you're transmitted CW sounds clipped
and chirpy. Best to just use the VOX and set the delay long enough
to hold between words.

>and you would adjust your rcv freq to compensate for
>the Doppler shift of the bird as it flies by.
>
A helpful trick to figuring out where to transmit, is to
try to listen for a local who is using the satellite, so
you can hear him on 15, and also on the downlink, and thus
determine what the offset is. I've found that the downlink
seems to be just a little "above" the uplink freq, perhaps about
500Hz when directly overhead. (I.e. an uplink of 21.220 MHz
results in a downlink of 29.4205 MHz. Doppler makes this greater
at AOS (about 1KHz) and less at LOS (almost the "same" freq)

I suspect this may change with the temperature of the satellite,
and over time...

Charlie Panek KX7L Hewlett Packard Company
charlier@lsid.hp.com Lake Stevens Instrument Division
Everett, Washington

1695. New Ham Radio Tests - Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: john@wd1v.mv.com
Message-ID: <john-1108951720250001@wd1v.mv.com>
Source record: 24403

The new Macintosh Ham Test Simulators are HERE!

Novice Ham Test 5.0 SA.sea
Technician Ham Test 5.0 SA.sea
General Ham Test 5.0 SA.sea
Advanced Ham Test 5.0 SA.sea
Extra Ham Test 5.0 SA.sea

The latest versions feature:

HyperCard 2.3 as a stand-alone application (SA) eliminating
the need to have HyperCard. All you need is a Mac with 4
Meg of memory and version System 7 or greater.

Each version 5 Ham Test Simulator has the latest questions
as prepared by the Question Pool Committee.

Each Ham Test Simulator is FREE OF CHARGE and work the
same way as the originals written by Diana, KC1SP.

You may obtain a Ham Test Simulator by mailing me a *FORMATTED
disk (1 per test) and include a Self Addressed and Stamped disk
mailer for the return.

The Ham Tests are now also available via America On Line.

Each Ham Test Simulator is also bundled with a shareware CW
program called MacMorse 1.4 written by Doug, WB0EON.

Also included are a collection of text files that relate an
interesting variety of ideas about the best way to study CW and
prepare for tests.

If you load these onto file servers where others can gain access
via Internet, please let me know so we can point others in that
direction.

Your comments and suggestions for future versions are always
welcome. Stay in touch and good luck with your next test!

73,

--

==
John D. Seney, WD1V Internet: john@wd1v.mv.com
144 Pepperidge Drive America On Line: jseney@aol.com
Manchester, NH 03103-6150 AX.25 Pkt: wd1v@wb1dsw.nh.usa.na
(H) 603-668-1096 Ampernet: wd1v@wd1v.ampr.org

(O) 603-627-6303 (F) 603-627-1623 (P) 800-SKYPAGE #5956779
* Source for Digital Scope.FAQ
*To obtain the latest copy automatically, simply send me an EMAIL
with "subscribe scope.faq" in the subject field.
==========

1696. Re: APT receiving

Newsgroup: rec.radio.amateur.space
Date: 1995-08-11 00:00:00 UTC
From: eareckso@netcom.com
Message-ID: <eareckso DD65nG.GBC@netcom.com>
Source record: 24404

Tom Woolner (Tom@woolner.demon.co.uk) wrote:

: At present NOAA 12 is on and uses 137.5 MHz, NOAA 14 is on and uses 137.62 MHz.
: NOAA 9 is off at present due to polar coincidence with NOAA 14 because they
: share the same APT channel. Unless something has gone wrong on NOAA 9, we
: should expect it to return in a few days, as usual.

: I hope this helps you,

: regards
: --- Tom Woolner ----------

About August 3rd NOAA 9 was reported as having a possible battery/buss
failure. Diagnostics are being performed to see if the ol' girl is
finally down for the count. Hope it doesn't end up like NOAA 14 but then
#9 has surpassed it's design life by quite a few years too.

Bill Eareckson
eareckso@netcom.com

1697. NORAD Two-Line Orbital Element Sets (TLE656)

Newsgroup: rec.radio.amateur.space
Date: 1995-08-12 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.808193028@dolphin>
Source record: 24405

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #656 -
Alouette 1
1 00424U 62049A 95220.50266653 .00000015 00000-0 71796-5 0 1265
2 00424 80.4645 233.2547 0024325 119.3024 241.0557 13.67847166639451
ATS 1
1 02608U 66110A 95210.09815052 .00000076 00000-0 10000-3 0 9400
2 02608 14.6412 356.2542 0010418 64.3986 295.7719 1.00339733 21612
ATS 3
1 03029U 67111A 95218.40835040 -.00000125 00000-0 10000-3 0 3862
2 03029 14.8515 3.1310 0008757 262.6302 90.2993 1.00272661101599
Cosmos 398
1 04966U 71016A 95222.75242058 .00135534 90044-5 12760-3 0 9636
2 04966 51.4107 332.1362 0507302 284.3128 70.2053 15.13750722833419
Starlette
1 07646U 75010A 95222.28037424 -.00000155 00000-0 -11392-4 0 9067
2 07646 49.8304 299.5519 0205976 280.2049 77.5670 13.82188933 35823
LAGEOS
1 08820U 76039A 95222.14403942 .00000019 00000-0 10000-3 0 1277
2 08820 109.8537 279.1055 0044000 195.8281 164.1185 6.38664510193901
ETS-2
1 09852U 77014A 95214.33447423 -.00000276 00000-0 10000-3 0 333
2 09852 12.8053 36.5608 0004806 80.5135 279.6781 1.00018091 14446
GOES 2
1 10061U 77048A 95222.61652795 .00000036 00000-0 10000-3 0 5646
2 10061 11.8972 40.7092 0012500 124.8597 199.0335 1.00284887 11318
IUE
1 10637U 78012A 95222.01748102 -.00000275 00000-0 10000-3 0 1584
2 10637 35.3248 88.1354 1331032 48.2398 144.9080 1.00315390 16803
GPS BI-01
1 10684U 78020A 95222.78682855 -.00000040 00000-0 10000-3 0 3796
2 10684 64.8769 33.0833 0061530 162.1786 198.0393 1.98068593113240
```

```
GPS BI-02
1 10893U 78047A 95208.45588531 .00000027 00000-0 10000-3 0 1760
2 10893 63.3044 271.4469 0223547 14.0466 346.6626 2.01627423126245
GOES 3
1 10953U 78062A 95218.58027735 .00000102 00000-0 10000-3 0 5198
2 10953 10.8704 43.5785 0006025 114.1825 208.5384 1.00337387 15881
SeaSat 1
1 10967U 78064A 95223.07941248 -.00000068 00000-0 22008-4 0 4204
2 10967 108.0003 251.0720 0002812 255.0227 105.0607 14.38047891896726
GPS BI-03
1 11054U 78093A 95212.53727145 .00000025 00000-0 10000-3 0 3413
2 11054 63.0081 269.6540 0045865 180.5640 179.5270 1.93505360122430
Nimbus 7
1 11080U 78098A 95223.27671167 -.00000073 00000-0 -28385-4 0 5213
2 11080 98.9908 94.8899 0009708 83.1329 277.0930 13.83706801848175
GPS BI-04
1 11141U 78112A 95219.65172794 -.00000007 00000-0 10000-3 0 9941
2 11141 64.8681 35.0921 0048999 27.5916 332.7046 1.92894765 11819
GPS BI-05
1 11690U 80011A 95220.74021587 -.00000015 00000-0 10000-3 0 9293
2 11690 65.1873 34.7274 0142217 191.4223 168.0945 2.00565928127915
GPS BI-06
1 11783U 80032A 95221.26515103 .00000046 00000-0 10000-3 0 912
2 11783 62.4261 264.1787 0220254 29.4194 331.8361 2.03456297112469
GOES 5
1 12472U 81049A 95219.46110641 -.00000298 00000-0 10000-3 0 8710
2 12472 7.6174 53.4271 0007761 35.2640 324.8934 1.00256335 9946
Cosmos 1383
1 13301U 82066A 95221.44799087 .00000045 00000-0 34788-4 0 4254
2 13301 82.9307 3.0924 0028471 24.9237 335.3276 13.68067372654610
LandSat 4
1 13367U 82072A 95223.17373120 .00082331 00000-0 18021-1 0 7543
2 13367 98.1242 277.7006 0008189 34.6993 325.4739 14.57180620695228
DMSP B5D2-1
1 13736U 82118A 95222.98916666 .00000036 00000-0 33625-4 0 8239
2 13736 98.6290 51.3308 0007793 212.8994 147.1704 14.25745554656729
IRAS
1 13777U 83004A 95222.52168997 .00000264 00000-0 21151-3 0 454
2 13777 98.9657 49.6405 0011741 233.1990 126.8105 13.99232963309787
Cosmos 1447
1 13916U 83021A 95221.09138168 .00000062 00000-0 50012-4 0 5221
2 13916 82.9431 62.6222 0037329 306.7431 53.0299 13.74329472620735
TDRS 1
1 13969U 83026B 95222.26389314 .00000066 00000-0 00000+0 0 4506
2 13969 8.4667 46.7525 0001863 135.7596 91.8901 1.00274166 18255
GOES 6
1 14050U 83041A 95216.56124448 -.00000104 00000-0 10000-3 0 4325
2 14050 6.4394 56.7988 0004860 26.6873 324.2368 1.00327407103007
OSCAR 10
1 14129U 83058B 95223.11765156 -.00000485 00000-0 10000-3 0 3675
```

```
2 14129 26.4473 253.8742 5991338 300.5571 13.7089 2.05883346 63461
LandSat 5
1 14780U 84021A 95221.56130770 .00000337 00000-0 84600-4 0 3206
2 14780 98.1090 276.5723 0005988 57.1873 302.9901 14.57164676608401
UoSat 2
1 14781U 84021B 95221.50651687 .00000074 00000-0 20253-4 0 8180
2 14781 97.7835 221.5435 0012412 16.9498 343.2113 14.69365653611734
GPS BI-09
1 15039U 84059A 95221.72271329 -.00000037 00000-0 10000-3 0 3557
2 15039 64.5351 29.4081 0081983 18.3350 341.9492 1.92301747 81428
Cosmos 1574
1 15055U 84062A 95220.16252884 .00000046 00000-0 32600-4 0 7230
2 15055 82.9584 117.5507 0028205 132.6901 227.6636 13.73624593557876
GPS BI-10
1 15271U 84097A 95221.90454236 .00000039 00000-0 10000-3 0 386
2 15271 62.1139 264.5095 0156484 353.8686 6.0232 2.00601313 79003
Cosmos 1602
1 15331U 84105A 95219.99108073 .00000157 00000-0 15664-4 0 4099
2 15331 82.5319 47.3735 0018392 267.5476 92.3631 14.84648756586356
NOAA 9
1 15427U 84123A 95222.73713571 .00000034 00000-0 41928-4 0 3574
2 15427 98.9955 281.7799 0015608 111.6805 248.6027 14.13722693549624
GPS BI-11
1 16129U 85093A 95217.97606229 -.00000001 00000-0 10000-3 0 6701
2 16129 65.2020 32.7191 0155220 86.5911 275.2122 1.89367960 15932
Mir
1 16609U 86017A 95222.23918881 .00001815 00000-0 31244-4 0 1944
2 16609 51.6480 247.0938 0003718 335.2695 24.8118 15.57169448541355
SPOT 1
1 16613U 86019A 95222.78795996 .00000090 00000-0 62356-4 0 8401
2 16613 98.6472 292.9162 0001442 47.2690 312.8597 14.20066299176115
Cosmos 1766
1 16881U 86055A 95221.73698621 .00000135 00000-0 13427-4 0 3252
2 16881 82.5203 103.5787 0017804 291.3470 68.5841 14.83647523487513
EGP
1 16908U 86061A 95220.22707757 -.00000083 00000-0 10000-3 0 199
2 16908 50.0119 242.2526 0011381 293.2813 66.6823 12.44412848 77314
NOAA 10
1 16969U 86073A 95222.71783994 .00000004 00000-0 20015-4 0 2666
2 16969 98.5130 223.9572 0012473 180.3650 179.7524 14.24950364462240
MOS-1
1 17527U 87018A 95223.23739061 .00000092 00000-0 10000-3 0 2367
2 17527 98.9790 286.9663 0001589 265.6485 94.4482 13.95257163431501
GOES 7
1 17561U 87022A 95222.43970122 .00000057 00000-0 10000-3 0 4998
2 17561 2.4252 71.7596 0001966 3.5176 266.3454 1.00284524 14175
Kvant-1
1 17845U 87030A 95222.81676115 .00004144 00000-0 62634-4 0 3451
2 17845 51.6437 244.2074 0003201 341.7134 18.2823 15.57173965541389
DMSP B5D2-3
```

```
1 18123U 87053 A 95222.70728501 .00000054 00000-0 28034-4 0 966
2 18123 098.7749 053.0071 0014453 064.0898 296.2365 14.15412936420431
RS-10/11
1 18129U 87054A 95219.52518365 .00000032 00000-0 18418-4 0 976
2 18129 82.9229 21.1157 0011035 316.2766 43.7509 13.72355110407011
Meteor 2-16
1 18312U 87068A 95219.12978507 .00000011 00000-0 -31596-5 0 4165
2 18312 82.5524 241.9602 0013939 30.1109 330.0847 13.84060384402598
Meteor 2-17
1 18820U 88005A 95223.26862285 .00000001 00000-0 -12121-4 0 6934
2 18820 82.5417 294.4312 0018325 78.8126 281.5090 13.84741566380498
DMSP B5D2-4
1 18822U 88006A 95222.59175891 -.00000001 00000-0 17950-4 0 425
2 18822 98.4014 64.2456 0005547 188.9256 171.1825 14.23161052390255
Glonass 34
1 19163U 88043A 95222.93787145 .00000013 00000-0 10000-3 0 109
2 19163 65.1495 96.3131 0007366 154.1460 205.9789 2.13102641 55604
Glonass 36
1 19165U 88043C 95222.05585588 .00000013 00000-0 10000-3 0 4116
2 19165 65.1298 96.3110 0002543 323.3748 36.6804 2.13102103 56202
METEOSAT 3
1 19215U 88051A 95221.18702558 -.00000295 00000-0 10000-3 0 1583
2 19215 2.6134 69.6322 0002558 77.7883 167.7473 1.00257852 14105
AO-13
1 19216U 88051B 95222.85101981 -.00000611 00000-0 -10723-2 0 765
2 19216 57.5019 171.1512 7316546 15.9977 358.0536 2.09724341 23317
OKEAN 1
1 19274U 88056A 95222.41353164 .00000280 00000-0 31868-4 0 257
2 19274 82.5123 203.3894 0021896 70.7863 289.5722 14.82366913383183
Meteor 3-2
1 19336U 88064A 95221.54016490 .00000051 00000-0 10000-3 0 4148
2 19336 82.5402 27.6577 0015915 299.9412 60.0125 13.16973843338324
Glonass 39
1 19503U 88085C 95221.61498254 -.00000073 00000-0 10000-3 0 3073
2 19503 65.6821 335.2462 0007623 165.1118 194.9194 2.13101833 53685
NOAA 11
1 19531U 88089A 95222.75501509 .00000026 00000-0 39188-4 0 1649
2 19531 99.1964 227.5787 0012808 37.5926 322.6139 14.13059631354469
TDRS 2
1 19548U 88091B 95218.70409443 -.00000206 00000-0 00000+0 0 1382
2 19548 1.8462 74.1093 0005012 99.8269 119.5377 1.00269394 12364
Glonass 40
1 19749U 89001A 95216.96081028 -.00000010 00000-0 10000-3 0 5177
2 19749 65.1035 96.0819 0004602 254.4668 105.5560 2.13101407 51098
Glonass 41
1 19750U 89001B 95221.70884900 .00000012 00000-0 10000-3 0 4302
2 19750 65.1098 95.9733 0006981 229.9086 130.1153 2.13101951 51215
GPS BII-01
1 19802U 89013A 95221.03593039 -.00000028 00000-0 10000-3 0 831
2 19802 55.2218 123.0927 0027262 175.4537 184.5982 2.00553173 47431
```

```
Akebono
1 19822U 89016A 95222.65059970 .00005797 00000-0 27118-3 0 5511
2 19822 75.0954 303.8299 3779446 340.2434 8.3909 7.86990481142107
Meteor 2-18
1 19851U 89018A 95222.85168278 .00000066 00000-0 45324-4 0 4152
2 19851 82.5219 169.3181 0015318 123.8942 236.3677 13.84394027325756
MOP-1
1 19876U 89020B 95217.47197338 .00000051 00000-0 10000-3 0 1303
2 19876 1.2998 72.3722 0001053 124.3385 296.3668 1.00280329 3514
TDRS 3
1 19883U 89021B 95219.19053083 -.00000284 00000-0 10000-3 0 1052
2 19883 0.0690 96.7066 0003606 74.2557 171.7940 1.00267036195958
GPS BII-02
1 20061U 89044A 95216.39121035 -.00000045 00000-0 10000-3 0 996
2 20061 54.4211 299.5034 0147441 215.4332 143.5568 2.00562874 45084
Nadezhda 1
1 20103U 89050A 95222.79654415 .00000037 00000-0 22911-4 0 4779
2 20103 82.9608 338.3138 0036566 199.2850 160.6921 13.73855704305927
GPS BII-03
1 20185U 89064A 95219.71987577 -.00000034 00000-0 10000-3 0 1208
2 20185 55.0108 123.6908 0030416 333.7269 26.1239 2.00572154 43728
GMS 4
1 20217U 89070A 95220.69673108 -.00000389 00000-0 10000-3 0 2262
2 20217 1.1499 75.5771 0001300 15.1611 236.8320 1.00269732 22276
INTERCOSMOS 24
1 20261U 89080A 95221.17446537 .00000123 00000-0 30593-4 0 4302
2 20261 82.5972 110.6701 1243360 33.4012 333.9574 12.47266645266881
GPS BII-04
1 20302U 89085A 95222.24909429 .00000029 00000-0 10000-3 0 981
2 20302 53.3610 239.2544 0017105 181.2639 178.7156 2.00556219 42573
Meteor 3-3
1 20305U 89086A 95223.25439648 .00000044 00000-0 10000-3 0 3696
2 20305 82.5532 339.5550 0007881 0.8985 359.2161 13.04424815277668
COBE
1 20322U 89089A 95221.04964571 -.00000002 00000-0 26995-4 0 1426
2 20322 98.9606 236.3009 0008344 184.6532 175.4570 14.03447498293007
Kvant-2
1 20335U 89093A 95222.81676115 .00004144 00000-0 62634-4 0 3483
2 20335 51.6437 244.2074 0003201 341.7134 18.2823 15.57173965324599
GPS BII-05
1 20361U 89097A 95220.76526814 -.00000014 00000-0 10000-3 0 9565
2 20361 55.7973 65.6985 0086537 120.3436 240.4300 2.00562383 32026
COSMOS 2054 (Altair-1)
1 20391U 89101A 95221.02921341 -.00000157 00000-0 10000-3 0 2019
2 20391 3.2390 65.3475 0004172 60.1499 185.7413 1.00275510 20852
SPOT 2
1 20436U 90005A 95221.71771346 .00000169 00000-0 10000-3 0 9590
2 20436 98.7318 295.1093 0000961 58.5350 301.5920 14.20029699287496
UO-14
1 20437U 90005B 95223.22314026 -.00000024 00000-0 76595-5 0 1177
```

```
2 20437 98.5665 306.7065 0011841 39.6656 320.5386 14.29893464289617
UO-15
1 20438U 90005C 95220.20738249 -.00000031 00000-0 50432-5 0 9134
2 20438 98.5613 302.1786 0011022 51.7371 308.4813 14.29210964289079
PACSAT
1 20439U 90005D 95220.18401728 -.00000004 00000-0 15361-4 0 9154
2 20439 98.5779 305.4552 0012312 47.7359 312.4865 14.29947545289191
DO-17
1 20440U 90005E 95223.24586252 -.00000009 00000-0 13496-4 0 9165
2 20440 98.5795 308.9580 0012417 38.7847 321.4222 14.30088928289659
WO-18
1 20441U 90005F 95222.24970354 -.00000028 00000-0 61966-5 0 9207
2 20441 98.5792 307.9442 0013040 41.5358 318.6809 14.30059931289511
LO-19
1 20442U 90005G 95223.24810405 -.00000006 00000-0 14653-4 0 9159
2 20442 98.5800 309.3043 0013300 37.0868 323.1226 14.30163339289679
GPS BII-06
1 20452U 90008A 95212.18098149 .00000055 00000-0 10000-3 0 589
2 20452 54.0159 179.8836 0054822 85.1060 275.2476 2.00573061 40351
MOS-1B
1 20478U 90013A 95220.55915055 .00000091 00000-0 10000-3 0 8136
2 20478 98.9889 288.7075 0000767 86.8597 273.2656 13.94927214200830
DEBUT
1 20479U 90013B 95222.19715020 -.00000030 00000-0 -43533-5 0 9156
2 20479 99.0714 300.9114 0541107 110.5968 255.4022 12.83334816257889
FO-20
1 20480U 90013C 95222.20781675 -.00000033 00000-0 -98734-5 0 8121
2 20480 99.0718 300.7644 0541277 111.0281 254.9571 12.83231555257871
MOS-1B R/B
1 20491U 90013D 95222.39162421 -.00000789 00000-0 -14171-2 0 1597
2 20491 99.0514 356.4998 0469668 304.6212 51.1453 13.02969383261256
LACE
1 20496U 90015A 95221.09395158 .00001121 00000-0 40997-4 0 5663
2 20496 43.0991 189.4407 0009299 193.1894 166.8735 15.34708833305709
Nadezhda 2
1 20508U 90017A 95222.77495109 .00000027 00000-0 12000-4 0 4760
2 20508 82.9549 112.9122 0044595 150.6996 209.6673 13.73496187273144
OKEAN 2
1 20510U 90018A 95220.23306970 .00000074 00000-0 69676-5 0 4337
2 20510 82.5268 157.4891 0017189 269.2088 90.7159 14.78511642293281
GPS BII-07
1 20533U 90025A 95219.57591184 -.00000044 00000-0 10000-3 0 821
2 20533 54.8162 299.9779 0045928 80.9981 279.5715 2.00567355 39276
PegSat
1 20546U 90028A 95222.85737576 .00004883 00000-0 99331-4 0 8298
2 20546 94.1158 175.2252 0067079 125.1772 235.5875 15.43936111296911
HST
1 20580U 90037B 95222.05070561 .00000347 00000-0 19196-4 0 7002
2 20580 28.4696 64.7554 0006186 148.5420 211.5534 14.90910857 91957
MACSAT 2
```

```
1 20608U 90043B 95221.35674251 .00000144 00000-0 21667-4 0 1160
2 20608 89.9283 176.0310 0108741 69.7601 291.5260 14.64851070280499
Glonass 44
1 20619U 90045A 95219.20628033 -.00000069 00000-0 10000-3 0 2102
2 20619 65.2541 334.7239 0024900 209.5799 150.2974 2.13102433 40595
Glonass 45
1 20620U 90045B 95221.67127463 -.00000073 00000-0 10000-3 0 2216
2 20620 65.2894 334.6324 0007703 51.0959 308.9371 2.13102535 40688
Glonass 46
1 20621U 90045C 95221.26871821 -.00000073 00000-0 10000-3 0 8133
2 20621 65.2978 334.7058 0012495 190.2280 169.7570 2.13101651 40675
Kristall
1 20635U 90048A 95222.81676115 .00004144 00000-0 62634-4 0 1396
2 20635 51.6437 244.2074 0003201 341.7134 18.2823 15.57173965541335
ROSAT
1 20638U 90049A 95222.20469333 .00000018 00000-0 20087-4 0 4828
2 20638 52.9860 263.8426 0012556 284.5066 75.4535 15.07221761285266
Meteor 2-19
1 20670U 90057A 95221.55092483 -.00000000 00000-0 -13727-4 0 9144
2 20670 82.5428 236.1702 0017652 54.7798 305.5013 13.84161715258490
CRRES
1 20712U 90065A 95222.52522464 .00000411 00000-0 59753-3 0 1330
2 20712 18.0863 17.0948 7192403 144.2478 297.6167 2.35465708 35764
GPS BII-08
1 20724U 90068A 95222.88810366 -.00000016 00000-0 10000-3 0 9271
2 20724 54.8546 121.1692 0119119 174.8514 185.3232 2.00566097 35202
Feng Yun1-2
1 20788U 90081A 95221.87221519 -.00000043 00000-0 13000-7 0 4542
2 20788 98.8176 233.0959 0015967 291.3895 68.5567 14.01381418252357
Meteor 2-20
1 20826U 90086A 95220.35587775 .00000064 00000-0 44249-4 0 9252
2 20826 82.5263 174.0465 0012670 326.2697 33.7772 13.83612200245448
GPS BII-09
1 20830U 90088A 95221.43746296 -.00000017 00000-0 10000-3 0 9384
2 20830 55.7394 63.6345 0067688 99.5073 261.3228 2.00555620 35819
GPS BIIA-10
1 20959U 90103A 95217.85912596 -.00000031 00000-0 10000-3 0 9020
2 20959 55.0312 123.3703 0098388 230.7518 128.3975 2.00573414 34338
DMSP B5D2-5
1 20978U 90105A 95222.67129503 .00000052 00000-0 34432-4 0 2949
2 20978 98.6362 290.7126 0079917 9.7947 350.4768 14.32567854245119
Glonass 47
1 21006U 90110A 95220.82505299 .00000009 00000-0 10000-3 0 7854
2 21006 65.0709 95.2914 0058028 187.4869 172.5165 2.13102616 36338
Glonass 48
1 21007U 90110B 95219.60612758 .00000001 00000-0 10000-3 0 9111
2 21007 65.1039 95.4006 0034688 178.7964 181.2964 2.13101303 36296
Glonass 49
1 21008U 90110C 95222.78229366 .00000013 00000-0 10000-3 0 1096
2 21008 65.0664 95.2478 0008557 272.9974 86.9910 2.13098902 36354
```

```
AO-21
1 21087U 91006A 95222.89848791 .00000094 00000-0 82657-4 0 6215
2 21087 82.9394 192.0801 0036800 356.3156 3.7723 13.74557897227247
RS-12/13
1 21089U 91007A 95221.06996290 .00000046 00000-0 33034-4 0 8218
2 21089 82.9212 61.5617 0030718 27.3912 332.8852 13.74059538226034
MOP-2
1 21140U 91015B 95221.61630213 -.00000022 00000-0 10000-3 0 850
2 21140 0.1342 291.9160 0001758 206.5684 41.9139 1.00283813 18473
Nadezhda 3
1 21152U 91019A 95222.67124041 -.00000014 00000-0 -31352-4 0 1678
2 21152 82.9230 16.5179 0042902 127.9509 232.5540 13.73521157220983
Glonass 50
1 21216U 91025A 95220.37440281 -.00000072 00000-0 10000-3 0 4298
2 21216 65.0301 334.3310 0009099 197.2773 162.7255 2.13102729 33831
Glonass 51
1 21217U 91025B 95221.38199805 -.00000073 00000-0 10000-3 0 8378
2 21217 65.0107 334.3027 0007925 244.8612 115.0709 2.13101572 33849
Glonass 52
1 21218U 91025C 95215.39332295 -.00000046 00000-0 10000-3 0 3101
2 21218 65.0136 334.4872 0018367 89.2340 270.9933 2.13105118 33729
GRO
1 21225U 91027B 95221.31651782 .00001758 00000-0 33037-4 0 2863
2 21225 28.4606 205.1020 0002896 260.1176 99.9102 15.42858010121545
Meteor 3-4
1 21232U 91030A 95220.11169342 .00000050 00000-0 10000-3 0 8244
2 21232 82.5378 234.8268 0012243 220.3124 139.7083 13.16468051206211
NOAA 12
1 21263U 91032A 95222.69862492 .00000278 00000-0 14335-3 0 5919
2 21263 98.5851 245.3614 0014007 95.9713 264.3052 14.22550061220173
OKEAN 3
1 21397U 91039A 95222.63296758 .00000165 00000-0 20457-4 0 1244
2 21397 82.5241 68.5186 0022657 337.1543 22.8652 14.76391094225398
GPS BIIA-11
1 21552U 91047A 95219.62075589 -.00000014 00000-0 10000-6 0 8817
2 21552 56.0434 61.4160 0064354 242.3206 117.0963 2.00563132 29963
ERS-1
1 21574U 91050A 95222.12292130 -.00000005 00000-0 14180-4 0 1844
2 21574 98.5481 295.6794 0001451 95.5817 264.5518 14.32248986212771
UO-22
1 21575U 91050B 95222.73766392 .00000009 00000-0 17437-4 0 6226
2 21575 98.3903 292.6999 0008161 110.8077 249.3986 14.36985414213338
ORBCOMM-X
1 21576U 91050C 95223.19613657 .00000030 00000-0 24635-4 0 7170
2 21576 98.3891 291.4997 0004283 111.7188 248.4443 14.36394545213308
TUBSAT-A
1 21577U 91050D 95219.21821365 -.00000009 00000-0 11291-4 0 6154
2 21577 98.3899 288.1640 0006831 123.1307 237.0536 14.36490062212763
SARA
1 21578U 91050E 95222.20348062 .00000134 00000-0 57462-4 0 8167
```

```
2 21578 98.4107 296.8352 0005758 111.5377 248.6420 14.39040642213464
TDRS 4
1 21639U 91054B 95218.56380091 .00000067 00000-0 00000+0 0 9236
2 21639 0.0116 91.4028 0003272 24.6544 227.1817 1.00271243108720
Meteor 3-5
1 21655U 91056A 95220.94527078 .00000051 00000-0 10000-3 0 8225
2 21655 82.5507 181.6881 0011671 233.2490 126.7557 13.16839946191442
UARS
1 21701U 91063B 95223.31859176 -.00000169 00000-0 63293-5 0 6937
2 21701 56.9850 275.7103 0005714 99.7828 260.3867 14.96412330213822
DMSP B5D2-6
1 21798U 91082A 95222.74343204 .00000013 00000-0 30762-4 0 9428
2 21798 98.9596 234.6140 0013737 33.4349 326.7692 14.13908740190914
Glonass 53
1 21853U 92005A 95219.82862627 .00000003 00000-0 10000-3 0 316
2 21853 65.0198 95.0126 0006742 193.6984 166.3608 2.13102278 27423
Glonass 54
1 21854U 92005B 95219.17957629 -.00000001 00000-0 10000-3 0 1705
2 21854 65.0206 95.0175 0016658 18.7480 341.3909 2.13104061 27390
Glonass 55
1 21855U 92005C 95220.18244504 .00000005 00000-0 10000-3 0 1635
2 21855 65.0171 94.9960 0007293 198.9181 161.1366 2.13102048 27406
JERS-1
1 21867U 92007A 95223.19416434 .00000756 00000-0 67847-4 0 6435
2 21867 97.7171 299.4182 0001298 87.7390 272.3982 14.98647209191281
GPS BIIA-12
1 21890U 92009A 95223.07629535 .00000021 00000-0 10000-3 0 6824
2 21890 53.9099 239.4665 0054009 179.7304 180.2339 2.00573989 25401
GPS BIIA-13
1 21930U 92019A 95221.28675580 -.00000087 00000-0 10000-3 0 6612
2 21930 55.7001 1.1317 0037704 183.4019 176.5825 2.00566635 24299
EUVE
1 21987U 92031A 95222.06610387 .00000663 00000-0 21032-4 0 4748
2 21987 28.4321 120.9380 0010074 233.7949 126.1714 15.19367111176158
SAMPEX
1 22012U 92038A 95222.12280890 .00000447 00000-0 36499-4 0 6514
2 22012 81.6715 88.7704 0119839 111.0575 250.3508 14.91415102168716
GPS BIIA-14
1 22014U 92039A 95218.33686282 .00000036 00000-0 10000-3 0 5758
2 22014 54.8475 181.1952 0089816 314.3905 44.8484 2.00570254 16079
Glonass 56
1 22056U 92047A 95221.02034324 -.00000073 00000-0 10000-3 0 754
2 22056 64.8664 334.4199 0004482 261.6367 98.3247 2.13103176 23511
Glonass 57
1 22057U 92047B 95220.84644630 -.00000073 00000-0 00000+0 0 701
2 22057 64.8736 334.4510 0006159 317.5231 42.4373 2.13102568 23483
Glonass 58
1 22058U 92047C 95222.66360164 -.00000072 00000-0 10000-3 0 356
2 22058 64.8764 334.3883 0006968 268.8607 91.0692 2.13102915 23570
TOPEX
```

```
1 22076U 92052A 95220.27718048 -.00000038 00000-0 10000-3 0 8973
2 22076 66.0408 144.6763 0008000 265.3801 94.6301 12.80930863139913
KO-23
1 22077U 92052B 95219.20666627 -.00000037 00000-0 10000-3 0 5123
2 22077 66.0754 128.9432 0003988 186.8520 173.2439 12.86291209140290
S80/T
1 22078U 92052C 95222.15468302 -.00000037 00000-0 10000-3 0 5100
2 22078 66.0781 121.6096 0003592 161.2232 198.8914 12.86575909140759
GPS BIIA-15
1 22108U 92058A 95222.28500501 .00000031 00000-0 10000-3 0 5992
2 22108 54.1467 240.2839 0115257 153.1275 207.5643 2.00571059 21330
FREJA
1 22161U 92064A 95220.74974391 -.00000220 00000-0 -42016-4 0 5365
2 22161 62.9934 315.5904 0814751 351.3531 7.4123 13.21842532136997
LAGEOS II
1 22195U 92070B 95219.09667630 -.00000009 00000-0 10000-3 0 4225
2 22195 52.6389 190.8068 0138021 298.8208 59.8556 6.47294126 65873
GPS BIIA-16
1 22231U 92079A 95221.97014529 -.00000005 00000-0 10000-3 0 5810
2 22231 54.6302 182.1713 0023881 287.8322 71.8630 2.00562095 19902
GPS BIIA-17
1 22275U 92089A 95222.12187368 -.00000008 00000-0 10000-3 0 5980
2 22275 54.6300 179.7130 0050217 251.9289 107.4842 2.00564958 19316
TDRS 5
1 22314U 93003B 95221.57713442 -.00000304 00000-0 10000-3 0 5481
2 22314 1.9808 71.6852 0001665 117.9048 290.0989 1.00271152 9451
GPS BIIA-18
1 22446U 93007A 95222.19244408 -.00000045 00000-0 10000-3 0 5876
2 22446 54.4125 300.1083 0081480 355.6501 4.3316 2.00576874 18300
Glonass 59
1 22512U 93010A 95220.76866875 .00000009 00000-0 10000-3 0 7223
2 22512 65.0324 94.8366 0008220 176.7942 183.3055 2.13102168 19018
Glonass 60
1 22513U 93010B 95222.11557006 .00000013 00000-0 00000+0 0 7947
2 22513 65.0280 94.7893 0006727 189.8824 170.1845 2.13102544 19231
Glonass 61
1 22514U 93010C 95222.87831141 .00000013 00000-0 00000+0 0 7890
2 22514 65.0452 94.7530 0010684 185.0767 175.0001 2.13102578 19259
ASTRO-D
1 22521U 93011A 95220.21330072 .00000735 00000-0 45817-4 0 4272
2 22521 31.1048 266.2549 0056690 293.8561 65.6150 15.02360325135206
UFO F1
1 22563U 93015A 95222.58889646 -.00000237 00000-0 10000-3 0 4420
2 22563 25.8939 293.5026 0006789 238.7815 160.8095 0.99254776 13009
GPS BIIA-19
1 22581U 93017A 95221.33631514 -.00000089 00000-0 10000-3 0 4518
2 22581 55.2179 0.6693 0057688 37.4906 322.8887 2.00573614 17347
ARSENE
1 22654U 93031B 95219.73745367 -.00000140 00000-0 10000-3 0 3256
2 22654 2.6727 82.7025 2891218 216.7331 119.4067 1.42202952 7128
```

```
GPS BIIA-20
1 22657U 93032A 95220.47156423 -.00000084 00000-0 10000-3 0 4968
2 22657 55.2547 0.5500 0069281 205.8504 153.8056 2.00563740 12651
RADCAL
1 22698U 93041A 95223.21072220 .00000064 00000-0 23069-4 0 4226
2 22698 89.5443 287.6607 0088983 259.9055 99.2081 14.21350142110250
GPS BIIA-21
1 22700U 93042A 95214.45585225 .00000057 00000-0 10000-3 0 4458
2 22700 54.3106 241.4017 0038914 342.2959 17.6372 2.00565663 15331
NOAA 13
1 22739U 93050A 95221.89919337 .00000063 00000-0 60324-4 0 8636
2 22739 98.9978 170.8133 0010671 25.8532 334.3168 14.10939684103016
GPS BIIA-22
1 22779U 93054A 95222.01732188 -.00000045 00000-0 10000-3 0 5033
2 22779 54.5433 300.1236 0020937 247.3156 112.5204 2.00573671 14244
Meteor 2-21
1 22782U 93055A 95220.15341152 -.00000094 00000-0 -99882-4 0 4207
2 22782 82.5453 236.0011 0022492 133.1777 227.1230 13.83035243 97725
UFO F2
1 22787U 93056A 95221.12200810 -.00000082 00000-0 10000-3 0 5049
2 22787 4.4350 325.2940 0003473 153.9794 313.4107 1.00276111 5692
SPOT 3
1 22823U 93061A 95220.20833353 -.00000108 00000-0 -30002-4 0 4615
2 22823 98.7375 293.6642 0000892 94.0491 266.0789 14.20020560 96672
STELLA
1 22824U 93061B 95223.23162176 -.00000027 00000-0 67025-5 0 4086
2 22824 98.6112 298.5052 0007504 60.9511 299.2417 14.27102157 97589
AO-27
1 22825U 93061C 95222.69578542 -.00000023 00000-0 84527-5 0 4109
2 22825 98.6149 298.3353 0009669 62.3717 297.8439 14.27668953 97545
IO-26
1 22826U 93061D 95222.22512374 -.00000005 00000-0 15637-4 0 4093
2 22826 98.6152 297.9779 0010224 64.4569 295.7663 14.27777050 97482
HEATHSAT
1 22827U 93061E 95222.24130034 .00000011 00000-0 22065-4 0 4702
2 22827 98.6128 297.9253 0010250 53.0709 307.1406 14.27901665 97497
ITAMSAT
1 22828U 93061F 95221.71870306 -.00000018 00000-0 10453-4 0 3870
2 22828 98.6108 297.5162 0011186 52.0850 308.1336 14.28107791 65516
PO-28
1 22829U 93061G 95220.75020884 .00000011 00000-0 22112-4 0 4016
2 22829 98.6121 296.5995 0011173 54.8221 305.4003 14.28087689 97297
KO-25
1 22830U 93061H 95222.28195617 -.00000037 00000-0 25232-5 0 4202
2 22830 98.5115 290.6973 0012466 30.2170 329.9731 14.28093978 97511
GPS BIIA-23
1 22877U 93068A 95220.08012011 -.00000016 00000-0 10000-3 0 3001
2 22877 55.4692 61.7202 0037393 293.6673 65.9986 2.00576479 13094
METEOSAT 6
1 22912U 93073B 95221.48155656 -.00000112 00000-0 10000-3 0 3541
```

```
2 22912 0.7039 277.6756 0000614 260.4850 302.2517 1.00271791 4724
HST Array
1 22920U 90037C 95222.79478520 .00003866 00000-0 27879-3 0 3540
2 22920 28.4664 14.8182 0003852 39.0528 321.0352 15.01554728 92528
Meteor 3-6
1 22969U 94003A 95223.21207367 .00000051 00000-0 10000-3 0 1883
2 22969 82.5640 119.9239 0014706 299.9326 60.0339 13.16730943 74129
TUBSAT-B
1 22970U 94003B 95221.80248060 .00000051 00000-0 10000-3 0 1793
2 22970 82.5611 120.8487 0015269 301.9025 58.0603 13.16825669 73940
GPS BIIA-24
1 23027U 94016A 95222.65181625 -.00000093 00000-0 10000-3 0 2392
2 23027 55.0957 2.4803 0064430 196.9283 162.8805 2.00558987 10453
Glonass 62
1 23043U 94021A 95219.67154837 -.00000071 00000-0 00000+0 0 2390
2 23043 64.7456 334.8726 0006796 183.4146 176.5860 2.13102831 10302
Glonass 63
1 23044U 94021B 95220.96199450 -.00000074 00000-0 00000+0 0 2141
2 23044 64.7447 334.8301 0030171 202.2900 157.5902 2.13102856 10330
Glonass 64
1 23045U 94021C 95220.66906673 -.00000073 00000-0 00000+0 0 2196
2 23045 64.7347 334.8493 0010188 37.3597 322.7194 2.13102773 10323
GOES 8
1 23051U 94022A 95220.17040037 -.00000275 00000-0 10000-3 0 3597
2 23051 0.1342 85.6169 0003544 61.9013 155.4592 1.00268264 12210
MSTI 2
1 23101U 94028A 95222.51810029 .00004332 00000-0 76291-4 0 2215
2 23101 97.0961 54.9887 0012962 42.6022 317.6270 15.50885381 70948
STRV-1A
1 23125U 94034B 95221.34653632 .00001783 00000-0 67446-3 0 1849
2 23125 7.4890 9.3429 7263790 163.1164 248.8405 2.30090282 8876
STRV-1B
1 23126U 94034C 95218.56992725 .00001336 00000-0 39086-3 0 1662
2 23126 7.5007 10.6656 7270122 160.4604 257.4041 2.29713871 8855
Nadezhda 4
1 23179U 94041A 95219.76320953 .00000064 00000-0 50940-4 0 1210
2 23179 82.9476 109.6488 0035346 284.0671 75.6552 13.75670417 53565
Glonass 65
1 23203U 94050A 95220.80670362 .00000064 00000-0 00000+0 0 1809
2 23203 64.7910 214.6437 0006673 162.3561 197.6821 2.13101949 7722
Glonass 66
1 23204U 94050B 95220.10220986 .00000076 00000-0 00000+0 0 1865
2 23204 64.7803 214.6988 0015190 338.4260 21.5286 2.13102202 7702
Glonass 67
1 23205U 94050C 95220.45434698 .00000070 00000-0 00000+0 0 1719
2 23205 64.7874 214.6724 0003431 281.6779 78.3007 2.13102285 7711
DMSP B5D2-7
1 23233U 94057A 95222.65242196 .00000054 00000-0 53004-4 0 4432
2 23233 98.8736 280.2367 0012754 348.8993 11.1893 14.12626890 48843
OKEAN 1-7
```

```
1 23317U 94066A 95219.86472017 .00000163 00000-0 21311-4 0 850
2 23317 82.5432 348.1593 0027810 24.8748 335.3796 14.73949496 44231
ELEKTRO
1 23327U 94069A 95222.93711650 -.00000125 00000-0 10000-3 0 845
2 23327 0.6895 259.9589 0005983 199.9810 272.2315 1.00273993 2880
RESURS 1-3
1 23342U 94074A 95223.30626548 .00000086 00000-0 22551-4 0 2461
2 23342 98.0121 281.9716 0001264 71.1400 288.9942 14.69758539 41146
Glonass 68
1 23396U 94076A 95220.29782905 .00000006 00000-0 00000+0 0 1334
2 23396 64.9606 94.9299 0029643 189.6268 170.3970 2.13102589 5555
Glonass 69
1 23397U 94076B 95221.41186690 .00000012 00000-0 00000+0 0 1358
2 23397 64.9469 94.9085 0012628 325.3850 34.6185 2.13102360 5576
Glonass 70
1 23398U 94076C 95221.29531625 .00000011 00000-0 00000+0 0 1468
2 23398 64.9415 94.8902 0002582 293.6002 66.4565 2.13102233 5584
LUCH (Altair-2)
1 23426U 94082A 95222.75478031 -.00000300 00000-0 00000+0 0 1530
2 23426 2.0976 272.6363 0000859 195.7856 216.9590 1.00284619 2381
RS-15
1 23439U 94085A 95220.83163229 -.00000039 00000-0 10000-3 0 694
2 23439 64.8141 169.8454 0167386 253.3803 104.8681 11.27525292 25459
NOAA 14
1 23455U 94089A 95222.82483495 .00000053 00000-0 53646-4 0 2755
2 23455 98.9047 164.9161 0010620 42.0812 318.1174 14.11526152 31526
ODERACS II A
1 23471U 95004C 95223.18633275 .00029417 00000-0 12082-3 0 1688
2 23471 51.6430 208.8343 0011459 319.9303 40.1125 15.85651217 29896
ODERACS II B
1 23472U 95004D 95222.14791398 .00110763 16368-4 22669-3 0 1859
2 23472 51.6375 205.4144 0008689 351.4193 8.6719 15.99138515 29845
Glonass 71
1 23511U 95009A 95221.84225754 -.00000074 00000-0 00000+0 0 791
2 23511 64.7560 335.0720 0004716 315.0458 44.9260 2.13102177 3312
Glonass 72
1 23512U 95009B 95221.66637963 -.00000074 00000-0 00000+0 0 881
2 23512 64.7536 335.0916 0014075 197.8903 162.0727 2.13102964 3317
Glonass 73
1 23513U 95009C 95221.25557287 -.00000074 00000-0 00000+0 0 865
2 23513 64.7623 335.0830 0006898 206.6226 153.3527 2.13102709 3308
Soyuz TM-21
1 23519U 95010A 95222.81676115 .00004144 00000-0 62634-4 0 1596
2 23519 51.6437 244.2074 0003201 341.7134 18.2823 15.57173965 23345
SFU
1 23521U 95011A 95221.90085923 .00002203 00000-0 68406-4 0 866
2 23521 28.4581 68.3407 0020459 99.2895 261.0017 15.28657708 22160
GMS 5
1 23522U 95011B 95219.07982516 -.00000299 00000-0 10000-3 0 451
2 23522 0.8027 297.6044 0002223 146.7547 39.7319 1.00274127 1296
```

```
DMSP B5D2-8
1 23533U 95015A 95222.73578505 .00000027 00000-0 38454-4 0 1715
2 23533 98.8343 224.3607 0005981 216.2030 143.8736 14.12696500 19651
Microlab 1
1 23547U 95017C 95222.27412652 .00000215 00000-0 78061-4 0 414
2 23547 69.9779 173.8271 0015308 258.6422 101.2990 14.45392774 18596
OFEQ 3
1 23549U 95018A 95222.60194408 .00014081 00000-0 39555-3 0 892
2 23549 143.3722 138.9864 0251620 48.3632 313.8401 15.07991355 19182
GFZ-1
1 23558U 86017JE 95222.30849559 .00002318 00000-0 34190-4 0 499
2 23558 51.6522 244.5524 0007566 130.1038 230.0664 15.60187309541283
ERS-2
1 23560U 95021A 95221.16686427 .00000034 00000-0 28835-4 0 1058
2 23560 98.5479 294.7460 0001162 81.1513 278.9802 14.32249775 15760
Spektr
1 23579U 95024A 95222.81676115 .00004144 00000-0 62634-4 0 990
2 23579 51.6437 244.2074 0003201 341.7134 18.2823 15.57173965 12901
GOES 9
1 23581U 95025A 95220.89772873 -.00000207 00000-0 10000-3 0 455
2 23581 0.4465 269.0238 0000407 230.7288 50.3291 1.00278247 787
Helios 1A
1 23605U 95033A 95222.92855270 .00000065 00000-0 21346-4 0 749
2 23605 98.0893 158.6301 0001726 77.1408 282.9987 14.63854329 5018
TDRS 6
1 23613U 95035B 95222.24471384 .00000104 00000-0 00000+0 0 265
2 23613 0.0233 85.2892 0000793 123.6586 47.1297 1.00265454 253
1995035C
1 23614U 95035C 95222.53963400 .00000379 00000-0 42604-3 0 122
2 23614 26.2372 314.3549 7263137 17.0356 358.0551 2.27702727 632
1995035D
1 23615U 95035D 95213.03682076 .00000128 00000-0 10000-3 0 54
2 23615 2.0607 156.6496 0007381 168.3038 191.1106 1.00488789 182
Progress M-28
1 23617U 95036A 95222.81676115 .00004144 00000-0 62634-4 0 288
2 23617 51.6437 244.2074 0003201 341.7134 18.2823 15.57173965 3397
1995036B
1 23618U 95036B 95204.05906086 .29958245 12725-4 29504-3 0 200
2 23618 51.6301 337.1649 0007753 75.2045 286.7848 16.50549978 485
Glonass 74
1 23620U 95037A 95223.03502325 .00000036 00000-0 00000+0 0 267
2 23620 64.8582 214.4049 0017947 184.8578 175.1311 2.13100893 377
Glonass 75
1 23621U 95037B 95222.62444130 .00000040 00000-0 00000+0 0 323
2 23621 64.8473 214.4228 0036572 167.2340 192.8751 2.13099624 365
Glonass 76
1 23622U 95037C 95220.10781693 .00000074 00000-0 00000+0 0 195
2 23622 64.8470 214.5315 0110708 257.1478 101.6312 2.16783352 313
1995037D
1 23623U 95037D 95206.20798611 .14391761 78694-5 10991-3 0 47
```

```
2 23623 64.8547 213.0520 0008335 271.4613 119.6698 16.52366825 91
1995037E
1 23624U 95037E 95205.89922234 .00388584 77671-5 10000-4 0 31
2 23624 64.8214 214.2845 0007283 77.2458 281.8629 16.45405797 41
1995037F
1 23625U 95037F 95223.00754980 .00000036 00000-0 00000+0 0 74
2 23625 64.8525 214.4107 0008095 246.1553 113.7380 2.13422594 372
1995037G
1 23626U 95037 G 95207.35685102 .08292106 00000-0 17695-3 0 42
2 23626 064.8501 209.1390 0230257 053.5306 308.6775 16.01358170000277
1995037H
1 23627U 95037 H 95208.35977691 .11875576 00000-0 11821-3 0 26
2 23627 064.9833 205.9815 0193251 054.4409 307.4530 16.15959152000446
1995037J
1 23630U 95037J 95222.96096357 .00000275 00000-0 27465-3 0 41
2 23630 64.8184 208.6294 5796347 296.7260 16.0996 4.23312676 736
1995037K
1 23631U 95037K 95219.89043503 .00000199 00000-0 89486-4 0 42
2 23631 64.8863 209.6704 5796646 296.8607 16.0498 4.23293722 249
Prognoz-M2
1 23632U 95039A 95222.61896790 -.00000158 00000-0 00000+0 0 61
2 23632 62.4900 261.0150 9281119 314.1620 358.2420 0.26364502 15
1995039B
1 23633U 95039B 95223.12992621 .00098691 88527-5 42167-3 0 112
2 23633 62.8277 232.4688 0382980 113.0811 251.1154 15.23449729 1241
1995039C
1 23634U 95039C 95223.13815137 .00266148 68170-5 61831-3 0 148
2 23634 62.7988 232.4945 0422564 113.2202 251.4010 15.23057412 1243
1995039D
1 23635U 95039D 95222.54841510 -.00000133 00000-0 00000+0 0 47
2 23635 62.5430 261.1120 9272251 314.0610 359.8460 0.26922002 16
PAS 4
1 23636U 95040A 95218.92641211 -.00000143 00000-0 00000+0 0 112
2 23636 0.3907 125.2191 1236664 163.9864 222.2441 1.19678929 17
1995040B
1 23637U 95040B 95215.97504380 -.00000178 00000-0 00000+0 0 17
2 23637 4.1663 111.0618 7252147 179.2403 4.8644 2.18377055 09
Magion 4
1 23638U 95039E 95222.45648011 .02181818 14240-2 74410-2 0 112
2 23638 62.8092 234.7117 0324981 111.8020 251.7526 15.39125838 919
1995041A
1 23639U 95041A 95222.65000000 -.00000134 00000-0 00000+0 0 105
2 23639 0.2007 148.5444 0421906 198.7690 204.1752 1.34135456 133
1995041B
1 23640U 95041B 95221.12585854 .00000118 00000-0 10000-4 0 76
2 23640 26.6787 286.0235 0290363 243.6485 113.3928 13.27555666 489
1995041C
1 23641U 95041C 95222.32406797 -.00000124 00000-0 00000+0 0 58
2 23641 20.5969 302.2379 6439968 2.0005 359.7203 2.70396106 134
1995042A
```

```
1 23642U 95042A 95223.19608242 .00000447 00000-0 74759-3 0 81
2 23642 62.8278 301.8285 7484652 280.2613 10.6617 1.95431631 45
1995042B
1 23643U 95042B 95223.28521305 .00477264 79369-5 59138-3 0 107
2 23643 62.8228 293.8871 0133623 136.0248 225.1643 15.92141135 351
1995042C
1 23644U 95042C 95223.29308477 .01011946 78408-5 67297-3 0 113
2 23644 62.8194 293.9121 0192723 126.1607 235.7164 15.87770959 359
1995042D
1 23645U 95042D 95222.17053209 .00004069 00000-0 39100-1 0 47
2 23645 062.8056 302.0421 7444352 280.2148 010.7483 01.95899690000037
1995039F
1 23646U 95039F 95215.39236111 .00000278 00000-0 00000+0 0 15
2 23646 63.2654 259.9492 9304461 314.4137 33.0930 0.26401563 04
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1698. SKYNEWS!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-12 00:00:00 UTC
From: karl.leite@dialdata.COM.BR
Message-ID: <1dd.64628.50.0CC78882@dialdata.com.br>
Source record: 24406

DEAR FRIENDS,

I would like to get more information about newsletter SKYNEWS, published by (?) North York Astronomical Association, in Canada. How to subscriber etc...?

All replies will welcomed. Can you help me!? Thank you very much in advance!

Vy best 73,

[]'s, Karl Leite, Natal/RN - Brasil
karl.leite@dialdata.com.br
PS7KM@PY1AA.#RJ.BRA.SA

---
* UniQWK #1812* SYSOP never die, they just smell that way!

1699. Re: G500 motors

Newsgroup: rec.radio.amateur.space
Date: 1995-08-12 00:00:00 UTC
From: g8tzj%gb7lan.bbs@ve4umr.ampr.ORG
Message-ID: <29@ve4umr.ampr.org>
Source record: 24407

>From: art.jeyes@jhuapl.edu (Art Jeyes)
>Subject: AZ/EL rotors
>
>A friend and I have been active on PACSATS for about 1 year.
>(snip)
>He has gone through 2 motors already. Is this normal for a G500? All

I doubt it! I have had 2 KR500 (same as G500) for 14 and 7 years and no burn outs. I take it that the motors did burn out ? I have built into the control unit current sensing so that in the event of an overload the power is cut-off. This has helped to save the motor many times. Now I wonder why the manufacturer did not build it in ..... :-)

I dont have large antennas, just a 6XY 2meter and a 17XY for 70 cms.

The only problem I have had is water getting into the bearings and corroding them. I have since waterproofed them to try and prevent this in the future.

73 Andrew G8TZJ @ AMSAT.ORG 12-Aug-95 19:35 GMT

1700. ARLK039 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-08-12 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk039.1995@ampr.org>
Source record: 24408
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK039
ARLK039 Keplerian data

ZCZC SK64
QST de W1AW
Keplerian Bulletin 39 ARLK039
From ARRL Headquarters
Newington, CT August 12, 1995
To all radio amateurs

SB KEP ARL ARLK039
ARLK039 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95210.49039197 .00000246 00000-0 10000-3 0 3664
2 14129 26.4555 255.9109 5993547 297.1786 14.8191 2.05876811 63202
RS-10/11
1 18129U 87054A 95220.98335080 .00000019 00000-0 47699-5 0 01081
2 18129 082.9228 020.0371 0010930 312.0304 047.9917 13.72355014407215
UO-11
1 14781U 84021B 95220.96173573 .00000066 00000-0 18911-4 0 08451
2 14781 097.7836 221.0246 0012489 018.3384 341.8274 14.69365457611659
RS-12/13
1 21089U 91007A 95221.06996290 .00000046 00000-0 33034-4 0 8218
2 21089 82.9212 61.5617 0030718 27.3912 332.8852 13.74059538226034
AO-13
1 19216U 88051B 95220.94379399 -.00000592 00000-0 -86872-3 0 748
2 19216 57.4924 171.4931 7316913 15.7799 358.0837 2.09725533 23270
UO-14
1 20437U 90005B 95221.19386007 -.00000002 00000-0 16084-4 0 01294
2 20437 098.5666 304.7106 0011909 044.9769 315.2375 14.29893534289326
RS-15
1 23439U 94085A 95221.09771398 -.00000039 00000-0 10000-3 0 00718
2 23439 064.8139 169.4148 0167404 253.2608 104.9883 11.27525194025484
AO-16
1 20439U 90005D 95221.23360502 .00000001 00000-0 17184-4 0 09213
2 20439 098.5777 306.4888 0012336 044.5097 315.7075 14.29947677289344
```

```
DO-17
1 20440U 90005E 95221.21686048 -.00000001 00000-0 16658-4 0 09259
2 20440 098.5797 306.9588 0012444 043.9869 316.2315 14.30088802289363
WO-18
1 20441U 90005F 95221.20019840 -.00000021 00000-0 85673-5 0 09345
2 20441 098.5793 306.9100 0013042 044.2549 315.9677 14.30059960289364
LO-19
1 20442U 90005G 95221.21920721 -.00000000 00000-0 16793-4 0 09248
2 20442 098.5801 307.3044 0013283 042.5777 317.6434 14.30163247289384
FO-20
1 20480U 90013C 95221.19423401 -.00000008 00000-0 46051-4 0 08291
2 20480 099.0719 299.9395 0541329 113.3210 252.5789 12.83231778257747
AO-21
1 21087U 91006A 95221.00591060 .00000094 00000-0 82657-4 0 06288
2 21087 082.9394 193.4808 0036967 001.3341 358.7897 13.74557815226981
UO-22
1 21575U 91050B 95221.20579567 -.00000008 00000-0 11676-4 0 06389
2 21575 098.3906 291.2068 0008066 114.8603 245.3420 14.36985099213110
KO-23
1 22077U 92052B 95221.15043486 -.00000037 00000-0 10000-3 0 05278
2 22077 066.0762 124.8759 0003501 185.5144 174.5832 12.86291290140544
KO-25
1 22828U 93061F 95221.15820253 -.00000011 00000-0 13039-4 0 04141
2 22828 098.6109 296.9640 0011202 053.5029 306.7183 14.28107806065436
IO-26
1 22826U 93061D 95221.17394167 .00000001 00000-0 18048-4 0 04313
2 22826 098.6154 296.9420 0010203 067.2933 292.9324 14.27777012097334
AO-27
1 22825U 93061C 95221.22401894 .00000007 00000-0 20391-4 0 04279
2 22825 098.6149 296.8849 0009665 066.4897 293.7301 14.27669139097335
PO-28
1 22829U 93061G 95221.17058991 .00000026 00000-0 27977-4 0 04046
2 22829 098.6121 297.0141 0011230 053.1175 307.1029 14.28087882097359
Mir
1 16609U 86017A 95221.21236389 .00001850 00000-0 31712-4 0 02778
2 16609 051.6480 252.2344 0003996 331.9768 028.1008 15.57164754541198

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
August 15, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1701. AMSAT-UK

Newsgroup: rec.radio.amateur.space
Date: 1995-08-12 00:00:00 UTC
From: John@MCC.ac.uk
Message-ID: <40jfa4$5bt@yama.mcc.ac.uk>
Source record: 24409

Greetings,

I have set up a WWW page for AMSAT-UK, at:

http://www.mcc.ac.uk/AMSAT/

which has all the contact details for AMSAT-UK.

Also I have started to mirror the anonymous ftp sites of

ftp://ftp.amsat.org/amsat/
ftp://ftp.tapr.org/tapr/

which are accessible from my AMSTA-UK home-page.

At the moment the local information on the system is a bit
thin, but it will hopefully change soon.

John, G1YYH, AMSAT-UK 5701

1702. Satellite Antenna Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-08-12 00:00:00 UTC
From: headshrnkr@aol.com
Message-ID: <40jpan$si2@newsbf02.news.aol.com>
Source record: 24410

I am in the process of setting up a 2m and 70m KLM antenna array. I have selected the Yaesu GB5400 antenna rotator. My question is this.
What is the max angle the antenna would be inclined to during the tracking process? By degree, for example I noted that the rotator control allows a 90 degree angle. Is the antenna ever really used at this angle? The reason for my concern is that mounting location that I have chosen maybe restrict me from using the antenna at 90 degrees. If I located the antenna on a higher mast, say 12 feet this problem would be solved, but it would become more of an eyesore to my neigbhors.

Also, do most Satellites tend to travel in a North/South pattern? Final question, how would this antenna be for use with ground based stations? Would I be better retaining my dualband vertical that I am presently using for gound communication?

Thank you for your reply. Email to HeadShrnkr@aol.com

"We, the people are the rightful masters of both the congress and the courts - not to overthrow the constitition, but to overthrow men who pervert the constitution" - A. Lincoln

Bruce J. Howes
HeadShrnkr@aol.com

1703. Re: Satellite Antenna Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-08-12 00:00:00 UTC
From: Bill@halcyon.com
Message-ID: <NEWTNews.808285689.358.bill@bill.halcyon.com>
Source record: 24411

In Article<40jpan$si2@newsbf02.news.aol.com>, <headshrnkr@aol.com> write:

> I am in the process of setting up a 2m and 70m KLM antenna array. I have
> selected the Yaesu GB5400 antenna rotator. My question is this.
> What is the max angle the antenna would be inclined to during the tracking
> process? By degree, for example I noted that the rotator control allows a
> 90 degree angle. Is the antenna ever really used at this angle?

Yes. There are many times that a satellite passes directly overhead.

>The reason
> for my concern is that mounting location that I have chosen maybe restrict
> me from using the antenna at 90 degrees. If I located the antenna on a
> higher mast, say 12 feet this problem would be solved, but it would become
> more of an eyesore to my neigbhors.

Go for the extra height. Its worth the effort.

>
> Also, do most Satellites tend to travel in a North/South pattern?

Yes

> Final
> question, how would this antenna be for use with ground based stations?

It will compare very favorably with any normal beam mounted at the same
height.

> Would I be better retaining my dualband vertical that I am presently using
> for gound communication?

Yes, your verticle is omni-directional. Your satellite antennas are going to
be highly directional.

Bill

reply to bill@halcyon.com

1704. Re: rs12 contacts using 1 transceiver with spli

Newsgroup: rec.radio.amateur.space
Date: 1995-08-12 00:00:00 UTC
From: clinton.peebles@saloon.bcbbs.net
Message-ID: <9508121411571355@saloon.bcbbs.net>
Source record: 24412

```
S>> Can this be done with my Kenwood 440 with a tribander? Any sugestions from
S>> anyone who's accomplished this?
```

I've done it with a Kenwood 850 and a Cushcraft tribander on phone.

• QMPro 1.53 • Please wait... Sysop has exited to DOS...

1705. Re: G500 motors

Newsgroup: rec.radio.amateur.space
Date: 1995-08-13 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <40k0j5$3ql@maureen.teleport.com>
Source record: 24413

In article <29@ve4umr.ampr.org>, g8tzj%gb7lan.bbs@ve4umr.ampr.ORG said...
>I have built into the control
>unit current sensing so that in the event of an overload the power is
cut-off.

I'm wondering just what kind of circuit you used. I have designed a PC board for the G-500 (and others) that will allow it to be used with a computer just like the G-5400 box, and I would like to include an overcurrent protection. I have some ideas, but I would like to know about ones that are proven effective.

>The only problem I have had is water getting into the bearings and corroding
>them. I have since waterproofed them to try and prevent this in the future.

I wish the manufacturers would seal their units, and this includes pre-amps too. There is no longer any good reason not to.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1706. Request for info/help by missionary

Newsgroup: rec.radio.amateur.space
Date: 1995-08-13 00:00:00 UTC
From: Robin Mitchell <100641.2667@CompuServe.COM>
Message-ID: <40lebu$6m1$1@mhafn.production.compuserve.com>
Source record: 24414

The background.
My father is a missionary (Baptist) working in north-western Cameroon. He has a 486 class computer with modem and is trying to use Compuserve or Internet.

The problem
Frankly, the Cameroon telephone system. It can take up to sixty (60) attempts to reach the SITA site in Youenda (sp?). Note: SITA is a telex interface through which Compuserve can be reached. When a connection has been made it rarely lasts for more than ten minutes.

The request
Is it possible to connect to Compuserve and/or Internet via his own satellite ground station?

Thanks for any help that can be provided.
Apologies if this is not an appropriate forum for this request.
Flames to the big D!

1707. Need RS-15 Frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-08-14 00:00:00 UTC
From: gerheim@sonalysts.com
Message-ID: <40nbt7$kdv@hatch.sonalysts.com>
Source record: 24415

Please send me the uplink, downlink, and beacon frequencies for
RS-15. Then I'll look into more ERP for the uplink.

--
****
Al Gerheim, N4QN |Opinions expressed here | Sonalysts Inc. POB 280
gerheim@sonalysts.com |are my own. Contents may| 215 Parkway North
Work: (203)442-4355 |settle during shipment. | Waterford CT 06385
****

1708. Re: Need RS-15 Frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-08-14 00:00:00 UTC
From: gerheim@sonalysts.com
Message-ID: <40ncqd$kus@hatch.sonalysts.com>
Source record: 24416

Al Gerheim (gerheim@sonalysts.com) wrote:
> Please send me the uplink, downlink, and beacon frequencies for
> RS-15. Then I'll look into more ERP for the uplink.

Oops.. shoulda webbed first. For all those interested,
AMSAT WWW page: http://www.amsat.org/amsat/AmsatHome.html

the frequencies are
145.858 to 145.898 up,
29.354 - 29.394 down,
29.3525 and 29.3987 MHz beacons

--
****
Al Gerheim, N4QN |Opinions expressed here | Sonalysts Inc. POB 280
gerheim@sonalysts.com |are my own. Contents may| 215 Parkway North
Work: (203)442-4355 |settle during shipment. | Waterford CT 06385
****

1709. LNAs and Peltier Cooling

Newsgroup: rec.radio.amateur.space
Date: 1995-08-14 00:00:00 UTC
From: Kevin Shea <mashea@students.wisc.edu>
Message-ID: <40nglg$1b5k@news.doit.wisc.edu>
Source record: 24417
Cross-posted to: rec.radio.amateur.space,sci.electronics

Has anyone used a peltier thermo chip to cool an LNA to get lower noise?
I know this kind of thing is done in professional systems, but I'm wondering
can an amateur do it?

Specifically, I have a LNA for Weather Satellites (1.7 GHz) it has a noise
figure of less than 1.0 dB. Could I simply mount the pelitier chip on the
LNA box and cool it's contents? BTW it is a two stage LNA using a GaAs FET
for the first stage and a MMIC for the second stage. It will be mounted at
the feed on the dish.

Thanks for any ideas, comments or suggestions.

Kevin
shea4460@macc.wisc.edu

--
****
* Kevin G. Shea N9JKP *
* 4460 Dahmen Pass *
* Cross Plains, WI 53528 USA *
* 608.789.4326,voice; 608.798.1747,fax *
****

1710. Re: APT receiving

Newsgroup: rec.radio.amateur.space
Date: 1995-08-14 00:00:00 UTC
From: Tom Woolner <Tom@woolner.demon.co.uk>
Message-ID: <808428818snz@woolner.demon.co.uk>
Source record: 24418

In article <earecksoDD65nG.GBC@netcom.com>
eareckso@netcom.com "William A. Eareckson" writes:

" Tom Woolner (Tom@woolner.demon.co.uk) wrote:
" : NOAA 9 is off at present due to polar coincidence with NOAA 14 because they
" : share the same APT channel. Unless something has gone wrong on NOAA 9, we

" About August 3rd NOAA 9 was reported as having a possible battery/buss
" failure. Diagnostics are being performed to see if the ol' girl is
"

Any further news on NOAA 9? It is still off 13 August...

Does anyone know where NOAA satellite bulletins are to be found?

Thanks,

--- Tom Woolner ---

1711. Re: rs12 contacts using 1 transceiver with split?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-14 00:00:00 UTC
From: erik@peewee.chinalake.navy.mil
Message-ID: <40ol15$9m3@pandora.sdsu.edu>
Source record: 24419

Charles Okstein (okstein@primenet.com) wrote:
: Can this be done with my Kenwood 440 with a tribander? Any sugestions from
: anyone who's accomplished this?

==========
The following text was compiled from the following sources:

* "How to use the EZSATS pas tables by N9LTD" reprinted without permission.
Full text, tables, and lots of other useful information can be obtained by
sending a SASE to David Mullenix N9LTD, 2052 Brentwood Pky, Madison, WI 53704

* "Amateur Radio Satellite Frequencies" This file can be obtained from the
ARRL e-mail server. For information on the server, send an e-mail message
to info-serv@arrl.org with 'HELP' in body of message.

* "Summary - Getting onto the Hamsats" This was an article posted to
rec.radio.amateur.misc newsgroup by Stephan Greene (sgreene@access.digex.com)
on 20 Mar 1992. The article is also available via anon ftp from
ftp.cs.buffalo.edu or Australian mirror at grivel.une.edu.au as file
pub/hamradio/ham_sat_sum.

* "An Amateur Satellite Operation Upgrade Path" from the AMSAT Journal,
September/October 1993, pp. 24-26.

"A cousin to RS-10/11, RS-12/13 is also a 40 KHz wide linear transponder.
However, this bird is unique because its input frequencies are in the fifteen
meter band! This is also the only ham sat in the sky that requires more than
a code free technician license to work it, because its input band is from
21.210 - 21.250 MHz. This straddles the Advanced and Extra portions of the
15 meter band. Its output freqs are from 29.410 - 29.450 MHz. Because of
skip, this satellite can often be heard and worked when it's below the
horizon! At least one person has earned DXCC on this satellite! RS-12/13 is
bolted to the ?????? ???? satellite and its NORAD ID is 21089."
==========

In the following my statements reflect information I have read, been
told over the air (and via other ham forums) and found through direct
experience.

I was driven to upgrade to advanced specifically so that I could use
phone via satellite using RS-12/13. Contrary to popular gossip, AO-27
is practically useless. I am *rarely* able to hear it at all and then
it is usually almost completely unreadable. If I had to rate the very
best signals I have heard from AO-27 they would be 4x2. Note that I
do not have any expensive AZ/EL beams for sophisticated satellite
work.

On the other hand RS-12/13 is relatively easy to read in spite of a rumor I overheard over RS-12 that it is currently only transmitting about 1 watt of power. I have worked it using my TS690S with both a homebrew horizontal 40m dipole and built-in tuner, a discone that's only supposed to tx from 6m and up (also using tuner), and my current cushcraft vertical.

I initially set my vfo (A) to 29.430, then press A/B and set vfo B to 21.230 which is the start of the advanced area of the 15m band. Return to A, then press SPLIT. The display should read 29.425. Now if you press TF-SET you will see 8.20000 remember this number. USB is used exclusively for phone on RS-12/13 so if you are advanced and wish to use phone press USB. I have monitored CW but never attempted to use it myself as the doppler shift drift is much more annoying than on phone. If you are using CW the following should still work, its just going to be more effort fiddling with the tuning, also if you have the 500hz CW filter, don't try to use it, at least at first.

When the bird begins its pass the beacon will be one of the first things you will be able to rx. This is found "around" 29.408 mhz. It will be a little higher at the beginning of the pass. A minute or two after you first acquire the beacon, phone qsos may be found from 29.430 to 29.450 or so. CW is usually exclusively below 29.430 during the entire pass. If you hear a CW signal, don't tx phone anywhere near it (obviously). At this point I tune around until I find a strong qso or someone calling cq. Keep them in tune and shortly before you are ready to call them, press and hold TF-SET and tune until you see 8.20000 again. Now you are transmitting on more or less the appropriate freq for the other party to hear you. I have never failed to make contact using this method with stations that I can hear clearly. There is usually considerable qsb so I generally just exchange signal reports, first names, and grid locators. If the qso drags on you will need to tune to keep the other party readable. Retune your tx offset to 8.2 using the same procedure to keep your signal in the more or less the same area of the passband.

One interesting note: in my experience, fully 80% of the time I hear a good signal on the downlink, when I press the TF-SET button I hear the other party on the uplink *better* than on the downlink.
It's unfortunate that folks don't use 15m more often!

Comments welcome

Good luck and I hope to work you via RS-12!
Erik

--
Erik van Bronkhorst Code 474400D
CW/KotGT DoD#4342585443 AMA#438054
erik@peewee.chinalake.navy.mil
kc6uut@wa6ybn.#soca.ca.usa.na
http://www.ridgecrest.ca.us/pub/users/caseycct/erik.html

1712. Re: LNAs and Peltier Cooling

Newsgroup: rec.radio.amateur.space
Date: 1995-08-14 00:00:00 UTC
From: jmelson@artsci.wustl.edu
Message-ID: <40oiiq$5o5@newsreader.wustl.edu>
Source record: 24420
Cross-posted to: rec.radio.amateur.space,sci.electronics

Kevin Shea (mashea@students.wisc.edu) wrote:
: Has anyone used a peltier thermo chip to cool an LNA to get lower noise?
: I know this kind of thing is done in professional systems, but I'm wondering
: can an amateur do it?

: Specifically, I have a LNA for Weather Satellites (1.7 GHz) it has a noise
: figure of less than 1.0 dB. Could I simply mount the pelitier chip on the
: LNA box and cool it's contents? BTW it is a two stage LNA using a GaAs FET
: for the first stage and a MMIC for the second stage. It will be mounted at
: the feed on the dish.

Almost. The problem is that the entire unit must be hermetically sealed,
or it will fill with condensed moisture. It will sure help the first stage,
but the beneficial effect on the second stage will be less. You will
probably have to insulate the entire box except where the peltier cooler is
attached, and add a big heat sink to the hot side of the peltier device.
Good luck!

1713. Re: LNAs and Peltier Cooling

Newsgroup: rec.radio.amateur.space
Date: 1995-08-14 00:00:00 UTC
From: rtm@ftp.netgate.net
Message-ID: <rtm-1408952144550001@ng50.netgate.net>
Source record: 24421
Cross-posted to: rec.radio.amateur.space,sci.electronics

In article <40oiiq$5o5@newsreader.wustl.edu>, jmelson@artsci.wustl.edu
(Jonathan M. Elson) wrote:

> Kevin Shea (mashea@students.wisc.edu) wrote:
> : Has anyone used a peltier thermo chip to cool an LNA to get lower noise?
> : I know this kind of thing is done in professional systems, but I'm
wondering
> : can an amateur do it?
>
> : Specifically, I have a LNA for Weather Satellites (1.7 GHz) it has a noise
> : figure of less than 1.0 dB. Could I simply mount the pelitier chip on the
> : LNA box and cool it's contents? BTW it is a two stage LNA using a GaAs FET
> : for the first stage and a MMIC for the second stage. It will be mounted at
> : the feed on the dish.
>
> Almost. The problem is that the entire unit must be hermetically sealed,
> or it will fill with condensed moisture. It will sure help the first stage,
> but the beneficial effect on the second stage will be less. You will
> probably have to insulate the entire box except where the peltier cooler is
> attached, and add a big heat sink to the hot side of the peltier device.
> Good luck!

Besides being a great experiment in producing mold and fungii, you'll learn
a great deal about thermal expansion coefficients- if you can cycle the unit
low enough, and high enough, you might be able to pop some solder connections,
or maybe dislodge the mmic, unless the materials are matched.

let us know how you do!

73-

--

Bob Martin N6MZV * rtm@ftp.netgate.net

1714. Re: RS-15 frequencies anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-14 00:00:00 UTC
From: kf8bex@oeonline.com
Message-ID: <DDAMwH.2DL@oeonline.oeonline.com>
Source record: 24422

>
> I believe RS-15 is between 29.345 and 29.395 rom what I'm told.

Actually it is between 29.357 and 29.397.

The CW portion is from 29.357 to 29.375 and SSB
is from 29.375 to 29.397.

The beacon is at 29.353.

Mike, KF8BE

1715. Re: Request for info/help by missionary

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: buch@exis.net
Message-ID: <40oqqq$fpf@grouper.Exis.Net>
Source record: 24423

If cost is not a problem, and I assume it is not since you are talking about a satellite ground station, I would suggest a link via INMARSAT. Portable suitcase type terminals are commercially available. Do you remember the broadcasts from downtown Baghdad by CNN reporter Peter Arnet (SP?)? He used a similar terminal to get his voice reports out after normal connections failed. The cost for satellite time is about $6.00 per minute. Once you are into an INMARSAT ground terminal, the world can be accessed.

Wouldn't the money be better spent on relief supplies and medical aid?

Regards,

Joe Buch N2JB
buch@exis.net

1716. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: jmaynard@admin5.hsc.uth.tmc.edu
Message-ID: <radio/personal-intro_808498601@rtfm.mit.edu>
Source record: 24424
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 3.1.1.2
Archive-name: radio/personal-intro
Revision: 2.1 1994/11/01 03:50:23
Posting-Frequency: posted on the 15th of each month

This message describes the rec.radio.amateur.*, rec.radio.cb,
rec.radio.info, and rec.radio.swap newsgroups, as well as their Internet
mailing list counterparts and complements. It is intended to serve as a
guide for the new reader on what to find where. Questions and comments may
be directed to the author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@admin5.hsc.uth.tmc.edu. This message was last changed on 31 October
1994 to add the discussion of non-Usenet mailing lists and streamline most
of the history discussion, and to change the moderator information for
rec.radio.info.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

Over the years, as the net grew, the volume of discussion became
progressively higher. First one by one, and then as part of two
reorganizations, what was once one group became many. In the process,
developments elsewhere on the net were reflected in the groups as they were
created, most notably the change to place all of the ham radio groups in one
hierarchy.

The collection of newsgroups continues to grow as more people join the net,
and as more topics of discussion gain volume, I expect to see more groups be
created as well. This follows what is happening on the rest of the net.

Nearly all of the radio newsgroups have corresponding mailing lists, the
notable exception being rec.radio.swap. There are also a few mailing lists
that don't have newsgroups.

The Current Groups
==================

It's important to post messages to the group that's appropriate for them,
and not to the groups that aren't. The whole idea of having different
```

newsgroups is so that folks who aren't interested in, say, homebrewing, don't have to wade through messages about homebrewing on the way to read about Field Day. Posting appropriately is just good etiquette.

The rec.radio.amateur.misc group is the catchall. It is what rec.ham-radio was renamed to during the first major reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, was removed on September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there. To answer a frequently asked question: No, there is no mailing list that goes along with this group. If you can't read Usenet news directly, you're out of luck.

The group rec.radio.amateur.policy was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate - it's now legal to order a pizza on the autopatch, if you're not in the pizza business - as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The group rec.radio.cb is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently David Dodell, WB7TPY. The email address for submissions to the group is rec-radio-info@stat.com. Inquires and other administrivia should be directed to rec-radio-info-request@stat.com. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

Mailing Lists

In addition to the mailing lists that mirror the Usenet newsgroups, there also are a few that stand alone. These cover specific areas of ham radio, and discussion is focused on just those areas.

The cq-contest mailing list is for discussions of contesting in ham radio. To join, send email with the word "subscribe" on a line by itself to cq-contest-request@tgv.com.

The DX mailing list covers the finer points of DXing. This one is also joined by mailing "subscribe" on a line by itself, this time to

dx-request@unbc.edu.

There's also a VHF mailing list, for VHF operators of the weak signal persuasion. You can join this one be sending "subscribe vhf" on a line by itself to vhf-request@w6yx.stanford.edu.

All of the following mailing lists are sponsored to the Boston Amateur Radio Club, as well as some others of local interest. Thanks to N1IST for the information.

qrp-l: This is the qrp mailing list, previously maintained by Bruce Walker at Think.com. It is for discussions about the design, construction, and use of qrp (low power) radios and related equipment.
arrl-ve-list: This is a one-way list, run by Bart Jahnke of the ARRL VEC, for announcements to VEs and VE teams.
w1aw-list: ARRL bulletins, news, and information
newsline-list: Redistribution of Amateur Radio Newsline
letter-list: Redistribution of the ARRL Letter
fox-list: Fox hunting and Radio Direction Finding
fieldorg-l: ARRL field organization discussions
ham-tech: Technical discussions and questions about Amateur Radio
arrl-exam-list: amateur radio license examinations scheduled in the US and in some foreign areas.

To sign up or inquire about these lists, send mail to listserv@netcom.com with the following in the body (subject is ignored) of the message.
<listname> is the name of the list to subscribe to.
To subscribe: subscribe <listname>
To unsubscribe: unsubscribe <listname>
For more information: help
To post (to the two-way lists), send your message to <listname>@netcom.com

Please do NOT send subscription requests to the mailing lists themselves; that doesn't work very often, and is very annoying to those on the list. Also, please keep your electronic mail address current with any mailing lists you subscribe to, as dealing with returned email is a nuisance for the person maintaining the mailing list.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while

still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
"All is strange and vague." "Are we dead?" "Or is this Ohio?"
-- Yakko and Dot Warner

1717. Re: APT receiving

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: yokoyama@tkl.iis.u-tokyo.ac.jp
Message-ID: <YOKOYAMA.95Aug15210145@akasaka.tkl.iis.u-tokyo.ac.jp>
Source record: 24425

Hello.

In article <808428818snz@woolner.demon.co.uk> Tom Woolner <Tom@woolner.demon.co.uk>
writes:

|Does anyone know where NOAA satellite bulletins are to be found?

You can find satellite-related infomation at newsgroup sci.space.news
and I reccomend to subscribe WXSAT-ML. mail to me how to subscribe this.

yama.

1718. Easter Island on Oscar 2 Sept.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: engberg@edfue0.ctis.af.mil
Message-ID: <40qsqf$frg@usafa2.usafa.af.mil>
Source record: 24426

I talked to XE1XA Sunday night on AO-13. He said he is planning to
be active on AO10/13 from Easter Island from 2 Sept to 15 Sept. So keep
a look out for him. He didn't say if he'd be on any other bands.

--
Bob
phone: 907-552-1895
e-mail: engberg@ctis.af.mil
URL: http://www.ctis.af.mil/~engberg/
packet: K0MVL@KL7AA.#NAK.AK.USA.NOAM

1719. Re: LNAs and Peltier Cooling

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: mbv@ti.com
Message-ID: <40qre8$ijk@superb.csc.ti.com>
Source record: 24427
Cross-posted to: rec.radio.amateur.space,sci.electronics

In article <40nglg$1b5k@news.doit.wisc.edu>, Kevin Shea <mashea@students.wisc.edu> says:
>
>Has anyone used a peltier thermo chip to cool an LNA to get lower noise?
>Kevin
>shea4460@macc.wisc.edu
>
>Kevin, it would probably be less expensive in the long run to replace
the GasFet in the first stage with a lower noise device and to use a
GasFet for the second stage also. The Peltier cooler is not very effecient
and will require lots of current and a big heat sink for the heat side
Moisture will be a problem on the cold side due to condensation. I don't
have the numbers for noise figure vs. temperature handy, but the improvement
would be small from cooling unless you used some kind of liquid gas or
other method to get a large temperature reduction.

Ken Durham K5MBV mbv@ti.com

1720. Higher Speed Digital Satellites??

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: n9syw@w9yt.engr.wisc.edu
Message-ID: <n9syw-1508951752350001@f181-111.net.wisc.edu>
Source record: 24428

Are there any higher speed amateur digital satellites being planned?
(19.2k baud or faster) Adding 56k+ baud cability would greatly
enhance performance on low orbit satelites. It would allow modes like
digital voice and crosslinking of multiple satellites. I've heard rumors
that phase IIID might offer T1 speeds? That sounds great.
But it's unwise to have all our faster digital hopes based on one one
satelite with no backup. We should also be building relitivly cheap
high speed digital satellites in low to medium orbits.
Anyways I do hope the designers of phase IIID are planning for the
future and implement 1.5 Mbps channels. This would allow for some
very powerfull capibilities in amateur radio.

1721. ARLK040 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk040.1995@ampr.org>
Source record: 24429
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK040
ARLK040 Keplerian data

ZCZC SK65
QST de W1AW
Keplerian Bulletin 40 ARLK040
From ARRL Headquarters
Newington, CT August 15, 1995
To all radio amateurs

SB KEP ARL ARLK040
ARLK040 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95226.03171378 -.00000185 00000-0 10000-3 0 3695
2 14129 26.4495 253.4106 5979305 301.4948 13.5002 2.05877430 63520
RS-10/11
1 18129U 87054A 95225.94111836 .00000022 00000-0 82212-5 0 01133
2 18129 82.9226 016.3706 0010570 297.0807 62.9268 13.72355197407895
UO-11
1 14781U 84021B 95226.00096137 .00000076 00000-0 20635-4 0 08246
2 14781 97.7839 225.8288 0012416 2.2379 357.8878 14.69366774612398
RS-12/13
1 21089U 91007A 95226.02157361 .00000046 00000-0 33156-4 0 08267
2 21089 82.9206 057.8872 0030455 14.0947 346.1053 13.74059656226714
AO-13
1 19216U 88051B 95225.23514033 -.00000000 00000-0 -39228-4 0 00783
2 19216 57.4714 170.6496 7318603 16.0864 358.0802 02.09720986023368
UO-14
1 20437U 90005B 95226.23207191 -.00000003 00000-0 15657-4 0 01342
2 20437 98.5664 309.6667 0011792 31.4457 328.7429 14.29893791290040
RS-15
1 23439U 94085A 95226.06457008 -.00000039 00000-0 10000-3 0 00753
2 23439 64.8140 161.3827 0167344 252.3471 105.9119 11.27525112026048
AO-16
1 20439U 90005D 95226.20165272 -.00000024 00000-0 75516-5 0 09278
2 20439 98.5778 311.3835 0012234 31.4928 328.6979 14.29947712290053
```

```
DO-17
1 20440U 90005E 95226.18441642 .00000014 00000-0 22377-4 0 09280
2 20440 98.5793 311.8537 0012491 29.9510 330.2382 14.30089447290073
WO-18
1 20441U 90005F 95226.16785450 .00000020 00000-0 24521-4 0 09355
2 20441 98.5791 311.8056 0013101 30.1943 329.9990 14.30060594290073
LO-19
1 20442U 90005G 95226.18650580 -.00000013 00000-0 11906-4 0 09281
2 20442 98.5804 312.2020 0013294 29.1131 331.0791 14.30163434290097
FO-20
1 20480U 90013C 95226.26212539 -.00000028 00000-0 18844-5 0 8137
2 20480 99.0718 304.0642 0541236 101.8629 264.3664 12.83231469258394
AO-21
1 21087U 91006A 95225.95572740 .00000094 00000-0 82657-4 0 6224
2 21087 82.9395 189.8180 0036647 347.8593 12.1675 13.74558083227665
UO-22
1 21575U 91050B 95226.14955138 .00000028 00000-0 23734-4 0 06388
2 21575 98.3904 296.0265 0008263 100.6856 259.5262 14.36985974213823
KO-23
1 22077U 92052B 95226.12648183 -.00000037 00000-0 10000-3 0 05321
2 22077 66.0761 114.4586 0003719 181.6168 178.4837 12.86290997141182
KO-25
1 22828U 93061F 95226.20270586 -.00000011 00000-0 13029-4 0 3889
2 22828 98.6108 301.9376 0011185 39.9574 320.2425 14.28108160 66155
IO-26
1 22826U 93061D 95226.14953617 -.00000005 00000-0 15607-4 0 04319
2 22826 98.6150 301.8467 0010211 54.2799 305.9331 14.27777237098043
AO-27
1 22825U 93061C 95226.19998989 -.00000012 00000-0 12662-4 0 04309
2 22825 98.6146 301.7889 0009671 53.4728 306.7345 14.27669191098048
PO-28
1 22829U 93061G 95226.14510180 .00000000 00000-0 17740-4 0 04039
2 22829 98.6066 301.9162 0010801 43.2459 316.9571 14.28088117098064
Mir
1 16609U 86017A 95226.60309509 .00006930 00000-0 99964-4 0 2015
2 16609 51.6446 225.2456 0003528 352.0572 8.0334 15.57235059542032

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
August 19, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1722. Weather sat I.F. bandwidth

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: tonyshep@aol.com
Message-ID: <40rcjd$3f8@newsbf02.news.aol.com>
Source record: 24430

Anyone have a simple solution for increasing the IF bandwidth of a scanner to the required 40 Khz. Currently the scanner has a 10.7 Mhz crystal filter and a 455 Khz second IF filter. Would it be possible to construct 2 or 3 pole passive band pass filters with surface mounted components to replace these? Any ideas would be appreciated.

Email- Tonyshep @AOL.COM

1723. Keplerian Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-08-15 00:00:00 UTC
From: mike@sccsi.com
Message-ID: <mike.25.00153346@sccsi.com>
Source record: 24431

I need info on how to obtain update keps on the internet. I was obtaining them on a weekly basis up until 3 weeks ago and they stopped. Not sure who's listserv I was subscribed to. Does anyone have any info?

Mike K5HDU mike@sccsi.com

1724. Re: Weather sat I.F. bandwidth

Newsgroup: rec.radio.amateur.space
Date: 1995-08-16 00:00:00 UTC
From: tfugate@pop.uky.edu
Message-ID: <40sn3q$mv@service1.uky.edu>
Source record: 24432

In article <40rcjd$3f8@newsbf02.news.aol.com>, tonyshep@aol.com (TONY SHEP) says:
>
>Anyone have a simple solution for increasing the IF bandwidth of a scanner
>to the required 40 Khz. Currently the scanner has a 10.7 Mhz crystal
>filter and a 455 Khz second IF filter. Would it be possible to construct
>2 or 3 pole passive band pass filters with surface mounted components to
>replace these? Any ideas would be appreciated.
>
>Email- Tonyshep @AOL.COM
The DRIG bbs has an artical for converting the BC100 into a wefax
receiver. Basicaly(if I am remembering correctly) they just replaced
the 455kc flilter with a 0.01uF cap. Spec-com ran a conversion for
the Kenwood R2000 that did the same thing. The R2000, a sw rig, also
had an optional VHF converter as sort of a plug in. The Specom artical
showed a way to have your cake and eat it too. They used a small DPDT
relay to either have the 455kc or the 0.01uF cap. I suspect that the same
idea might work for the Pro2004/5/6. The advantage of this over the
BC100, is the BC100 also required retuning the IF. If memory serves
me, you tunned to the other conversion product up ?2X10.7Mc? and rebais
the RF front end. The BC100 would almost have to be dedicated..of course
the BC100 should be cheap these days.
If you need the DRIG phone number and file name, just drop me a line.
Either here or Email. I do not have it here, but should still have the
data at home.
.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do represent
the official view of the University of Kentucky, the State of Kentucky, or
any agency of any government or agency. If you do not like my opinion,
just get on with your life. I will not change your mind and you damn sure
can not change mine."

1725. Re: KR-10 Rotor Control

Newsgroup: rec.radio.amateur.space
Date: 1995-08-16 00:00:00 UTC
From: jmaesr@aol.com
Message-ID: <40sqoj$g8h@newsbf02.news.aol.com>
Source record: 24433

I'm looking for any information on the KR-10 rotor control.
schematics, wiring, sources....

send e-mail Jmaes@aol.com or jimro@zimmer.csufresno.edu
Thank you very much for any help....

1726. Re: PARSEID Meteor Shower Questions?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-16 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Aug16.171536.29674@ke4zv.atl.ga.us>
Source record: 24434

In article im@hydra.carleton.ca (Ian McEachern VE3PFH) writes:
>References: <40dbfi$6ag@news.azstarnet.com> <1995Aug11.143205.7340@ke4zv.atl.ga.us>
>: I've been too busy to rig up something better, so I'll be using
>: 160 watts, 1200 baud, on 145.79 MHz into a vertical for this
>: shower. I may get excited enough to arrange better for the next
>: one, or at least get set back up on 6 meters.
>
>So Gary did you hear anything/make contact anywhere?

I'm still looking through the log file. It turns out that 145.79 is
the local APRS channel, with what looks like a HF gateway active.
I've got lots of packets recorded, I just dumped passall to a file,
but I don't know if any were via meteors. Because the channel is busy,
I didn't try to transmit.

>I had mine on receiving all weekend with a horizontal
>dipole, but heard nothing:-(

Bummer. Looks like this thing needs a bit more planning.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

1727. Re: PARSEID Meteor Shower Questions?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-16 00:00:00 UTC
From: im@hydra.carleton.ca
Message-ID: <DDELKC.7wr@cunews.carleton.ca>
Source record: 24435

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

: I've been too busy to rig up something better, so I'll be using
: 160 watts, 1200 baud, on 145.79 MHz into a vertical for this
: shower. I may get excited enough to arrange better for the next
: one, or at least get set back up on 6 meters.

So Gary did you hear anything/make contact anywhere?

I had mine on receiving all weekend with a horizontal
dipole, but heard nothing:-(

Ian
--
Ian A. McEachern, VE3PFH | Try our new www server:
Packet Working Group, Ottawa A.R.C. | http://hydra.carleton.ca/
im@hydra.carleton.ca | Interesting stuff about packet
http://hydra.carleton.ca/~im/im.html | radio & our 56kbps radio LAN

1728. Dove S-Band Beacon ?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: Benno Stabernack <staberna@hhi.de>
Message-ID: <40v1j9$7f5@brachio.zrz.TU-Berlin.DE>
Source record: 24436

Hi all sat users,

does anybody knows if the S-Band beacon of DOVE OSCAR-17 is still on, and if which frequency is used ?

I want to test my homebrew Mode-S equipment (16 turn helix with direct mounted homebrew downconverter) with the beacons of DOVE and AO-13.

Thanks in advance ...

Benno Stabernack (DD6RF)

1729. i need help getting 2 line keps for sts dave ransons program pre formated would be great

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: dig@mail.webex.com
Message-ID: <40ucbs$3lf@wa4mei.radio.org>
Source record: 24437

[No readable article body recovered]

1730. Amateur Radio Satellite Predictions for the UK

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: Dave Johnson <badger@parallax.co.uk>
Message-ID: <40ur33$tbf@red.parallax.co.uk>
Source record: 24438

I have set up a Web page which contains Amateur Radio Satellite Predictions for the UK. It covers 13 cities and gives every AOS and LOS etc for a period of 7 days.

The URL is http://www.parallax.co.uk/~badger/predict

The Keps and data are updated at midnight each day. If you find it useful, or if you can recommend any improvements please let me know.

Dave Johnson, G4DPZ
AMSAT-UK 1267
badger@parallax.co.uk
g4dpz@cix.compulink.co.uk
g4dpz@g4dpz.demon.co.uk

1731. Re: Weather sat I.F. bandwidth

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: donr@mdsroc.com
Message-ID: <40vgtc$suj@mdsroc.com>
Source record: 24439

In article <40sn3q$mv@service1.uky.edu>, tfugate@pop.uky.edu says...
>
>In article <40rcjd$3f8@newsbf02.news.aol.com>, tonyshep@aol.com (TONY
SHEP) says
>:
>>
>>Anyone have a simple solution for increasing the IF bandwidth of a
scanner
>>to the required 40 Khz. Currently the scanner has a 10.7 Mhz crystal
>>filter and a 455 Khz second IF filter. Would it be possible to construct
>>2 or 3 pole passive band pass filters with surface mounted components to
>>replace these? Any ideas would be appreciated.
>>
>>Email- Tonyshep @AOL.COM
>The DRIG bbs has an artical for converting the BC100 into a wefax
>receiver. Basicaly(if I am remembering correctly) they just replaced
>the 455kc flilter with a 0.01uF cap. Spec-com ran a conversion for
>the Kenwood R2000 that did the same thing.
>Terry Fugate
>UKTV
>University of Kentucky

The .1 uf cap fix will sort of work (That's what I started with) but the
IR images will not be good at all. The IR images are much brighter and
that makes the modulation wider. I was getting excellent images of
visable but not IR. Multi-Fax is roumored to be comming out with a new
converted scanner but unlike Spec-Com they are DESIGNING new IF's for it.
THey will be using double tuned IFs like Vanguard. Thus you get a
synthisized, sensitive receiver in a nice enclosure that can even receive
the weather broadcasts. I don't know what they will be asking for their
new receiver but it won't be much and it will WORK! I can't wait to place
an order!

--
Don Russ Microwave Data Systems
Advanced Development Engineer a California Microwave Co.
N2CZL@WB2PSI.wny.ny.usa.na donr@mdsroc.com
_ /| SUPPORT AMSAT
\'o.O' Bill in 96!
=(___)=
U Ack!

1732. Re: NOAA decoder wanted!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: moritz@ipers1.e-technik.uni-stuttgart.de
Message-ID: <40vohk$11fe@info4.rus.uni-stuttgart.de>
Source record: 24440

>I am looking for a program which is able to decode the NOAA signals (for
>PC)? Who knows such a program? From where can i get it?

Chris,

JVFAX 6.0 or roundabout does just this rather well. It's a PD
program on the HAM-FTP sites. Only you need a hardware decoder
to digitize the AM audio. The "Harifax" is quite cheap and good.

There may be programs around that work with a soundblaster, not sure though.

73, Moritz DL5UH

1733. Re: Dove S-Band Beacon ?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: rargyle@cc.weber.edu
Message-ID: <17AUG199511470959@cc.weber.edu>
Source record: 24441

In article <40v1j9$7f5@brachio.zrz.TU-Berlin.DE>, Benno Stabernack <staberna@hhi.de>
writes...
:Hi all sat users,

:does anybody knows if the S-Band beacon of DOVE OSCAR-17 is still on, and if
:which frequency is used ?

:I want to test my homebrew Mode-S equipment (16 turn helix with direct mounted
: homebrew downconverter) with the beacons of DOVE and AO-13.

:Thanks in advance ...

:Benno Stabernack (DD6RF)

As of 14-Aug, DO-17's text message (dated 16-July) says the S-band is off.
Frequency is 2.401221 GHz.

Bob Argyle kb7kcl rargyle@cc.weber.edu

1734. Re: NOAA decoder wanted!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: tfugate@pop.uky.edu
Message-ID: <4106mu$4uv@service1.uky.edu>
Source record: 24442

In article <40vohk$11fe@info4.rus.uni-stuttgart.de>,
moritz@ipers1.e-technik.uni-stuttgart.de () says:
>
>>I am looking for a program which is able to decode the NOAA signals (for
>>PC)? Who knows such a program? From where can i get it?
>
>Chris,
>
>JVFAX 6.0 or roundabout does just this rather well. It's a PD
>program on the HAM-FTP sites. Only you need a hardware decoder
>to digitize the AM audio. The "Harifax" is quite cheap and good.
>
>There may be programs around that work with a soundblaster, not sure though.
>
>73, Moritz DL5UH
JVFAX 7.0 is out and is better than 6.0. If you have a real Sound
Blaster card, try the SBDSP. There are atleast two versions. You will
also need APTCAP40. I think both the ARRL and AMSAT ftp sites have both.
I have not had any luck with this route. I suspect that I am just miss-
understanding something.
The JVFAX route works great. It is at the AMSAT ftp site. It works
best with a real am demod feeding an a>d converter. But the author
includes a diagram for a ?2211 am demod>>fm mod that you feed to a simple
op amp circuit. It will cost you less than $10(us) or so to get up by
the "simplest" route.
Mr. Felix looks great out in the Atlantic(via NOAA 12).

.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do represent
the official view of the University of Kentucky, the State of Kentucky, or
any agency of any government or agency. If you do not like my opinion,
just get on with your life. I will not change your mind and you damn sure
can not change mine."

1735. Re: Weather sat I.F. bandwidth

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: elesol@aol.com
Message-ID: <4109ke$jg0@newsbf02.news.aol.com>
Source record: 24443

Tony, this is not an answer to your question about the homemade filters but i do know that you can purchase the 40khz filters from Hamtronics, Hilton, NY. They sell a set of the 455khz and 10.7 mhz filters for around $25 for the pair. I have modified several receivers just by by-passing the 10.7 mhz filter with a 470 pf capacitor and then purchasing a 40khz filter for the 455khz. This gives very usable results.
Also i have obtained very satisfactory results with just a standard off-the-shelf receiver.

Hope this is of any help!

1736. BBC World Service on Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: navsaria@bu.edu
Message-ID: <410akn$hkf@news.bu.edu>
Source record: 24444
Cross-posted to: rec.radio.amateur.space,rec.video.satellite.dbs,rec.video.satellite.misc

Hi, satellite folks. I know close to nothing about satellites, so please bear with me on this question.

I'd like to know what the cheapest/easiest way to receive the BBC World Service via satellite in the United States is. My father-in-law and I were wondering if the new RCA 18" dishes would suffice or not.

BBC World Service to North America is on Satcom C3, 131 degrees West, C-Span transponder, vertical polarisation, 3.840 GHz on an audio subcarrier frequency of 5.41 MHz.

I'd appreciate direct responses (I'll be make a few trips here and there and could get behind in newsreading) so we can also conserve bandwidth -- I'll summarize if there's interest...

Thanks in advance,
Dipesh
(navsaria@bu.edu)

1737. Re: Weather sat I.F. bandwidth

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: tonyshep@aol.com
Message-ID: <410g9e$lq7@newsbf02.news.aol.com>
Source record: 24445

Thanks for the reply. Post a message when you find out more about the
Multifax rec.
Tony KD4EQT

1738. NOAA decoder wanted!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: oe5kco@sbox.tu-graz.ac.at
Message-ID: <40vhmu$9ah@freewill.tu-graz.ac.at>
Source record: 24446

Hello!
I am looking for a program which is able to decode the NOAA signals (for PC)? Who knows such a program? From where can i get it?

Chris alias OE5KCO
--
Christian Koubek alias oe5kco@sbox.tu-graz.ac.at

1739. Re: Internet by satellite.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: g8tzj@ve4umr.ampr.ORG
Message-ID: <179@ve4umr.ampr.org>
Source record: 24447

>Is it possible to connect to Compuserve and/or Internet via his
>own satellite ground station?

Certainly not via amateur radio satellites. You might get store and forward email facilities via the VITA or SATELIFE satellites (sorry I dont have a contact number / address).

I guess the other option is an Inmarsat type portable telephone mobile uplink. Probably expensive but it should work. It did work for the UN inspectors that got blockaded in Iraq some time ago.

Andrew G8TZJ @ AMSAT.ORG

1740. Re: G500 motors

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: g8tzj@ve4umr.ampr.ORG
Message-ID: <177@ve4umr.ampr.org>
Source record: 24448

>From: n7ryw@teleport.com (William Roth)
>>I have built into the control unit current sensing so that in the event of
>>an overload the power is cut-off.
>I'm wondering just what kind of circuit you used. I have designed a PC board

Its not my design. It is part of a larger design for computer antenna control
from VHF Communications magazine 4/1979 Yes 79!

The return current from the motor passes through 3 x 1 ohm 1 Watt resistors in
parallel, the voltage so developed is applied to a pre-set pot to vary the
cut-off point and the slider goes to the base of an NPN transistor.
This is bufferd through another transistor, which in the event of an overload
operates a self-latching relay to disconnect the 26v ac to the motor.

If you are interested I can always draw up a rough diagram in GIF / JPG and
uucode it. I only have email facilities here.

>>The only problem I have had is water getting into the bearings and corroding
>>them. I have since waterproofed them to try and prevent this in the future.
>I wish the manufacturers would seal their units, and this includes pre-amps
>too. There is no longer any good reason not to.

Now surely you dont need me to tell you why they dont :-)

As for pre-amps, over this side of the pond there is a company called Mutek
that makes excellent pre-amps in IP rated enclosures. I have 2m and 70 cms
units of theirs and no water problems. (Or at least I did not until I wrote
this !)

73 Andrew G8TZJ @ AMSAT.ORG

1741. Mail failure

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: POSTMASTER@crmain.msmail.uthscsa.EDU
Message-ID: <01HU6BA4Y1R600351U@uthscsa.edu>
Source record: 24449

FROM: Adminstrator
TO: Ham-Space Mailing List and Newsgroup DATE: 08-17-95
TIME: 09:27
SUBJECT: Mail failure

User mail failed mailing to mailbag (file contention):
UTHSCSA/CRMAIN/muenzlerk

FROM: Ham-Space Mailing List and Newsgroup (SMTP:ham-space@ucsd.edu)

TO: SMTP:Ham-Space@ucsd.edu

SUBJECT: Ham-Space Digest V95 #220

Ham-Space Digest Thu, 17 Aug 95 Volume 95 : Issue 220

Today's Topics:
Higher Speed Digital Satellites??
KR-10 Rotor Control
LNAs and Peltier Cooling
PARSEID Meteor Shower Questions?
Weather sat I.F. bandwidth

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Tue, 15 Aug 1995 17:52:35 -0500
From: n9syw@w9yt.engr.wisc.edu (Reid H. Savage)
Subject: Higher Speed Digital Satellites??

Are there any higher speed amateur digital satellites being planned?
(19.2k baud or faster) Adding 56k+ baud cability would greatly
enhance performance on low orbit satelites. It would allow modes like
digital voice and crosslinking of multiple satellites. I've heard rumors
that phase IIID might offer T1 speeds? That sounds great.

But it's unwise to have all our faster digital hopes based on one one
satelite with no backup. We should also be building relitivly cheap
high speed digital satellites in low to medium orbits.
Anyways I do hope the designers of phase IIID are planning for the
future and implement 1.5 Mbps channels. This would allow for some
very powerfull capibilities in amateur radio.

Date: 16 Aug 1995 09:10:43 -0400
From: jmaesr@aol.com (JmaesR)
Subject: KR-10 Rotor Control

I'm looking for any information on the KR-10 rotor control.
schematics, wiring, sources....

send e-mail Jmaes@aol.com or jimro@zimmer.csufresno.edu
Thank you very much for any help....

Date: 15 Aug 1995 19:10:00 GMT
From: mbv@ti.com (ken)
Subject: LNAs and Peltier Cooling

In article <40nglg$1b5k@news.doit.wisc.edu>, Kevin Shea
<mashea@students.wisc.edu> says:
>
>Has anyone used a peltier thermo chip to cool an LNA to get lower noise?
>Kevin
>shea4460@macc.wisc.edu
>
>Kevin, it would probably be less expensive in the long run to replace
the GasFet in the first stage with a lower noise device and to use a
GasFet for the second stage also. The Peltier cooler is not very effecient
and will require lots of current and a big heat sink for the heat side
Moisture will be a problem on the cold side due to condensation. I don't
have the numbers for noise figure vs. temperature handy, but the improvement
would be small from cooling unless you used some kind of liquid gas or
other method to get a large temperature reduction.

Ken Durham K5MBV mbv@ti.com

Date: Wed, 16 Aug 1995 12:33:48 GMT
From: im@hydra.carleton.ca (Ian McEachern VE3PFH)
Subject: PARSEID Meteor Shower Questions?

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

: I've been too busy to rig up something better, so I'll be using
: 160 watts, 1200 baud, on 145.79 MHz into a vertical for this
: shower. I may get excited enough to arrange better for the next

: one, or at least get set back up on 6 meters.

So Gary did you hear anything/make contact anywhere?

I had mine on receiving all weekend with a horizontal
dipole, but heard nothing:-(

Ian
--
Ian A. McEachern, VE3PFH | Try our new www server:
Packet Working Group, Ottawa A.R.C. | http://hydra.carleton.ca/
im@hydra.carleton.ca | Interesting stuff about packet
http://hydra.carleton.ca/~im/im.html | radio & our 56kbps radio LAN

Date: 16 Aug 1995 12:08:26 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: Weather sat I.F. bandwidth

In article <40rcjd$3f8@newsbf02.news.aol.com>, tonyshep@aol.com (TONY SHEP)
says:
>
>Anyone have a simple solution for increasing the IF bandwidth of a scanner
>to the required 40 Khz. Currently the scanner has a 10.7 Mhz crystal
>filter and a 455 Khz second IF filter. Would it be possible to construct
>2 or 3 pole passive band pass filters with surface mounted components to
>replace these? Any ideas would be appreciated.
>
>Email- Tonyshep @AOL.COM
The DRIG bbs has an artical for converting the BC100 into a wefax
receiver. Basicaly(if I am remembering correctly) they just replaced
the 455kc flilter with a 0.01uF cap. Spec-com ran a conversion for
the Kenwood R2000 that did the same thing. The R2000, a sw rig, also
had an optional VHF converter as sort of a plug in. The Specom artical
showed a way to have your cake and eat it too. They used a small DPDT
relay to either have the 455kc or the 0.01uF cap. I suspect that the same
idea might work for the Pro2004/5/6. The advantage of this over the
BC100, is the BC100 also required retuning the IF. If memory serves
me, you tunned to the other conversion product up ?2X10.7Mc? and rebais
the RF front end. The BC100 would almost have to be dedicated..of course
the BC100 should be cheap these days.
If you need the DRIG phone number and file name, just drop me a line.
Either here or Email. I do not have it here, but should still have the
data at home.
.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do represent
the official view of the University of Kentucky, the State of Kentucky, or
any agency of any government or agency. If you do not like my opinion,

just get on with your life. I will not change your mind and you damn sure
can not change mine."

End of Ham-Space Digest V95 #220
****

1742. Mail failure

Newsgroup: rec.radio.amateur.space
Date: 1995-08-17 00:00:00 UTC
From: POSTMASTER@crmain.msmail.uthscsa.EDU
Message-ID: <01HU6BAD9UL200351U@uthscsa.edu>
Source record: 24450

FROM: Adminstrator
TO: Ham-Space Mailing List and Newsgroup DATE: 08-17-95
TIME: 09:27
SUBJECT: Mail failure

User mail failed mailing to mailbag (file does not exist):

FROM: Ham-Space Mailing List and Newsgroup (SMTP:ham-space@ucsd.edu)

TO: SMTP:Ham-Space@ucsd.edu

SUBJECT: Ham-Space Digest V95 #220

Ham-Space Digest Thu, 17 Aug 95 Volume 95 : Issue 220

Today's Topics:
Higher Speed Digital Satellites??
KR-10 Rotor Control
LNAs and Peltier Cooling
PARSEID Meteor Shower Questions?
Weather sat I.F. bandwidth

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Tue, 15 Aug 1995 17:52:35 -0500
From: n9syw@w9yt.engr.wisc.edu (Reid H. Savage)
Subject: Higher Speed Digital Satellites??

Are there any higher speed amateur digital satellites being planned?
(19.2k baud or faster) Adding 56k+ baud cability would greatly
enhance performance on low orbit satelites. It would allow modes like
digital voice and crosslinking of multiple satellites. I've heard rumors
that phase IIID might offer T1 speeds? That sounds great.
But it's unwise to have all our faster digital hopes based on one one

satelite with no backup. We should also be building relitivly cheap
high speed digital satellites in low to medium orbits.
Anyways I do hope the designers of phase IIID are planning for the
future and implement 1.5 Mbps channels. This would allow for some
very powerfull capibilities in amateur radio.

Date: 16 Aug 1995 09:10:43 -0400
From: jmaesr@aol.com (JmaesR)
Subject: KR-10 Rotor Control

I'm looking for any information on the KR-10 rotor control.
schematics, wiring, sources....

send e-mail Jmaes@aol.com or jimro@zimmer.csufresno.edu
Thank you very much for any help....

Date: 15 Aug 1995 19:10:00 GMT
From: mbv@ti.com (ken)
Subject: LNAs and Peltier Cooling

In article <40nglg$1b5k@news.doit.wisc.edu>, Kevin Shea
<mashea@students.wisc.edu> says:
>
>Has anyone used a peltier thermo chip to cool an LNA to get lower noise?
>Kevin
>shea4460@macc.wisc.edu
>
>Kevin, it would probably be less expensive in the long run to replace
the GasFet in the first stage with a lower noise device and to use a
GasFet for the second stage also. The Peltier cooler is not very effecient
and will require lots of current and a big heat sink for the heat side
Moisture will be a problem on the cold side due to condensation. I don't
have the numbers for noise figure vs. temperature handy, but the improvement
would be small from cooling unless you used some kind of liquid gas or
other method to get a large temperature reduction.

Ken Durham K5MBV mbv@ti.com

Date: Wed, 16 Aug 1995 12:33:48 GMT
From: im@hydra.carleton.ca (Ian McEachern VE3PFH)
Subject: PARSEID Meteor Shower Questions?

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

: I've been too busy to rig up something better, so I'll be using
: 160 watts, 1200 baud, on 145.79 MHz into a vertical for this
: shower. I may get excited enough to arrange better for the next
: one, or at least get set back up on 6 meters.

So Gary did you hear anything/make contact anywhere?

I had mine on receiving all weekend with a horizontal
dipole, but heard nothing:-(

Ian
--
Ian A. McEachern, VE3PFH | Try our new www server:
Packet Working Group, Ottawa A.R.C. | http://hydra.carleton.ca/
im@hydra.carleton.ca | Interesting stuff about packet
http://hydra.carleton.ca/~im/im.html | radio & our 56kbps radio LAN

Date: 16 Aug 1995 12:08:26 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: Weather sat I.F. bandwidth

In article <40rcjd$3f8@newsbf02.news.aol.com>, tonyshep@aol.com (TONY SHEP)
says:
>
>Anyone have a simple solution for increasing the IF bandwidth of a scanner
>to the required 40 Khz. Currently the scanner has a 10.7 Mhz crystal
>filter and a 455 Khz second IF filter. Would it be possible to construct
>2 or 3 pole passive band pass filters with surface mounted components to
>replace these? Any ideas would be appreciated.
>
>Email- Tonyshep @AOL.COM
The DRIG bbs has an artical for converting the BC100 into a wefax
receiver. Basicaly(if I am remembering correctly) they just replaced
the 455kc flilter with a 0.01uF cap. Spec-com ran a conversion for
the Kenwood R2000 that did the same thing. The R2000, a sw rig, also
had an optional VHF converter as sort of a plug in. The Specom artical
showed a way to have your cake and eat it too. They used a small DPDT
relay to either have the 455kc or the 0.01uF cap. I suspect that the same
idea might work for the Pro2004/5/6. The advantage of this over the
BC100, is the BC100 also required retuning the IF. If memory serves
me, you tunned to the other conversion product up ?2X10.7Mc? and rebais
the RF front end. The BC100 would almost have to be dedicated..of course
the BC100 should be cheap these days.
If you need the DRIG phone number and file name, just drop me a line.
Either here or Email. I do not have it here, but should still have the
data at home.
.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do represent
the official view of the University of Kentucky, the State of Kentucky, or
any agency of any government or agency. If you do not like my opinion,
just get on with your life. I will not change your mind and you damn sure
can not change mine."

```
------------------------------

End of Ham-Space Digest V95 #220
******************************
```

1743. Re: Higher Speed Digital Satellites??

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <41351r$qlk@paperboy.ids.net>
Source record: 24265

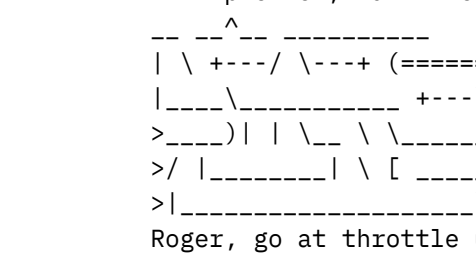
In article <n9syw-1508951752350001@f181-111.net.wisc.edu> Reid H. Savage, n9syw@w9yt.engr.wisc.edu writes:
>We should also be building relitivly cheap
>high speed digital satellites in low to medium orbits.

Relatively cheap????? That qualifies as an understatement in the same class as "Houston, We've had a problem".

I would certainly like more high speed digital satellites, but are you aware of the cost and effort invovled in building and launching such a bird????????

If the AMSAT members want such a project - and are willing to fund it, then it would certainly be an excellent project for the future, after Phase 3-D is in operation. In some ways it might even be easier to operate.

But I think you've underestimated the effort needed to do such a project.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1744. Crossed dipole for RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: n2elw@ix.netcom.com
Message-ID: <410vjg$dti@ixnews7.ix.netcom.com>
Source record: 24451

I have heard that some folks are having good results receiving RS-15 using a preamp with a 10 meter crossed dipole. Does anybody have any idea how long the phasing stub has to be for a 10 meter crossed dipole?

Larry N2ELW

1745. Re: Higher Speed Digital Satellites??

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <411drp$8v8@maureen.teleport.com>
Source record: 24452

In article <n9syw-1508951752350001@f181-111.net.wisc.edu>,
n9syw@w9yt.engr.wisc.edu said...
>
>Are there any higher speed amateur digital satellites being planned?
>(19.2k baud or faster) Adding 56k+ baud cability would greatly
>enhance performance on low orbit satelites. It would allow modes like
>digital voice and crosslinking of multiple satellites.

I am in favor of higher speeds as well. The load on the present 9600 bps sats is maxed out when they are over populated areas. The biggest problem is in getting enough power to put out a readable signal from the satellite. The size of the sats are very limited, and there is only so much area for solar panels. There are some modulation schemes that conserve power, but the cost of the modems and special RF gear is pretty extreme.

>I've heard rumors
>that phase IIID might offer T1 speeds? That sounds great.

Actually, user links will probably be at 9600 bps. These will link to groundstations through the satellite at high speed (64k) and allow for some really BIG storage availability.

>But it's unwise to have all our faster digital hopes based on one one
>satelite with no backup. We should also be building relitivly cheap
>high speed digital satellites in low to medium orbits.
>Anyways I do hope the designers of phase IIID are planning for the
>future and implement 1.5 Mbps channels. This would allow for some
>very powerfull capibilities in amateur radio.

It would be nice, but the expense to a ground station to be able to receive at that speed would be very large. There's a lot more to it than just a $300.00 modem. 64k is starting to come down in price, and will much more now that ISDN is (finally) coming around. For now, I think it best we take it one step at a time and try for the 64k and get that tested and affordable. Then, lets move up some.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1746. Re: LNAs and Peltier Cooling

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: StaZyr@Lin.FOA.SE
Message-ID: <StaZyr-1808951326200001@stazyr.lin.foa.se>
Source record: 24453
Cross-posted to: rec.radio.amateur.space,sci.electronics

In article <40nglg$1b5k@news.doit.wisc.edu>, Kevin Shea
<mashea@students.wisc.edu> wrote:

> Has anyone used a peltier thermo chip to cool an LNA to get lower noise?
> I know this kind of thing is done in professional systems, but I'm wondering
> can an amateur do it?
>
> Specifically, I have a LNA for Weather Satellites (1.7 GHz) it has a noise
> figure of less than 1.0 dB. Could I simply mount the pelitier chip on the
> LNA box and cool it's contents? BTW it is a two stage LNA using a GaAs FET
> for the first stage and a MMIC for the second stage. It will be mounted at
> the feed on the dish.
>
> Thanks for any ideas, comments or suggestions.
>
> Kevin
> shea4460@macc.wisc.edu
>
>
>
> --
> **
> * Kevin G. Shea N9JKP *
> * 4460 Dahmen Pass *
> * Cross Plains, WI 53528 USA *
> * 608.789.4326,voice; 608.798.1747,fax *
> **

The answer is yes, if you can afford it. This type of termo electric
coolers are multi-stage Peltier-cascades. (single stage coolers do not
give a temperature difference enough) Those cascades look like small
pyramids, where the coolest surface is the smallest, because underlying
elements cool the preceeding, including their losses. All surfaces but the
outermost must be thermally isolated in a tight fashion, (use thermal
foam) in order to minimize dimensions (cost). The temperature limit is
somewhere between -90deg C to -100deg C. This makes them excellent
replacements for liquid nitrogen. The Peltier type of cooler is frequently
used to cool IR-detectors. First stage cooling of radio receivers are more
often done at considerably lower temperature and this excludes the TEC
although the use of this kind of cooler could not be more simple.

Stan SM7EIR

1747. Mail Failure - Apology

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: MUENZLERK@uthscsa.edu
Message-ID: <01HU81X7EAAA004FRS@uthscsa.edu>
Source record: 24454
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

My apologies to the list(s). We had a system failure on our end.
It has been corrected.

Kevin, WB5RUE
muenzlerk@uthscsa.edu

1748. RE: Mail Failure

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: MUENZLERK@uthscsa.edu
Message-ID: <01HU7W53QW8I0040Q6@uthscsa.edu>
Source record: 24455
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

My apologies to the list(s). We had a system failure on our end.
It has been corrected.

Kevin, WB5RUE
muenzlerk@uthscsa.edu

1749. Re: LET'S TALK 1-800-770-6120

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: landisj@nad.com
Message-ID: <1995Aug18.141445.345@nad.com>
Source record: 24456

In article <412a0f$684@usenetz1.news.prodigy.com>, LPAQ98D@prodigy.com (Mary Smith) writes:
> I'm hot to trot. Call me now and we'll get it on. 1-800-770-6120
>

Hey Mary,
I'd tell you where to ram this crap, but you'd probably only get hotter.

Why don't we all call this number from a pay phone?

Joe - AA3GN
--
Joe Landis - Systems and Network Manager - North American Drager - Telford, PA
landisj@nad.com ..speaking only for myself, of course..

1750. Re: Crossed dipole for RS-15

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <4122jn$4m4@nnrp3.primenet.com>
Source record: 24457

In <410vjg$dti@ixnews7.ix.netcom.com>, n2elw@ix.netcom.com (Larry Makoski) writes:
>I have heard that some folks are having good results receiving RS-15
>using a preamp with a 10 meter crossed dipole. Does anybody have any
>idea how long the phasing stub has to be for a 10 meter crossed dipole?
>
>Larry N2ELW

73 Magazine July 1990 p. 42 "Turnstile Antennas"

This article is what you are looking for. It uses RG-62, 100 ohm coax for the phasing line. Length for 28.5 MHz is listed as 82.76 in. and dipole length of 98.5 in. Satellite Experimenter's Handbook also has a short article, chap. 8 p. 17., 2nd ed.
If you can't find RG62 at your normal source, try a computer calbe or network installer. It is usually used in network apps. I salvaged 200 feet from a remodeled office building.

Jim N7TCF

1751. Re: LNAs and Peltier Cooling

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: blanton@ni.net
Message-ID: <blanton-1808950718000001@xband.ni.net>
Source record: 24458
Cross-posted to: rec.radio.amateur.space,sci.electronics

In article <40nglg$1b5k@news.doit.wisc.edu>, Kevin Shea
<mashea@students.wisc.edu> wrote:

> Has anyone used a peltier thermo chip to cool an LNA to get lower noise?
> Specifically, I have a LNA for Weather Satellites (1.7 GHz) it has a noise
> figure of less than 1.0 dB. Could I simply mount the pelitier chip on the
> LNA box and cool it's contents? BTW it is a two stage LNA using a GaAs FET
> for the first stage and a MMIC for the second stage. It will be mounted at
> the feed on the dish.

If your noise figure is already less than 1.0 dB the most you can expect
to gain is a few tenths of a dB in SNR. It hardly seems worth the time or
trouble.

My employer used some Peltier coolers on a Ku-band GaAs FET LNA in the
early 1980s. It was a military project that has deep pockets. One of the
problems they had was that the LNAs kept icing up. Within a few years
there were GaAs FET amplifiers on the market that achieved lower noise
figures without cooling than the expensive and troublesome cooled ones
that they built.

Cheers,

J. Lee Blanton, WA8YBT/6

1752. Re: APT receiving

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: Chris Oesterling <chris@angus.mystery.com>
Message-ID: <JHk20c1w165w@angus.mystery.com>
Source record: 24459

Tom Woolner <Tom@woolner.demon.co.uk> writes:

> Hello Tobias,
>
> At present NOAA 12 is on and uses 137.5 MHz, NOAA 14 is on and uses 137.62 MH
> NOAA 9 is off at present due to polar coincidence with NOAA 14 because they
> share the same APT channel. Unless something has gone wrong on NOAA 9, we
> should expect it to return in a few days, as usual.
>
> I hope this helps you,
>
> regards
> --- Tom Woolner --

Well 9 is dead (APT at least). It was launched in 1984 so I'm sure
NOAA can't be too upset. - Chris

--
Chris Oesterling (chris@angus.mystery.com)
Mystery Spot BBS, Royal Oak, MI --?--

1753. Re: NOAA decoder wanted!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: greg@core.rose.hp.com
Message-ID: <DDJ02u.8s6@icon.rose.hp.com>
Source record: 24460

Terry Fugate (tfugate@pop.uky.edu) wrote:
: JVFAX 7.0 is out and is better than 6.0. If you have a real Sound
: Blaster card, try the SBDSP. There are atleast two versions. You will
: also need APTCAP40. I think both the ARRL and AMSAT ftp sites have both.
: I have not had any luck with this route. I suspect that I am just miss-
: understanding something.
: The JVFAX route works great. It is at the AMSAT ftp site. It works
: best with a real am demod feeding an a>d converter. But the author
: includes a diagram for a ?2211 am demod>>fm mod that you feed to a simple
: op amp circuit. It will cost you less than $10(us) or so to get up by
: the "simplest" route.

JVFAX does work well, but with the simple opamp decoder it only works on the FM Fax signals, i.e. HF WEFAX. If you happen to live in the wrong place (as I do), you may not be able to hear the station you want. I can get really nice images of weather out in the Atlantic Ocean, or over in China, but the west coast (Tx in San Francisco, I think) can't be heard from my QTH.

The SoundBlaster + SBDSP may work better - I've only tried it on one pass, and got a rather wierd image. Definitely needs work. But there WAS an image!

For the IF Filter problem, check out EEB. The Icom R-7000 receiver I purchased used had a 30khz (?) filter added in place of one of the stock ones by them.

Good luck,

Greg KO6TH

1754. Re: Internet by satellite.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: j austin <74733.2407@CompuServe.COM>
Message-ID: <412nvf$97s$2@mhadf.production.compuserve.com>
Source record: 24461

inmarsat is very expensive when you have other means of
ditigal/analog transfer. gm/hughes, att and others offer
datalinks for monthly service fees but i don't know what they are
now. i heard the telecom canada has taken a transponder and put
it to amateur vhf repeater use. i can't confirm the report.
-73 de jeff n8vna
remember "when all else fails, ham radio will be there."

--
j austin

1755. Icom R7000 used on sats?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <4128ma$e0u@news.internetmci.com>
Source record: 24462

Does anyone use an ICOM R7000 out there for sat work. Was thinking that the versatility of narrow and wideband FM with wide receive range might be great for one side of the equation. Looking to to together the peices so opinions would be most helpful.

Thanks in advance and vry 73's

--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

1756. Re: LNAs and Peltier Cooling

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: blanton@ni.net
Message-ID: <blanton-1808952126590001@xband.ni.net>
Source record: 24463
Cross-posted to: rec.radio.amateur.space,sci.electronics

In article <blanton-1808950718000001@xband.ni.net>, blanton@ni.net (J. L. Blanton) wrote:

> If your noise figure is already less than 1.0 dB the most you can expect
> to gain is a few tenths of a dB in SNR. It hardly seems worth the time or
> trouble.

I must correct my own statement. With the cold sky as background, cooling the LNA could potentially produce an SNR improvement greater than 1 dB. (Sorry about the slip...I'm more accustomed to thinking about downward-looking systems.) Good luck if you try it.

73,
Lee Blanton, WA8YBT/6

1757. Seeking M2 Eggbeater Antenna Experiences

Newsgroup: rec.radio.amateur.space
Date: 1995-08-18 00:00:00 UTC
From: regross1@aol.com
Message-ID: <413fvs$fif@newsbf02.news.aol.com>
Source record: 24464

I am considering ordering the 2m and 70 cm set of eggbeater antennas from M-square and am looking for someone who has actually used them for satellite communications. I plan to use them with an ICOM 820H and two TE Systems 160 watt output amplifiers having internal preamplifiers. Premium coax in anticipated in lengths of less than 75 feet.

How effective are they? What are their benefits and limitations. I expect to ultimately have to use them in a housing development with covenants against outside antennas. I would consider putting them high in the attic. If you have any experiences with a similar arrangement, please share them.
Robert E. Gross (KE3EM)
REGROSS1@aol.com

1758. Tracking software for Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-08-19 00:00:00 UTC
From: michael@rig-uk.demon.co.uk
Message-ID: <michael-1908951023350001@rig-uk.demon.co.uk>
Source record: 24266

Does anyone know a source of shareware or freeware satellite tracking programs for Apple Macintosh. I also need software etc. to control Azimuth and Elevation rotators also for Apple Macintosh.

Please reply by e-mail to michael@rig-uk.demon.co.uk

Many thanks

Michael G6HOM

1759. ARLK041 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-08-19 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk041.1995@ampr.org>
Source record: 24267
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK041
ARLK041 Keplerian data

ZCZC SK66
QST de W1AW
Keplerian Bulletin 41 ARLK041
From ARRL Headquarters
Newington, CT August 19, 1995
To all radio amateurs

SB KEP ARL ARLK041
ARLK041 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95226.51733708 -.00000116 00000-0 10000-3 0 3705
2 14129 26.4564 253.3162 5988239 301.4565 13.4548 2.05880986 63534
RS-10/11
1 18129U 87054A 95228.93036143 .00000014 00000-0 -11485-5 0 01082
2 18129 82.9227 014.1607 0010460 288.0801 71.9213 13.72355143408302
UO-11
1 14781U 84021B 95229.54203609 .00000093 00000-0 23592-4 0 8202
2 14781 97.7839 229.2041 0012056 351.5234 8.5766 14.69367839612910
RS-12/13
1 21089U 91007A 95229.58964511 .00000029 00000-0 15222-4 0 8236
2 21089 82.9202 55.2393 0030224 4.4890 355.6524 13.74059625227203
AO-13
1 19216U 88051B 95228.57297674 .00000179 00000-0 -70646-4 0 787
2 19216 57.4738 170.0259 7320488 16.2994 358.0904 2.09719719 23438
UO-14
1 20437U 90005B 95229.17102732 .00000009 00000-0 20427-4 0 01260
2 20437 98.5663 312.5580 0011702 23.2712 336.8999 14.29894154290462
RS-15
1 23439U 94085A 95229.16885687 -.00000039 00000-0 10000-3 0 711
2 23439 64.8132 156.3621 0167370 251.5947 106.6714 11.27524700 26392
AO-16
1 20439U 90005D 95229.21046948 -.00000013 00000-0 11846-4 0 09206
2 20439 98.5776 314.3474 0012135 23.2271 336.9467 14.29947970290480
```

```
DO-17
1 20440U 90005E 95229.19293643 -.00000010 00000-0 12904-4 0 09259
2 20440 98.5793 314.8188 0012359 22.1985 337.9738 14.30089335290505
WO-18
1 20441U 90005F 95229.17643459 .00000001 00000-0 17121-4 0 09336
2 20441 98.5790 314.7703 0012980 22.2889 337.8857 14.30060619290504
LO-19
1 20442U 90005G 95229.19486796 -.00000001 00000-0 16510-4 0 09228
2 20442 98.5803 315.1676 0013223 21.1182 339.0546 14.30163800290526
FO-20
1 20480U 90013C 95229.22486822 -.00000042 00000-0 -30715-4 0 08298
2 20480 99.0717 306.4754 0541220 95.1656 271.1415 12.83231229258777
AO-21
1 21087U 91006A 95229.01296724 .00000094 00000-0 82657-4 0 6231
2 21087 82.9399 187.5569 0036244 339.5243 20.4464 13.74558201228085
UO-22
1 21575U 91050B 95229.21328573 .00000034 00000-0 25922-4 0 06317
2 21575 98.3900 299.0128 0008467 93.6485 266.5665 14.36986372214262
KO-23
1 22077U 92052B 95229.08100875 -.00000037 00000-0 10000-3 0 05207
2 22077 66.0765 108.2733 0003489 179.7275 180.3745 12.86291107141568
KO-25
1 22828U 93061F 95229.21539342 .00000009 00000-0 21211-4 0 04060
2 22828 98.6105 304.9073 0011208 31.7600 328.4249 14.28108729066587
IO-26
1 22826U 93061D 95229.16292242 .00000017 00000-0 24669-4 0 04246
2 22826 98.6146 304.8166 0010163 46.4113 313.7910 14.27777741098473
AO-27
1 22825U 93061C 95229.21360466 -.00000009 00000-0 13974-4 0 04288
2 22825 98.6145 304.7596 0009631 45.9177 314.2797 14.27669406098476
PO-28
1 22829U 93061G 95230.20878214 .00000103 00000-0 58921-4 0 4036
2 22829 98.6063 305.9209 0011222 28.6854 331.4902 14.28089675 98645
Mir
1 16609U 86017A 95230.45351852 .00001589 00000-0 28108-4 0 2063
2 16609 51.6445 205.9570 0003459 7.2669 352.8556 15.57245480542633

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
August 22, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1760. Re: Seeking M2 Eggbeater Antenna Experiences

Newsgroup: rec.radio.amateur.space
Date: 1995-08-19 00:00:00 UTC
From: rtm@ftp.netgate.net
Message-ID: <rtm-1908951516240001@ng53.netgate.net>
Source record: 24268

In article <413fvs$fif@newsbf02.news.aol.com>, regross1@aol.com (REGross1) wrote:

> I am considering ordering the 2m and 70 cm set of eggbeater antennas from
> M-square and am looking for someone who has actually used them for
> satellite communications. I plan to use them with an ICOM 820H and two TE
> Systems 160 watt output amplifiers having internal preamplifiers. Premium
> coax in anticipated in lengths of less than 75 feet.
>
> How effective are they? What are their benefits and limitations. I
> expect to ultimately have to use them in a housing development with
> covenants against outside antennas. I would consider putting them high in
> the attic. If you have any experiences with a similar arrangement, please
> share them.
> Robert E. Gross (KE3EM)
> REGROSS1@aol.com

I've got the 2 meter m2 eggbeater- works well. I've used it to work the Shuttle and MIR on 2 meters, running about 30 watts into 50 feet of 9913. Also use it for 137 MHz WX sats. Here in Silicon Gulch, the 28 degree shuttle orbits only give us about a 12 degree elevation at maximum- so the antenna works well down low as well as on overhead passes for the wx birds. I'd like to put a preamp up on the mast, but around here, I'm going to need filters (probably switchable) ahead of the preamp to cut down on local noise (I'm still looking for something that's effective for dealing with louts keying up on the downlink).

73-

--

Bob Martin N6MZV * rtm@ftp.netgate.net

1761. IC 7000 for sat work

Newsgroup: rec.radio.amateur.space
Date: 1995-08-19 00:00:00 UTC
From: bsmith@msn.com
Message-ID: <00001ff1+0000031e@msn.com>
Source record: 24269

Anyone use an IC 7000 for 1/2 of the equation (rcv) for sat work,
Looking specifically for use in the PSK ans FSK modes. Thanks.

1762. Re: Higher Speed Digital Satellites??

Newsgroup: rec.radio.amateur.space
Date: 1995-08-20 00:00:00 UTC
From: n9syw@w9yt.engr.wisc.edu
Message-ID: <n9syw-2008950345050001@f181-033.net.wisc.edu>
Source record: 24270

I have yet to receive any really decent answers to my questions
about the future of amateur digital satellites....

In article <41351r$qlk@paperboy.ids.net>, Philip Chien <Pchien@ids.net> wrote:

> In article <n9syw-1508951752350001@f181-111.net.wisc.edu> Reid H. Savage,
> n9syw@w9yt.engr.wisc.edu writes:
> >We should also be building relitivly cheap
> >high speed digital satellites in low to medium orbits.
>
> Relatively cheap????? That qualifies as an understatement in the same
> class as "Houston, We've had a problem".

A microsat is incredibly cheap compared to a large satellite
like phase IIID. A larger satellite requires its own launch
vehicle and can no longer 'hitch a free ride' as a secondary
payload. The store and forward microsats have been one of the few
recent contributions amateur radio has made to the radio art.
At the moment there are very few American digital hamsats and
no high speed ones that I know of (9600+baud). I would like to
know what groups are planning and building the next generation
of digital satellites??

> I would certainly like more high speed digital satellites, but are you
> aware of the cost and effort invovled in building and launching such a
> bird????????
>

I'm not talking about building T1 speed microsats! Speeds in
excess of 56k bps probably would not be very practical with
current amateur microsat technology. But we should try and match
new oportunities for satellites with the best currently available
technology and I don't mean what the Japenese radio makers are
selling.
Replacing the FM DFSK type downlinks with a much more robust
modulation schemes and error correction would allow 2-6
times the speed at similar power levels when used with high
quality receivers. Assumming the team building the satellite
has mastered the basics of constructing space worthy satellites
adding higher speed digital capibility is a small fraction
of the launch cost or spacecraft cost.

> If the AMSAT members want such a project - and are willing to fund it,
> then it would certainly be an excellent project for the future, after
> Phase 3-D is in operation. In some ways it might even be easier to
> operate.

>
> But I think you've underestimated the effort needed to do such a project.

The effort needed is a willingness to make the most of the oportunities
available and push amateur radio into the future. Nothing decent ever
comes without hard work.

1763. Re: Tracking software for Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-08-20 00:00:00 UTC
From: Chris Lewicki <chrisl@lpl.arizona.edu>
Message-ID: <416vc6$2ls@news.ccit.arizona.edu>
Source record: 24271

Michael,
Check out /pub/software/mac/sat at ftp.seds.org
--

Christopher A. Lewicki + (520) 621-4662 + Maintainer of SEDS.LPL.Arizona.EDU
ChrisL@seds.org NEAR XRS/GRS, New Milenium Penetrator, Rosetta-Champollion(?)
Chair, Students for the Exploration and Development of Space (SEDS-USA)

1764. Got my SWL confirmation for STS-64

Newsgroup: rec.radio.amateur.space
Date: 1995-08-20 00:00:00 UTC
From: btbanko@prairienet.org
Message-ID: <417b7q$pgu@vixen.cso.uiuc.edu>
Source record: 24272

It only took about 11 months, but it did come through.

--
Brad Banko
Rockford, Illinois
Internet: btbanko@prairienet.org (Support your local Freenet!)
Amateur packet radio: kb8cne@n9hkm.il.usa.na

1765. Re: IC 7000 for sat work

Newsgroup: rec.radio.amateur.space
Date: 1995-08-20 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <417ohd$2oq@maureen.teleport.com>
Source record: 24273

In article <00001ff1+0000031e@msn.com>, bsmith@msn.com said...
>
>Anyone use an IC 7000 for 1/2 of the equation (rcv) for sat work,
>Looking specifically for use in the PSK ans FSK modes. Thanks.

The R-7000 would not be appropriate for these modes. It tunes in 100 hz steps, while 10 hz is needed for psk. It can work for FM AFSK, but I have noticed that the sensitivity is not very good. I use mine for weather sats (with much modification), but with even these relatively high powered signals, I need one extra stage of RF amplification. For PSK, the modems all use tuning inputs to the radio, and the R-7000 has no provisions for that.

These are great as scanners, but leave something to be desired for serious data signal reception. I think it would be better to stick with a radio that is intended for Amateur band usage. They will be optimised for the intended band, with better performance than a wide coverage scanner type unit.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1766. unsubscribe

Newsgroup: rec.radio.amateur.space
Date: 1995-08-20 00:00:00 UTC
From: F.TRBIC@ZAMIR-SA.ZTN.APC.ORG
Message-ID: <45.36397@zamir-sa.ztn.apc.org>
Source record: 24274

```
unsubscribe
```

1767. Re: Tracking software for Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-08-20 00:00:00 UTC
From: Sean Sharkey <sean@g0oanint.demon.co.uk>
Message-ID: <9508200811330047@g0oanint.demon.co.uk>
Source record: 24275

In article <michael-1908951023350001@rig-uk.demon.co.uk>, Michael Gill writes:

>
> Does anyone know a source of shareware or freeware satellite
> tracking

Michael,

Have a look in ftp.demon.co.uk /pub/ham/mac

in there you'll find at least 2 sat tracking programmes (and lots of other Mac stuff by the way).

Hope this helps,

Sean.

1768. New Macintosh Ham Test Simulators

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: john@wd1v.mv.com
Message-ID: <john-2108950531440001@wd1v.mv.com>
Source record: 24276

The new Macintosh Ham Test Simulators are HERE!

Novice Ham Test 5.0 SA.sea
Technician Ham Test 5.0 SA.sea
General Ham Test 5.0 SA.sea
Advanced Ham Test 5.0 SA.sea
Extra Ham Test 5.0 SA.sea

The latest versions feature:

HyperCard 2.3 as a stand-alone application (SA) eliminating the need to have HyperCard. All you need is a Mac with 4 Meg of memory and version System 7 or greater.

Each version 5 Ham Test Simulator has the latest questions as prepared by the Question Pool Committee.

Each Ham Test Simulator is FREE OF CHARGE and work the same way as the originals written by Diana, KC1SP.

You may obtain a Ham Test Simulator by mailing me a *FORMATTED disk (1 per test) and include a Self Addressed and Stamped disk mailer for the return.

Each Ham Test Simulator is also bundled with a shareware CW program called MacMorse 1.4 written by Doug, WB0EON.

Also included are a collection of text files that relate an interesting variety of ideas about the best way to study CW and prepare for tests.

or warm your phone line and get just the tests:

America On Line - Macintosh Ham Radio Section

ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/AdvancedHamTest1.sea.bin
ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/ExtraHamTest.sea.bin
ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/GeneralHamTest.sea.bin
ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/NoviceHamTest.sea.bin
ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/TechnicianHamTest.sea.bin

Your comments and suggestions for future versions are always welcome. Stay in touch and good luck with your next test!

73,

\/
John D. Seney, WD1V Internet: john@wd1v.mv.com
144 Pepperidge Drive America On Line: jseney@aol.com

Manchester, NH 03103-6150 AX.25 Pkt: wd1v@wb1dsw.nh.usa.na
(H) 603-668-1096 Ampernet: wd1v@wd1v.ampr.org
\/
LeCroy Sales Engineering - Maine, New Hampshire, and Northeastern Massachusetts
(O) 800-553-2769 (F) 603-627-1623 (P) 800-SKYPAGE #5956779

All opinions are my own, including Digital Storage Scope.FAQ

To obtain the latest copy automatically, simply send me an EMAIL
with "subscribe scope.faq" in the subject field.
\/

1769. Re: IC 7000 for sat work

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: rsmith@internetmci.com
Message-ID: <418r0v$4ju@news.internetmci.com>
Source record: 24277

A great response, thanks for the info.
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

1770. Re: Higher Speed Digital Satellites??

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: thomas.g.booth@den.mmc.com
Message-ID: <thomas.g.booth-200895231933@160.205.101.24>
Source record: 24278

In article <41351r$qlk@paperboy.ids.net>, Philip Chien <Pchien@ids.net>
wrote:
>
> In article <n9syw-1508951752350001@f181-111.net.wisc.edu> Reid H. Savage,
> n9syw@w9yt.engr.wisc.edu writes:
> >We should also be building relitivly cheap
> >high speed digital satellites in low to medium orbits.
>
> Relatively cheap????? That qualifies as an understatement in the same
> class as "Houston, We've had a problem".

Amen, Philip, Amen.

> I would certainly like more high speed digital satellites, but are you
> aware of the cost and effort invovled in building and launching such a
> bird????????

Not to mention the $$$$$ spent on each user's ground station in the
necessary upgrades to Tx & Rx reliably @ T1 rates. Guess I'd better start
looking for a good used Microdyne 1400-MR receiver...(g)

> If the AMSAT members want such a project - and are willing to fund it,
> then it would certainly be an excellent project for the future, after
> Phase 3-D is in operation. In some ways it might even be easier to
> operate.
>
> But I think you've underestimated the effort needed to do such a project.

Agreed.

TGB

\\ The opinions expressed herein are my own. //

1771. FOR SALE:VARIAN MICROWAVE AMPS,S.C.I.F.,COMMUNICATIONS GEAR

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <41a4iu$k6o@ixnews3.ix.netcom.com>
Source record: 24279
Cross-posted to: rec.radio.swap,rec.radio.amateur.space,misc.forsale

FOR SALE- OR TRADE::
Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 404-925-2779 404-925-2887FOR SALE-
OR TRADE::

1772. SatPasses home page and Canadian cities

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <41abql$9k1@agate.berkeley.edu>
Source record: 24280

Over the last few weeks I received several requests to add
Canadian cities to the SatPasses home page that shows predictions
for Space Shuttle, Mir, HST and UARS passes for presently 53
U.S. cities. To do this consistently, I would need to know the
Canadian time zones for the following cities:

Calgary, AB
Edmonton, AB
Montreal, PQ
Ottawa, ON
Quebec, QC
Saskatoon, SK
Toronto, ON
Vancouver, BC
Winnipeg, MB

Also, is daylight savings time observed everywhere in Canada?

Thanks very much!

Manfred Bester

http://ssl.berkeley.edu/isi_www/satpasses.html

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720

1773. Internet Via Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: BDONALDSON@HNS.COM
Message-ID: <1995Aug21.144214.27296@hns.com>
Source record: 24281

Check out the DirecPC home page. Iknow that it is not amateur radio related
but may assist you in your search.

http://www.direcpc.com/doc.htm

73
Brian

,,, Waddayamean, it's NOT workin'?!
(o o)
==========oOO==(_)==OOo==========
Brian Donaldson, KF6BL Project Engineer, Customer Svc
Hughes Network Systems, Inc. TES, Terrestrial, et al...
10450 Pacific Center Ct. Email: bdonaldson@hns.com
San Diego, CA 92121 Phone: (619) 452-5175
Room 2077 Fax: (619) 452-4886
==========

1774. Satellite Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: headshrnkr@aol.com
Message-ID: <41ae2u$cl1@newsbf02.news.aol.com>
Source record: 24282

Hello.

I have a few questions about sat. tracking software and modems. First, let me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and KLM 70cm antenna setup on a Yaesu GB5400 rotor.

First, can anyone make a suggestion as to a good tracking program for DOS or Windows? Either commerical or shareware is fine.

Second, I would like to have my rotor controlled by software, suggestions? Possibly a tracking and rotor control software package?

Third, I do not understand the exact equipement required for digital transmission and reception. I am familar with Packet and use a PK 232 but the standard is different for the Digital Satellites? Is there any way to use or modify my PK 232 to function in this manner?

I appericate your reply. If possible email to HeadShrnkr@aol.com.

73,
KB2VKJ

"We, the people are the rightful masters of both the congress and the courts - not to overthrow the constitition, but to overthrow men who pervert the constitution" - A. Lincoln

Bruce J. Howes
HeadShrnkr@aol.com

1775. QSL card for DOVE?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: darryl.linkow@ledge.com
Message-ID: <8AF926A.01E9000A07.uuout@ledge.com>
Source record: 24283

Hello all. I was just wondering if anybody has ever received a QSL
card for the DOVE (DO-17) satellite? I sent a telemetry printout
back about May to Sao Paulo, Brazil, but never received a card
back. Anyone ever get one?
73' Darryl KE6IHA

---
* OLX 2.2 * Darryl Linkow (818)346-5278 9 am - 5 pm PDT

1776. Space/Astronomy Software ?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: edward@localhost
Message-ID: <41asvb$n3l@news.ios.com>
Source record: 24284

Subject: Space/Astronomy Software ?
Newsgroups: sci.astro.planetarium
Organization: Internet Online Services
Summary:
Keywords:

Hello net

My company is working on this new product called " The Space Station "
and are trying to get our hands on all the space/astronomy related
software ever published. If you can help us with info on any programs
of this nature we will be very thankful. Please send as much of the
following as possible

Name of Software
Name of Publisher and year (if possible)
Name and address of retail store or mail order company.
cost (if posssible)
a brief description (as much as you can remember)
and your opinion of it's quality

p.s. video games do not apply, but if they're educational in nature
please include them if you know of any.

Note: When we are done, we will send all of you a list of what we
compiled, including info on this very exciting project.

send your helpful info to:

edward@venus.hili.com

1777. VISIBLE MIR PASSES, now also for CANADIAN CITIES

Newsgroup: rec.radio.amateur.space
Date: 1995-08-21 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <41b5f9$l50@agate.berkeley.edu>
Source record: 24285
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

The SatPasses web page has been upgraded and now also provides predictions
for Canadian cities. Quite a number of viewing opportunities for
observing the Russian Space Station Mir are coming up from tonight on
until the end of August. Predictions are provided at the following URL:

http://ssl.berkeley.edu/isi_www/satpasses.html

Manfred Bester

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720

1778. NORAD Two-Line Orbital Element Sets (TLE660)

Newsgroup: rec.radio.amateur.space
Date: 1995-08-22 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.809056510@dolphin>
Source record: 24286

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #660 -
Alouette 1
1 00424U 62049A 95233.01059892 .00000028 00000-0 22336-4 0 1292
2 00424 80.4635 220.9111 0024599 88.0896 272.3062 13.67848012641162
ATS 1
1 02608U 66110A 95210.09815052 .00000076 00000-0 10000-3 0 9400
2 02608 14.6412 356.2542 0010418 64.3986 295.7719 1.00339733 21612
ATS 3
1 03029U 67111A 95232.26096770 -.00000119 00000-0 10000-3 0 3897
2 03029 14.8503 2.9834 0008722 262.8919 50.7683 1.00272660101734
Cosmos 398
1 04966U 71016A 95232.18470917 .00168624 91812-5 15142-3 0 9717
2 04966 51.4065 287.3690 0496488 318.2715 38.1362 15.16636210834840
Starlette
1 07646U 75010A 95231.17350851 -.00000127 00000-0 11336-4 0 9085
2 07646 49.8308 264.4615 0205661 309.6700 48.6210 13.82189331 37055
LAGEOS
1 08820U 76039A 95230.28678733 .00000001 00000-0 10000-3 0 1296
2 08820 109.8533 281.8972 0044028 194.2075 165.7498 6.38664608194429
ETS-2
1 09852U 77014A 95230.33108114 -.00000310 00000-0 10000-3 0 342
2 09852 12.8246 36.3584 0004636 90.5898 269.5636 1.00012838 14607
GOES 2
1 10061U 77048A 95231.51773795 .00000049 00000-0 10000-3 0 5665
2 10061 11.9177 40.5459 0013141 124.0672 173.6370 1.00287720 11405
IUE
1 10637U 78012A 95232.88622808 -.00000267 00000-0 10000-3 0 1608
2 10637 35.3046 87.9883 1335921 48.6275 109.5932 1.00310843 16915
GPS BI-01
1 10684U 78020A 95232.37952196 -.00000020 00000-0 10000-3 0 3822
2 10684 64.8575 32.8065 0061007 162.1674 198.0928 1.98068959113435
```

```
GPS BI-02
1 10893U 78047A 95232.26210690 .00000034 00000-0 10000-3 0 1784
2 10893 63.2955 270.6801 0223941 14.0302 346.6813 2.01627455126729
GOES 3
1 10953U 78062A 95231.57147800 .00000105 00000-0 10000-3 0 5225
2 10953 10.8894 43.4218 0006131 117.6519 218.0241 1.00342996 16013
SeaSat 1
1 10967U 78064A 95231.63556704 -.00000043 00000-0 30262-4 0 4220
2 10967 108.0010 268.7777 0003006 249.3951 110.6861 14.38049591897956
GPS BI-03
1 11054U 78093A 95232.17488147 .00000038 00000-0 10000-3 0 3448
2 11054 63.0044 269.0700 0045929 180.6328 179.4421 1.93505341122814
Nimbus 7
1 11080U 78098A 95231.66451762 -.00000084 00000-0 -37815-4 0 5234
2 11080 98.9901 102.9090 0009697 61.6188 298.5940 13.83706095849336
GPS BI-04
1 11141U 78112A 95232.61220958 -.00000017 00000-0 10000-3 0 9961
2 11141 64.8785 34.7323 0049197 28.1554 332.1434 1.92894795 12068
GPS BI-05
1 11690U 80011A 95228.71793061 -.00000035 00000-0 10000-3 0 9305
2 11690 65.1999 34.4921 0142050 192.1129 167.6601 2.00566075128074
GPS BI-06
1 11783U 80032A 95226.18023707 .00000001 00000-0 10000-3 0 924
2 11783 62.4605 264.0075 0219780 29.1793 332.1515 2.03457056112564
GOES 5
1 12472U 81049A 95225.44564798 -.00000299 00000-0 10000-3 0 8723
2 12472 7.6285 53.3628 0007742 36.4734 323.7098 1.00254165 10007
Cosmos 1383
1 13301U 82066A 95229.85869252 .00000003 00000-0 -13988-4 0 4275
2 13301 82.9309 356.9255 0028030 2.0956 358.0308 13.68067057655760
LandSat 4
1 13367U 82072A 95230.17782612 .00000040 00000-0 18691-4 0 7623
2 13367 98.1219 284.5307 0007451 18.0795 342.0667 14.57154157696243
DMSP B5D2-1
1 13736U 82118A 95232.53345666 .00000033 00000-0 32191-4 0 8309
2 13736 98.6291 60.7249 0008145 182.3787 177.7354 14.25747225658089
IRAS
1 13777U 83004A 95232.53263638 .00000326 00000-0 25462-3 0 553
2 13777 98.9667 59.4397 0011724 205.4589 154.5997 13.99241244311180
Cosmos 1447
1 13916U 83021A 95229.53660586 .00000017 00000-0 20735-5 0 5244
2 13916 82.9410 56.3707 0036790 282.7940 76.9094 13.74329148621894
TDRS 1
1 13969U 83026B 95233.21682958 .00000078 00000-0 00000+0 0 4528
2 13969 8.4853 46.6442 0001905 142.0139 79.7913 1.00279136 18362
GOES 6
1 14050U 83041A 95232.27037175 -.00000126 00000-0 10000-3 0 4358
2 14050 6.4670 56.6296 0004602 26.7878 238.2007 1.00327443103166
OSCAR 10
1 14129U 83058B 95226.51733708 -.00000116 00000-0 10000-3 0 3705
```

```
2 14129 26.4564 253.3162 5988239 301.4565 13.4548 2.05880986 63534
LandSat 5
1 14780U 84021A 95230.28205521 .00000035 00000-0 17615-4 0 3298
2 14780 98.1075 285.0598 0005441 25.6562 334.4893 14.57162056609678
UoSat 2
1 14781U 84021B 95229.54203609 .00000093 00000-0 23592-4 0 8202
2 14781 97.7839 229.2041 0012056 351.5234 8.5766 14.69367839612910
GPS BI-09
1 15039U 84059A 95232.64308770 -.00000028 00000-0 10000-3 0 3595
2 15039 64.5494 29.0984 0082072 18.4308 341.8926 1.92302406 81635
Cosmos 1574
1 15055U 84062A 95232.18132727 .00000047 00000-0 34156-4 0 7260
2 15055 82.9583 108.6895 0028888 100.3547 260.0867 13.73625098559523
GPS BI-10
1 15271U 84097A 95232.87143444 .00000050 00000-0 10000-3 0 439
2 15271 62.1247 264.1683 0155359 354.1050 5.7916 2.00602791 79221
Cosmos 1602
1 15331U 84105A 95232.93142199 .00000205 00000-0 21401-4 0 4129
2 15331 82.5310 35.2461 0018598 220.5418 139.4405 14.84653534588277
NOAA 9
1 15427U 84123A 95232.64556322 .00000074 00000-0 62916-4 0 3691
2 15427 98.9949 291.7426 0016011 85.1983 275.1010 14.13725216551024
GPS BI-11
1 16129U 85093A 95231.70598477 -.00000022 00000-0 10000-3 0 6728
2 16129 65.2073 32.3523 0155494 86.5019 275.2972 1.89368120 16198
Mir
1 16609U 86017A 95232.89208756 .00002279 00000-0 37374-4 0 2070
2 16609 51.6458 193.7462 0003248 15.3204 344.7885 15.57260894543016
SPOT 1
1 16613U 86019A 95231.24305055 .00000090 00000-0 62356-4 0 8438
2 16613 98.6457 301.1776 0001259 35.7199 324.4057 14.20067178177314
Cosmos 1766
1 16881U 86055A 95230.63946781 .00000088 00000-0 78104-5 0 3277
2 16881 82.5199 95.2358 0017344 258.9485 100.9755 14.83649117488834
EGP
1 16908U 86061A 95232.35443653 -.00000083 00000-0 10000-3 0 222
2 16908 50.0106 204.9672 0011312 323.9441 36.0630 12.44413103 78828
NOAA 10
1 16969U 86073A 95232.75900180 -.00000005 00000-0 16122-4 0 2799
2 16969 98.5134 233.6976 0013214 149.1872 211.0086 14.24951615463674
MOS-1
1 17527U 87018A 95230.19332737 .00000092 00000-0 10000-3 0 2381
2 17527 98.9793 293.7379 0001047 248.4354 111.6688 13.95257009432473
GOES 7
1 17561U 87022A 95226.63480850 .00000060 00000-0 10000-3 0 5038
2 17561 2.4449 71.8651 0001767 1.5045 342.8395 1.00286112 14212
Kvant-1
1 17845U 87030A 95233.02044907 -.00010750 00000-0 -13813-3 0 3551
2 17845 51.6452 193.1106 0003942 12.6182 347.5623 15.57247054 7523
DMSP B5D2-3
```

```
1 18123U 87053A 95232.46252517 -.00000027 00000-0 82716-5 0 1071
2 18123 98.7768 62.6091 0015309 37.9752 322.2492 14.15414035421815
RS-10/11
1 18129U 87054A 95232.42996337 .00000019 00000-0 46891-5 0 1006
2 18129 82.9243 11.5734 0010334 277.0091 82.9885 13.72355268408788
Meteor 2-16
1 18312U 87068A 95232.50376198 .00000012 00000-0 -27546-5 0 4194
2 18312 82.5507 231.3486 0012746 355.9844 4.1213 13.84060888404442
Meteor 2-17
1 18820U 88005A 95232.66193683 .00000051 00000-0 31788-4 0 7011
2 18820 82.5395 286.9589 0018365 55.2182 305.0702 13.84742682381796
DMSP B5D2-4
1 18822U 88006A 95232.15340522 -.00000006 00000-0 15484-4 0 495
2 18822 98.4011 73.3701 0005902 159.3353 200.8058 14.23161906391618
Glonass 34
1 19163U 88043A 95232.79231325 .00000000 00000-0 10000-3 0 126
2 19163 65.1525 95.9817 0007887 153.2882 206.8359 2.13102648 55813
Glonass 36
1 19165U 88043C 95231.91034532 -.00000011 00000-0 10000-3 0 4141
2 19165 65.1351 95.9797 0002646 322.3800 37.6891 2.13102087 56411
METEOSAT 3
1 19215U 88051A 95232.60023841 -.00000281 00000-0 10000-3 0 1645
2 19215 2.6383 69.5528 0002814 84.1623 320.7701 1.00253496 14225
AO-13
1 19216U 88051B 95232.86433214 -.00000622 00000-0 -11356-3 0 793
2 19216 57.4761 169.2300 7321109 16.6784 358.0675 2.09726853 23525
OKEAN 1
1 19274U 88056A 95230.91867315 .00000266 00000-0 30090-4 0 271
2 19274 82.5127 195.4304 0021725 45.0793 315.2175 14.82370829384442
Meteor 3-2
1 19336U 88064A 95229.89704714 .00000051 00000-0 10000-3 0 4169
2 19336 82.5404 21.7419 0015857 278.4168 81.5145 13.16974297339427
Glonass 39
1 19503U 88085C 95226.30763186 -.00000069 00000-0 10000-3 0 3089
2 19503 65.6812 335.0896 0007542 164.7922 195.2565 2.13101844 53781
NOAA 11
1 19531U 88089A 95232.73885378 -.00000005 00000-0 22606-4 0 1765
2 19531 99.1972 237.8331 0012576 11.0632 349.0804 14.13060486355878
TDRS 2
1 19548U 88091B 95224.99633358 -.00000213 00000-0 00000+0 0 1393
2 19548 1.8714 74.1752 0005716 109.5069 221.0962 1.00267906 12427
Glonass 40
1 19749U 89001A 95228.69235115 -.00000030 00000-0 10000-3 0 5192
2 19749 65.1057 95.6872 0004438 260.0926 99.9322 2.13101429 51347
Glonass 41
1 19750U 89001B 95232.50185254 -.00000003 00000-0 10000-3 0 4321
2 19750 65.1133 95.6078 0007130 229.1268 130.8956 2.13101921 51445
GPS BII-01
1 19802U 89013A 95233.00252409 -.00000041 00000-0 10000-3 0 895
2 19802 55.2371 122.6129 0028824 162.0474 198.0599 2.00554697 47679
```

```
Akebono
1 19822U 89016A 95232.18098524 .00005466 00000-0 25874-3 0 5574
2 19822 75.0916 298.3473 3778287 333.1332 11.5074 7.87102945142859
Meteor 2-18
1 19851U 89018A 95227.18815505 .00000029 00000-0 12278-4 0 4167
2 19851 82.5223 165.8622 0015456 112.2123 248.0674 13.84393940326355
MOP-1
1 19876U 89020B 95228.02741319 .00000047 00000-0 10000-3 0 1327
2 19876 1.3278 72.3380 0001783 205.4947 65.9465 1.00283054 3615
TDRS 3
1 19883U 89021B 95226.63790509 -.00000288 00000-0 10000-3 0 1076
2 19883 0.0421 247.3186 0005483 288.3821 335.5052 1.00268870196035
GPS BII-02
1 20061U 89044A 95232.34588895 -.00000050 00000-0 10000-3 0 1054
2 20061 54.3890 298.8372 0148527 215.2052 143.8799 2.00563137 45404
Nadezhda 1
1 20103U 89050A 95232.77413898 .00000046 00000-0 32744-4 0 4872
2 20103 82.9610 330.9570 0037413 171.1977 188.9844 13.73856049307291
GPS BII-03
1 20185U 89064A 95231.18689654 -.00000052 00000-0 10000-3 0 1253
2 20185 55.0134 123.2261 0022260 338.9443 21.0574 2.00570281 43954
GMS 4
1 20217U 89070A 95229.75237345 -.00000382 00000-0 10000-3 0 2316
2 20217 1.1591 76.0651 0001394 24.1741 256.1156 1.00264404 22362
INTERCOSMOS 24
1 20261U 89080A 95229.19518853 .00000217 00000-0 61349-4 0 4322
2 20261 82.5962 105.5495 1243296 15.1847 348.3249 12.47270230267889
GPS BII-04
1 20302U 89085A 95232.22091922 .00000050 00000-0 10000-3 0 1031
2 20302 53.3572 238.8376 0015609 189.0632 170.9530 2.00557446 42779
Meteor 3-3
1 20305U 89086A 95231.76826011 .00000044 00000-0 10000-3 0 3741
2 20305 82.5574 333.6816 0006378 341.8977 18.1923 13.04429707278778
COBE
1 20322U 89089A 95232.59896901 .00000272 00000-0 20161-3 0 1458
2 20322 98.9603 247.6776 0009447 151.7686 208.3992 14.03456970294628
Kvant-2
1 20335U 89093A 95233.02044907 -.00010750 00000-0 -13813-3 0 3583
2 20335 51.6452 193.1106 0003942 12.6182 347.5623 15.57247054326187
GPS BII-05
1 20361U 89097A 95231.73431678 -.00000027 00000-0 10000-3 0 9583
2 20361 55.8022 65.2595 0085751 121.6029 239.3524 2.00562457 32245
COSMOS 2054 (Altair-1)
1 20391U 89101A 95231.14098958 -.00000147 00000-0 10000-3 0 2099
2 20391 3.2563 65.3884 0004065 68.8020 227.4118 1.00275365 20959
SPOT 2
1 20436U 90005A 95230.87762279 .00000169 00000-0 10000-3 0 9626
2 20436 98.7319 304.1500 0001410 65.2292 294.8985 14.20031107288797
UO-14
1 20437U 90005B 95232.17995764 -.00000003 00000-0 15649-4 0 1196
```

```
2 20437 98.5663 315.5179 0011599 14.7589 345.3932 14.29894286290895
UO-15
1 20438U 90005C 95233.22897006 .00000001 00000-0 17470-4 0 9160
2 20438 98.5618 314.9704 0010989 15.8980 344.2544 14.29212039290934
PACSAT
1 20439U 90005D 95232.77906316 .00000032 00000-0 29512-4 0 9181
2 20439 98.5773 317.8626 0011948 13.3669 346.7828 14.29948848290997
DO-17
1 20440U 90005E 95231.78166112 .00000009 00000-0 20418-4 0 9185
2 20440 98.5789 317.3691 0012264 15.0027 345.1518 14.30089762290871
WO-18
1 20441U 90005F 95230.78567458 -.00000004 00000-0 15151-4 0 9222
2 20441 98.5789 316.3559 0012860 18.0772 342.0865 14.30060684290734
LO-19
1 20442U 90005G 95231.78345760 .00000018 00000-0 23981-4 0 9172
2 20442 98.5801 317.7187 0013108 14.1187 346.0359 14.30164297290899
GPS BII-06
1 20452U 90008A 95231.12938318 .00000001 00000-0 10000-3 0 643
2 20452 54.0285 179.0963 0055691 81.3153 279.3057 2.00550607 40733
MOS-1B
1 20478U 90013A 95232.17977720 .00000090 00000-0 10000-3 0 8201
2 20478 99.0741 300.0788 0001125 55.3876 304.7391 13.94722274202453
DEBUT
1 20479U 90013B 95230.69488000 -.00000058 00000-0 -65786-4 0 9170
2 20479 99.0714 307.8286 0541091 91.3732 274.9391 12.83334255258975
FO-20
1 20480U 90013C 95230.70623198 -.00000014 00000-0 32940-4 0 8146
2 20480 99.0716 307.6810 0541217 91.8124 274.5020 12.83231508258961
MOS-1B R/B
1 20491U 90013D 95232.37361842 .00000051 00000-0 16662-3 0 1637
2 20491 99.0511 4.8902 0469130 281.2266 73.6495 13.02970489262553
LACE
1 20496U 90015A 95227.86246416 .00000934 00000-0 35526-4 0 5681
2 20496 43.1022 150.8586 0009857 234.7977 125.1959 15.34727335306748
Nadezhda 2
1 20508U 90017A 95232.68230004 .00000036 00000-0 21336-4 0 4865
2 20508 82.9546 105.6056 0045380 123.3351 237.2158 13.73496771274506
OKEAN 2
1 20510U 90018A 95232.82101712 .00000196 00000-0 23740-4 0 4361
2 20510 82.5260 145.7989 0017139 221.8190 138.1709 14.78516051295148
GPS BII-07
1 20533U 90025A 95232.53874999 -.00000049 00000-0 10000-3 0 869
2 20533 54.7664 299.4588 0046291 79.6751 280.9096 2.00567333 39532
PegSat
1 20546U 90028A 95231.86632758 .00004857 00000-0 98305-4 0 8320
2 20546 94.1166 180.3344 0067768 91.7644 269.1383 15.44027855298309
HST
1 20580U 90037B 95231.89123064 .00000405 00000-0 24949-4 0 7031
2 20580 28.4691 1.5210 0005758 254.3393 105.6548 14.90915774 93424
MACSAT 2
```

```
1 20608U 90043B 95229.89561898 .00000163 00000-0 25132-4 0 1183
2 20608 89.9294 175.9605 0108505 40.4986 320.4234 14.64853469281742
Glonass 44
1 20619U 90045A 95232.34564170 -.00000081 00000-0 10000-3 0 2163
2 20619 65.2639 334.2762 0025506 205.3367 154.5814 2.13102433 40878
Glonass 45
1 20620U 90045B 95229.64878607 -.00000080 00000-0 10000-3 0 2234
2 20620 65.2950 334.3609 0007727 53.9820 306.1161 2.13102561 40853
Glonass 46
1 20621U 90045C 95232.53106277 -.00000080 00000-0 10000-3 0 8162
2 20621 65.2922 334.3208 0011719 189.1933 170.8066 2.13101636 40910
Kristall
1 20635U 90048A 95233.02044907 -.00010750 00000-0 -13813-3 0 1496
2 20635 51.6452 193.1106 0003942 12.6182 347.5623 15.57247054542922
ROSAT
1 20638U 90049A 95231.15655325 .00000099 00000-0 25395-4 0 4859
2 20638 52.9874 223.5477 0011077 290.8400 69.1408 15.07226816286614
Meteor 2-19
1 20670U 90057A 95230.51444727 .00000020 00000-0 42598-5 0 9163
2 20670 82.5431 229.0500 0017258 32.0615 328.1592 13.84162204259735
CRRES
1 20712U 90065A 95230.57877914 .00000732 00000-0 83269-3 0 1376
2 20712 18.0936 13.8068 7194269 150.3708 284.5857 2.35480901 35952
GPS BII-08
1 20724U 90068A 95231.86243281 -.00000050 00000-0 10000-3 0 9295
2 20724 54.8467 120.8117 0119239 174.5270 185.6437 2.00566006 35380
Feng Yun1-2
1 20788U 90081A 95232.86747569 -.00000027 00000-0 10000-4 0 4671
2 20788 98.8167 243.7191 0014924 259.1411 100.9536 14.01380512253892
Meteor 2-20
1 20826U 90086A 95233.22798306 .00000056 00000-0 37524-4 0 9288
2 20826 82.5283 163.8095 0012091 288.6687 71.3164 13.83612828247229
GPS BII-09
1 20830U 90088A 95227.91923576 -.00000055 00000-0 10000-3 0 9417
2 20830 55.7485 63.3861 0067807 99.5974 261.2279 2.00556501 35941
GPS BIIA-10
1 20959U 90103A 95231.81874186 -.00000050 00000-0 10000-3 0 9058
2 20959 55.0443 122.8093 0098976 230.8918 128.2646 2.00572489 34613
DMSP B5D2-5
1 20978U 90105A 95232.65897848 .00000078 00000-0 43677-4 0 3043
2 20978 98.6359 300.6618 0079400 340.5205 19.2945 14.32570498246545
Glonass 47
1 21006U 90110A 95230.67941193 -.00000023 00000-0 10000-3 0 7885
2 21006 65.0739 94.9472 0059179 188.0986 171.8796 2.13102862 36549
Glonass 48
1 21007U 90110B 95231.80695635 -.00000011 00000-0 10000-3 0 9136
2 21007 65.1029 94.9916 0034762 179.0128 181.0757 2.13101357 36554
Glonass 49
1 21008U 90110C 95232.16763966 -.00000007 00000-0 10000-3 0 1137
2 21008 65.0684 94.9247 0008250 271.7584 88.2269 2.13098913 36556
```

```
AO-21
1 21087U 91006A 95232.43416531 .00000093 00000-0 82657-4 0 6241
2 21087 82.9397 185.0253 0035973 330.1914 29.7191 13.74558312228550
RS-12/13
1 21089U 91007A 95229.58964511 .00000029 00000-0 15222-4 0 8236
2 21089 82.9202 55.2393 0030224 4.4890 355.6524 13.74059625227203
MOP-2
1 21140U 91015B 95230.95373683 -.00000018 00000-0 10000-3 0 914
2 21140 0.1125 295.5006 0001478 166.5977 208.5840 1.00263696 18567
Nadezhda 3
1 21152U 91019A 95232.79692274 .00000010 00000-0 -60598-5 0 1771
2 21152 82.9237 9.0162 0043216 100.2099 260.3936 13.73522149222371
Glonass 50
1 21216U 91025A 95230.22886447 -.00000082 00000-0 10000-3 0 4315
2 21216 65.0250 333.9941 0008402 197.2792 162.7218 2.13102717 34047
Glonass 51
1 21217U 91025B 95232.17507765 -.00000081 00000-0 10000-3 0 8408
2 21217 65.0090 333.9301 0008550 236.1108 123.8642 2.13101556 34070
Glonass 52
1 21218U 91025C 95231.34800951 -.00000083 00000-0 10000-3 0 3115
2 21218 65.0162 333.9361 0017121 88.5725 271.5206 2.13103292 34060
GRO
1 21225U 91027B 95230.11328953 .00001875 00000-0 35600-4 0 2882
2 21225 28.4605 143.8510 0002575 12.8064 347.2600 15.42887315122901
Meteor 3-4
1 21232U 91030A 95229.07980373 .00000050 00000-0 10000-3 0 8265
2 21232 82.5366 228.4834 0012422 197.3318 162.7377 13.16468583207395
NOAA 12
1 21263U 91032A 95232.75670155 .00000096 00000-0 62110-4 0 6037
2 21263 98.5848 255.1578 0014186 69.7210 290.5495 14.22551032221606
OKEAN 3
1 21397U 91039A 95231.24028429 .00000068 00000-0 65868-5 0 1269
2 21397 82.5229 60.5458 0021110 308.1745 51.7522 14.76391790226664
GPS BIIA-11
1 21552U 91047A 95232.58395238 -.00000019 00000-0 10000-6 0 8841
2 21552 56.0385 60.9090 0064868 242.2423 117.1575 2.00562220 30222
ERS-1
1 21574U 91050A 95232.18278741 .00000055 00000-0 36704-4 0 1887
2 21574 98.5459 305.5911 0001229 85.8031 274.3294 14.32251507214215
UO-22
1 21575U 91050B 95231.23256464 .00000046 00000-0 29914-4 0 6241
2 21575 98.3899 300.9810 0008539 87.7363 272.4797 14.36986754214556
ORBCOMM-X
1 21576U 91050C 95232.18214444 .00000003 00000-0 15437-4 0 7192
2 21576 98.3883 300.2479 0004733 91.6564 268.5158 14.36395259214598
TUBSAT-A
1 21577U 91050D 95232.17392118 .00000029 00000-0 24546-4 0 6184
2 21577 98.3887 300.7805 0007338 87.2190 272.9839 14.36491312214627
SARA
1 21578U 91050E 95230.75577822 .00000175 00000-0 70709-4 0 8180
```

```
2 21578 98.4097 305.2182 0005988 90.0730 270.1144 14.39044554214692
TDRS 4
1 21639U 91054B 95231.54574329 .00000070 00000-0 00000+0 0 9298
2 21639 0.0358 90.4445 0003503 41.8945 217.2578 1.00275764108853
Meteor 3-5
1 21655U 91056A 95229.83487407 .00000051 00000-0 10000-3 0 8245
2 21655 82.5516 175.4127 0012002 206.8510 153.1985 13.16839961192610
UARS
1 21701U 91063B 95232.20358050 -.00000206 00000-0 30547-5 0 6950
2 21701 56.9847 240.1120 0005612 102.8736 257.2912 14.96414943215150
DMSP B5D2-6
1 21798U 91082A 95232.50901189 .00000081 00000-0 66474-4 0 9542
2 21798 98.9599 244.4007 0013246 7.5507 352.5860 14.13911772192297
Glonass 53
1 21853U 92005A 95230.15234831 -.00000026 00000-0 10000-3 0 333
2 21853 65.0205 94.6599 0006904 192.3138 167.7464 2.13102285 27645
Glonass 54
1 21854U 92005B 95232.31876458 -.00000005 00000-0 10000-3 0 1755
2 21854 65.0230 94.5723 0016187 20.0008 340.1515 2.13104072 27672
Glonass 55
1 21855U 92005C 95230.97543709 -.00000020 00000-0 10000-3 0 1674
2 21855 65.0215 94.6291 0007058 198.2074 161.8467 2.13102016 27631
JERS-1
1 21867U 92007A 95230.40516328 .00000280 00000-0 28170-4 0 6472
2 21867 97.7135 306.5498 0001015 113.5106 246.6321 14.98647395192368
GPS BIIA-12
1 21890U 92009A 95232.54897025 .00000052 00000-0 10000-3 0 6865
2 21890 53.9034 239.0758 0059309 183.9173 176.0678 2.00571472 25592
GPS BIIA-13
1 21930U 92019A 95231.75687276 -.00000089 00000-0 10000-3 0 6656
2 21930 55.7097 0.7222 0038770 176.3676 183.6723 2.00565844 24509
EUVE
1 21987U 92031A 95230.07969653 .00000963 00000-0 34871-4 0 4761
2 21987 28.4305 67.0806 0009260 323.7867 36.2164 15.19379417177375
SAMPEX
1 22012U 92038A 95230.64337910 .00000472 00000-0 38629-4 0 6533
2 22012 81.6706 79.7737 0120049 83.4918 277.9939 14.91424073169980
GPS BIIA-14
1 22014U 92039A 95228.80673809 .00000021 00000-0 10000-3 0 5789
2 22014 54.8584 180.7884 0089794 315.4305 43.8068 2.00569319 16280
Glonass 56
1 22056U 92047A 95232.28257205 -.00000081 00000-0 10000-3 0 792
2 22056 64.8611 334.0253 0004883 258.7509 101.2249 2.13103150 23754
Glonass 57
1 22057U 92047B 95230.23167716 -.00000082 00000-0 00000+0 0 733
2 22057 64.8707 334.1239 0006270 315.7976 44.1799 2.13102386 23687
Glonass 58
1 22058U 92047C 95232.51807422 -.00000081 00000-0 10000-3 0 376
2 22058 64.8739 334.0459 0007257 267.3501 92.5980 2.13102906 23786
TOPEX
```

```
1 22076U 92052A 95232.84740339 -.00000038 00000-0 10000-3 0 9002
2 22076 66.0375 118.5677 0008056 266.4856 93.5234 12.80930837141527
KO-23
1 22077U 92052B 95232.73529356 -.00000037 00000-0 10000-3 0 5156
2 22077 66.0876 100.6273 0002774 176.5056 183.5981 12.86291394142032
S80/T
1 22078U 92052C 95231.09403777 -.00000037 00000-0 10000-3 0 5120
2 22078 66.0766 102.8856 0003219 155.7598 204.3571 12.86575735141903
GPS BIIA-15
1 22108U 92058A 95232.25636381 .00000052 00000-0 10000-3 0 6068
2 22108 54.1477 239.8720 0117909 149.7452 210.9482 2.00569990 21530
FREJA
1 22161U 92064A 95229.22263691 .00000001 00000-0 44171-4 0 5382
2 22161 62.9918 294.1248 0815194 352.0765 6.7953 13.21844595138111
LAGEOS II
1 22195U 92070B 95231.45353158 -.00000009 00000-0 10000-3 0 4259
2 22195 52.6426 182.9961 0137906 304.2171 54.5389 6.47294156 66679
GPS BIIA-16
1 22231U 92079A 95232.93893386 -.00000007 00000-0 10000-3 0 5861
2 22231 54.6281 181.7317 0023551 287.7017 72.0135 2.00562333 20121
GPS BIIA-17
1 22275U 92089A 95231.09620833 .00000003 00000-0 10000-3 0 6003
2 22275 54.6291 179.3538 0050654 252.3477 107.1026 2.00565399 19492
TDRS 5
1 22314U 93003B 95232.95239659 -.00000293 00000-0 10000-3 0 5508
2 22314 1.9938 71.5306 0001858 132.2970 62.0196 1.00266596 9561
GPS BIIA-18
1 22446U 93007A 95232.16345646 -.00000053 00000-0 10000-3 0 5903
2 22446 54.3916 299.6834 0079733 358.9989 1.0593 2.00575506 18501
Glonass 59
1 22512U 93010A 95230.62310839 -.00000023 00000-0 10000-3 0 7242
2 22512 65.0363 94.5028 0008127 179.3728 180.7055 2.13102144 19228
Glonass 60
1 22513U 93010B 95231.50076162 -.00000014 00000-0 00000+0 0 7974
2 22513 65.0283 94.4766 0006768 184.5005 175.5734 2.13102538 19439
Glonass 61
1 22514U 93010C 95229.91718396 -.00000027 00000-0 00000+0 0 7917
2 22514 65.0526 94.5156 0010727 183.3970 176.6718 2.13102684 19405
ASTRO-D
1 22521U 93011A 95229.11638851 .00000980 00000-0 63452-4 0 4295
2 22521 31.1045 209.5341 0056497 22.6363 337.6751 15.02376372136542
UFO F1
1 22563U 93015A 95229.52732580 -.00000283 00000-0 00000+0 0 4454
2 22563 25.8823 293.3906 0007202 239.8608 119.0470 0.99253222 13063
GPS BIIA-19
1 22581U 93017A 95225.32481181 -.00000095 00000-0 10000-3 0 4533
2 22581 55.2189 0.5118 0057680 37.1199 323.2663 2.00573274 17420
ARSENE
1 22654U 93031B 95230.98729458 -.00000151 00000-0 10000-3 0 3262
2 22654 2.6913 82.3186 2890383 217.5587 118.4468 1.42202922 7281
```

```
GPS BIIA-20
1 22657U 93032A 95232.43758332 -.00000090 00000-0 10000-3 0 5041
2 22657 55.2470 0.0639 0073408 214.3547 145.1809 2.00562193 12899
RADCAL
1 22698U 93041A 95231.65881651 .00000036 00000-0 10419-4 0 4245
2 22698 89.5435 287.2216 0088838 231.4584 127.8625 14.21350569111452
GPS BIIA-21
1 22700U 93042A 95231.40726542 .00000049 00000-0 10000-3 0 4485
2 22700 54.3094 240.7086 0039811 342.8513 17.0638 2.00566082 15676
NOAA 13
1 22739U 93050A 95232.39446030 .00000160 00000-0 11408-3 0 8702
2 22739 98.9979 181.3264 0010444 1.2923 358.8261 14.10941510104498
GPS BIIA-22
1 22779U 93054A 95229.99419224 -.00000068 00000-0 10000-3 0 5046
2 22779 54.5445 299.7970 0019857 247.4036 111.5553 2.00547153 14402
Meteor 2-21
1 22782U 93055A 95229.05190579 .00000061 00000-0 42011-4 0 4226
2 22782 82.5451 228.9472 0023638 109.7977 250.5729 13.83036560 98950
UFO F2
1 22787U 93056A 95232.01295718 -.00000073 00000-0 10000-3 0 5107
2 22787 4.4247 325.2440 0003323 163.0294 276.0310 1.00276388 5802
SPOT 3
1 22823U 93061A 95232.60949072 -.00000044 00000-0 00000+0 0 4650
2 22823 98.7319 305.9003 0000881 106.4579 253.6710 14.20021997 98438
STELLA
1 22824U 93061B 95232.62661893 -.00000037 00000-0 26201-5 0 4104
2 22824 98.6126 307.7597 0007345 37.9972 322.1730 14.27102056 98920
AO-27
1 22825U 93061C 95231.17595805 -.00000009 00000-0 14177-4 0 4122
2 22825 98.6144 306.6936 0009558 40.6066 319.5832 14.27669560 98751
IO-26
1 22826U 93061D 95231.19520581 .00000015 00000-0 23880-4 0 4110
2 22826 98.6145 306.8201 0010161 40.7016 319.4918 14.27777924 98767
HEATHSAT
1 22827U 93061E 95231.21059857 .00000018 00000-0 25036-4 0 4722
2 22827 98.6122 306.7660 0010297 27.9279 332.2444 14.27902624 98774
ITAMSAT
1 22828U 93061F 95230.75676872 -.00000009 00000-0 14048-4 0 3892
2 22828 98.6103 306.4264 0011070 27.7429 332.4341 14.28108685 66809
PO-28
1 22829U 93061G 95230.20878214 .00000103 00000-0 58921-4 0 4036
2 22829 98.6063 305.9209 0011222 28.6854 331.4902 14.28089675 98645
KO-25
1 22830U 93061H 95230.75961492 -.00000010 00000-0 13369-4 0 4225
2 22830 98.5104 298.9578 0011665 8.0726 352.0636 14.28094592 98729
GPS BIIA-23
1 22877U 93068A 95232.54395157 -.00000021 00000-0 10000-3 0 3039
2 22877 55.5519 61.2271 0036880 293.9339 65.7582 2.00575600 13349
METEOSAT 6
1 22912U 93073B 95230.83316748 -.00000102 00000-0 10000-3 0 3573
```

```
2 22912 0.6923 277.9032 0000804 286.8040 51.5053 1.00271974 4811
HST Array
1 22920U 90037C 95232.56509685 .00003936 00000-0 28337-3 0 3585
2 22920 28.4672 310.9697 0004062 137.1404 222.9496 15.01640455 93998
Meteor 3-6
1 22969U 94003A 95232.17838764 .00000051 00000-0 10000-3 0 1902
2 22969 82.5621 113.5988 0014318 276.1990 83.7500 13.16731174 75302
TUBSAT-B
1 22970U 94003B 95230.16030712 .00000051 00000-0 10000-3 0 1818
2 22970 82.5611 114.9534 0014896 278.3152 81.6278 13.16825904 75045
GPS BIIA-24
1 23027U 94016A 95231.62646618 -.00000089 00000-0 10000-3 0 2459
2 23027 55.1084 2.0972 0071957 190.1102 169.7608 2.00560144 10631
Glonass 62
1 23043U 94021A 95230.93379984 -.00000083 00000-0 00000+0 0 2421
2 23043 64.7514 334.4825 0006807 185.6803 174.3417 2.13102866 10548
Glonass 63
1 23044U 94021B 95231.28570492 -.00000083 00000-0 00000+0 0 2181
2 23044 64.7465 334.4677 0030157 202.8427 157.0523 2.13103126 10555
Glonass 64
1 23045U 94021C 95230.99280821 -.00000083 00000-0 00000+0 0 2239
2 23045 64.7347 334.4865 0010011 36.1500 323.9514 2.13102838 10543
GOES 8
1 23051U 94022A 95231.77325463 -.00000266 00000-0 10000-3 0 3639
2 23051 0.1505 84.9178 0004442 80.3304 5.9201 1.00264213 12338
MSTI 2
1 23101U 94028A 95232.51869961 .00003666 00000-0 64645-4 0 2247
2 23101 97.0954 64.8489 0012332 7.6649 352.4772 15.50969100 72493
STRV-1A
1 23125U 94034B 95230.43804466 .00004011 00000-0 11159-2 0 1871
2 23125 7.5010 5.4963 7265511 170.6230 220.5389 2.30158522 9085
STRV-1B
1 23126U 94034C 95232.44640356 .00002962 00000-0 66385-3 0 1685
2 23126 7.5011 4.9840 7273435 171.7948 215.4547 2.29812393 9177
Nadezhda 4
1 23179U 94041A 95232.63692879 .00000038 00000-0 24064-4 0 1242
2 23179 82.9458 100.1072 0034842 246.4989 113.2500 13.75670689 55334
Glonass 65
1 23203U 94050A 95233.00744126 .00000064 00000-0 00000+0 0 1838
2 23203 64.7943 214.2282 0006590 162.2065 197.8201 2.13102067 7982
Glonass 66
1 23204U 94050B 95231.36442698 .00000072 00000-0 00000+0 0 1902
2 23204 64.7779 214.3175 0015338 339.7377 20.2008 2.13102007 7943
Glonass 67
1 23205U 94050C 95232.18581466 .00000068 00000-0 00000+0 0 1771
2 23205 64.7926 214.2784 0003351 283.4434 76.5230 2.13102535 7963
DMSP B5D2-7
1 23233U 94057A 95232.63936283 .00000110 00000-0 83180-4 0 4541
2 23233 98.8733 290.1276 0012351 320.6869 39.3399 14.12630009 50250
OKEAN 1-7
```

```
1 23317U 94066A 95232.35578744 .00000095 00000-0 11015-4 0 880
2 23317 82.5442 336.6724 0026649 346.1964 13.8513 14.73951480 46074
ELEKTRO
1 23327U 94069A 95222.93711650 -.00000125 00000-0 10000-3 0 845
2 23327 0.6895 259.9589 0005983 199.9810 272.2315 1.00273993 2880
RESURS 1-3
1 23342U 94074A 95233.10968244 .00000586 00000-0 10640-3 0 2710
2 23342 98.0110 291.5932 0001391 114.9936 245.1467 14.69770599 42588
Glonass 68
1 23396U 94076A 95231.09078945 -.00000019 00000-0 00000+0 0 1364
2 23396 64.9658 94.5690 0029855 188.9173 171.0993 2.13102479 5781
Glonass 69
1 23397U 94076B 95231.26631257 -.00000017 00000-0 00000+0 0 1396
2 23397 64.9534 94.5718 0012239 324.6246 35.3770 2.13102326 5780
Glonass 70
1 23398U 94076C 95232.08830451 -.00000008 00000-0 00000+0 0 1508
2 23398 64.9372 94.5296 0002106 287.7231 72.3331 2.13102162 5813
LUCH (Altair-2)
1 23426U 94082A 95232.21927267 -.00000289 00000-0 00000+0 0 1572
2 23426 2.0815 272.4421 0000887 242.2683 347.5697 1.00280961 2478
RS-15
1 23439U 94085A 95229.16885687 -.00000039 00000-0 10000-3 0 711
2 23439 64.8132 156.3621 0167370 251.5947 106.6714 11.27524700 26392
NOAA 14
1 23455U 94089A 95232.81956069 .00000066 00000-0 60856-4 0 2864
2 23455 98.9068 174.8369 0010318 17.3111 342.8410 14.11527871 32932
ODERACS II A
1 23471U 95004C 95233.20518451 .00025386 00000-0 10200-3 0 1737
2 23471 51.6483 156.4808 0011424 356.4550 3.6378 15.86202886 31487
ODERACS II B
1 23472U 95004D 95233.13692162 .00123146 17847-4 21487-3 0 1959
2 23472 51.6414 146.7442 0007404 26.0853 334.0464 16.01867515 31602
Glonass 71
1 23511U 95009A 95230.17151713 -.00000082 00000-0 00000+0 0 856
2 23511 64.7595 334.7739 0006891 208.0306 151.9599 2.13102930 3495
Glonass 72
1 23512U 95009B 95230.28897150 -.00000082 00000-0 00000+0 0 930
2 23512 64.7630 334.7728 0005016 309.6930 50.2917 2.13102159 3491
Glonass 73
1 23513U 95009C 95232.72802576 -.00000080 00000-0 00000+0 0 927
2 23513 64.7634 334.7052 0014041 200.3133 5.7595 2.13102812 3545
Soyuz TM-21
1 23519U 95010A 95233.02044907 -.00010750 00000-0 -13813-3 0 1696
2 23519 51.6452 193.1106 0003942 12.6182 347.5623 15.57247054 24932
SFU
1 23521U 95011A 95231.56282895 .00002505 00000-0 78717-4 0 902
2 23521 28.4596 2.5161 0019682 205.7266 154.2292 15.28711117 23642
GMS 5
1 23522U 95011B 95228.77185426 -.00000299 00000-0 10000-3 0 475
2 23522 0.7916 298.0325 0001141 185.2023 259.6091 1.00271639 1390
```

```
DMSP B5D2-8
1 23533U 95015A 95232.72226744 .00000015 00000-0 31519-4 0 1835
2 23533 98.8341 234.2111 0006573 182.9066 177.2056 14.12697730 21065
Microlab 1
1 23547U 95017C 95230.85541740 .00000244 00000-0 86224-4 0 432
2 23547 69.9778 153.9180 0015296 248.0503 111.8996 14.45397949 19832
OFEQ 3
1 23549U 95018A 95232.79745675 .00011856 00000-0 32936-3 0 940
2 23549 143.3709 200.4375 0250099 133.6278 228.5468 15.08282613 20720
GFZ-1
1 23558U 86017JE 95231.08350249 .00002116 00000-0 31708-4 0 518
2 23558 51.6521 200.4172 0007302 159.1977 200.9311 15.60236222542659
ERS-2
1 23560U 95021A 95233.18281924 .00000034 00000-0 28835-4 0 1090
2 23560 98.5469 306.5876 0001175 78.3283 281.8033 14.32251221 17487
Spektr
1 23579U 95024A 95233.02044907 -.00010750 00000-0 -13813-3 0 1091
2 23579 51.6452 193.1106 0003942 12.6182 347.5623 15.57247054 14498
GOES 9
1 23581U 95025A 95232.92247942 -.00000197 00000-0 10000-3 0 487
2 23581 0.4284 269.4966 0000870 270.4637 31.0703 1.00275619 909
Helios 1A
1 23605U 95033A 95231.26768383 .00000122 00000-0 32240-4 0 776
2 23605 98.0895 166.8185 0001583 79.5763 280.5620 14.63857072 6233
TDRS 6
1 23613U 95035B 95232.84001560 .00000117 00000-0 00000+0 0 328
2 23613 0.0528 89.4688 0000897 132.7675 258.4684 1.00270747 364
Progress M-28
1 23617U 95036A 95233.02044907 -.00010750 00000-0 -13813-3 0 388
2 23617 51.6452 193.1106 0003942 12.6182 347.5623 15.57247054 4984
Glonass 74
1 23620U 95037A 95230.36694779 .00000073 00000-0 00000+0 0 379
2 23620 64.8447 214.1572 0018666 172.1822 187.8500 2.13103992 537
Glonass 75
1 23621U 95037B 95232.42021500 .00000067 00000-0 00000+0 0 446
2 23621 64.8645 214.0866 0017900 183.7957 176.2006 2.13102086 570
Glonass 76
1 23622U 95037C 95231.54035737 .00000071 00000-0 00000+0 0 362
2 23622 64.8448 214.1182 0036539 167.5302 192.5693 2.13101991 552
1995037D
1 23623U 95037D 95206.20798611 .14391761 78694-5 10991-3 0 47
2 23623 64.8547 213.0520 0008335 271.4613 119.6698 16.52366825 91
1995037E
1 23624U 95037E 95205.89922234 .00388584 77671-5 10000-4 0 31
2 23624 64.8214 214.2845 0007283 77.2458 281.8629 16.45405797 41
1995037F
1 23625U 95037F 95232.84723872 .00000064 00000-0 00000+0 0 129
2 23625 64.8504 214.0764 0007238 254.6118 105.2996 2.13422697 589
1995037G
1 23626U 95037 G 95207.35685102 .08292106 00000-0 17695-3 0 42
```

```
2 23626 064.8501 209.1390 0230257 053.5306 308.6775 16.01358170000277
1995037H
1 23627U 95037 H 95208.35977691 .11875576 00000-0 11821-3 0 26
2 23627 064.9833 205.9815 0193251 054.4409 307.4530 16.15959152000446
1995037J
1 23630U 95037J 95230.99290872 .00000161 00000-0 59971-4 0 65
2 23630 64.8196 205.6330 5794084 296.3821 16.2195 4.23313440 1073
1995037K
1 23631U 95037K 95230.99390154 .00000177 00000-0 77803-4 0 83
2 23631 64.8839 205.5321 5793518 296.3665 16.2283 4.23295781 719
Prognoz-M2
1 23632U 95039A 95222.61896790 -.00000158 00000-0 00000+0 0 61
2 23632 62.4900 261.0150 9281119 314.1620 358.2420 0.26364502 15
1995039B
1 23633U 95039B 95233.03596423 .00074366 80175-5 31347-3 0 238
2 23633 62.8326 197.6572 0376791 114.5208 249.5630 15.25092818 2751
1995039C
1 23634U 95039C 95232.90731644 .00177519 68750-5 39283-3 0 292
2 23634 62.8153 198.0808 0407293 114.8738 249.4701 15.27109313 2737
1995039D
1 23635U 95039D 95222.54841510 -.00000133 00000-0 00000+0 0 47
2 23635 62.5430 261.1120 9272251 314.0610 359.8460 0.26922002 16
PAS 4
1 23636U 95040A 95230.83028400 -.00000086 00000-0 00000+0 0 155
2 23636 0.0228 74.1211 0009123 38.6346 223.7622 1.00366607 110
1995040B
1 23637U 95040B 95231.25210585 -.00000216 00000-0 10000-4 0 49
2 23637 4.2045 105.2038 7214840 190.6128 136.1326 2.18391814 335
Magion 4
1 23638U 95039E 95232.83345409 .15741816 78993-5 42535-2 0 250
2 23638 62.8069 195.5708 0062703 125.4505 235.2528 16.22182774 2548
1995041A
1 23639U 95041A 95231.92442899 -.00000169 00000-0 00000+0 0 266
2 23639 0.1134 122.6582 0215165 178.9665 291.8541 1.12460061 227
1995041B
1 23640U 95041B 95229.24703101 .00000132 00000-0 43302-4 0 93
2 23640 26.6786 245.5092 0290409 311.4772 46.1144 13.27556332 1567
1995041C
1 23641U 95041C 95230.45938342 -.00000173 00000-0 00000+0 0 73
2 23641 20.5779 299.2009 6440256 7.4895 358.8138 2.70396260 358
1995042A
1 23642U 95042A 95232.23889337 -.00000665 00000-0 -35780-2 0 244
2 23642 62.8217 300.4086 7437103 280.3105 10.9099 2.00565924 225
1995042B
1 23643U 95042B 95233.24421444 .00494105 80991-5 44924-3 0 379
2 23643 62.8264 254.9889 0106083 137.9854 222.9387 16.01152161 1949
1995042C
1 23644U 95042C 95233.23526619 .01648239 82842-5 52356-3 0 431
2 23644 62.8136 254.8997 0105400 126.1230 234.9765 16.13074444 1940
1995042D
```

```
1 23645U 95042D 95231.35905934 .00001068 00000-0 33339-2 0 76
2 23645 62.8259 300.6065 7452617 280.2628 10.8895 1.95907338 202
1995039F
1 23646U 95039F 95215.39236111 .00000278 00000-0 00000+0 0 15
2 23646 63.2654 259.9492 9304461 314.4137 33.0930 0.26401563 04
```

--

Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1779. Re: Satellite Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-08-22 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <41bef9$9d6@over.mhv.net>
Source record: 24287

HeadShrnkr (headshrnkr@aol.com) wrote:
: Hello.

: I have a few questions about sat. tracking software and modems. First, let
: me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and
: KLM 70cm antenna setup on a Yaesu GB5400 rotor.

: First, can anyone make a suggestion as to a good tracking program for DOS
: or Windows? Either commerical or shareware is fine.

I can answer this one at least! Get STSORBIT PLUS. Probably THE best
satellite software around. I believe it's in either the ham area on AOL
or the astronomy area. Also check the ftp site: ftp.amsat.org and Nasa
spacelink at: spacelink.msfc.nasa.gov
I'll let others answer the rest.

: Second, I would like to have my rotor controlled by software, suggestions?
: Possibly a tracking and rotor control software package?

: Third, I do not understand the exact equipement required for digital
: transmission and reception. I am familar with Packet and use a PK 232 but
: the standard is different for the Digital Satellites? Is there any way to
: use or modify my PK 232 to function in this manner?

: I appericate your reply. If possible email to HeadShrnkr@aol.com.

: 73,
: KB2VKJ

: ---
: -------------------------------

: "We, the people are the rightful masters of both the congress and the
: courts - not to overthrow the constitition, but to overthrow men who
: pervert the constitution" - A. Lincoln

: Bruce J. Howes
: HeadShrnkr@aol.com

Tom Randall, KB2SMS

1780. Re: QSL card for DOVE?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-22 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <41bei3$9d6@over.mhv.net>
Source record: 24288

DARRYL LINKOW (darryl.linkow@ledge.com) wrote:
: Hello all. I was just wondering if anybody has ever received a QSL
: card for the DOVE (DO-17) satellite? I sent a telemetry printout
: back about May to Sao Paulo, Brazil, but never received a card
: back. Anyone ever get one?
: 73' Darryl KE6IHA

: ---
: * OLX 2.2 * Darryl Linkow (818)346-5278 9 am - 5 pm PDT

Well, I sent for one back on January 26th and haven't recieved mine yet
either. It may take a while I suppose.
Good luck.

73,
Tom Randall, KB2SMS

1781. Antennas for DXpedition

Newsgroup: rec.radio.amateur.space
Date: 1995-08-22 00:00:00 UTC
From: dickd@magicnet.net
Message-ID: <41bg6t$hrg@comet2.magicnet.net>
Source record: 24289

A group of us from Central Florida will be goint to VP5 the last
week of Oct. I will be on the Sats and am looking for good portable
antennas we can take with us. My setup here at home is going too be
too difficult to transport. Any suggestions???
Also does anyone know of the DX association for sats.? I understand
they have antennas for this type of operation.
Thanks for the info.
VP5/KB4QKP

1782. looking for TRW address.

Newsgroup: rec.radio.amateur.space
Date: 1995-08-22 00:00:00 UTC
From: smchenry@freenet.columbus.oh.us
Message-ID: <41crcq$gc1@acme.freenet.columbus.oh.us>
Source record: 24290

Looking for the name and/or address of TRW. A company that used to manufacture microwave devices. Are they still around? Anyone have the address or phone number? Please e-mail me at the address given below. Thanks, Sean.

--
smchenry@FREENET.COLUMBUS.OH.US In Cyberspace, no one can hear you scream.

1783. Re: Email by radio from Yacht - HELP?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-22 00:00:00 UTC
From: mbv@ti.com
Message-ID: <41d5t9$44j@superb.csc.ti.com>
Source record: 24291
Cross-posted to: rec.radio.shortwave,uk.amateur.radio,rec.radio.amateur.space,alt.radio.digital

In article <41cmgg$dmg@etech.aladdin.co.uk>, geoff@aladdin.co.uk (Geoff Lynch) says:
>
Probably not by Amateur satellite, but by Inmarsat, which is a commercial system. I don't have any information on how to get started using the system except that it uses a frequency of around 2Ghz and you need a small (2-3ft) dish to access it. I believe the system is intended to be used primarily by underdeveloped countries for emergency medical communications.

There are some systems designed to be used by ships for telephone traffic that could be used by individuals if they were willing to pay the price. Contact a marine radio salesman through a local marina for information. If your friends are in range of the Japanese digital cellular satellites, they could use them for worldwide communications. I don't think the US has its system in place yet.

There are Gateways from Ham satellite to Internet, but they are NOT used for the purposes you described. Also the access is not good due the orbital mechanics. There are just not enough Ham Satellites to be overhead when you need them.

Ken K5MBV mbv@ti.com

1784. Email by radio from Yacht - HELP?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-22 00:00:00 UTC
From: geoff@aladdin.co.uk
Message-ID: <41cmgg$dmg@etech.aladdin.co.uk>
Source record: 24292
Cross-posted to: rec.radio.shortwave,uk.amateur.radio,rec.radio.amateur.space,alt.radio.digital

I am not an amateur radio person, but have some understanding of technology, unlike my friends. They are retired and sailing slowly round the world on 37' yacht (currently ashore for winter in N.Z.)

I am informed that there is the possibility of sending email via radio to amateur satellites which then can connect into good old internet/compuserve......from a laptop or similar on board. The have a radio which from N.Z. they could "talk" to mid USA and as far west as Austria, so presumably it is quite powerful. They want this facility to be able to leave email for their agent in UK so they can get spares ordered before they get into port.......

Anyone any ideas if this is so , and if so, how do they go about it?

Any info gratefully recieved. Please email me as well as posting any response for the education of others.

Thanks a bunch in advance, geoff@aladdin.net

1785. Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-22 00:00:00 UTC
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Message-ID: <Pine.SOL.3.91.950822212845.8136D-100000@spacelink>
Source record: 24293

Does anyone access domestic Russian television from Molniya satellites,
over the north pole? How difficult is it to do it? Can I use surplus
C-band equipment?
If you know of a good written description of how to do this little stunt,
I'd really like to know the title of the publication reference.
-Dick

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

1786. NBSCOM.INI

Newsgroup: rec.radio.amateur.space
Date: 1995-08-23 00:00:00 UTC
From: bbd@pop3.connectnet.com
Message-ID: <41earr$sqi@news.connectnet.com>
Source record: 24294

Can anyone provide me with a sample of this INI file?

Thnaks, and please post here, not e-mail.
Brian

1787. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-23 00:00:00 UTC
From: Keith Stein <us011192@pop3.interramp.com>
Message-ID: <41g9b7$mua@usenet1.interramp.com>
Source record: 24295

I don't know about how to pick up on the Molniya signal. But if you do, please let me know what you find, and the downlink frequency.

1788. Re: RS-15 frequencies anyone?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-23 00:00:00 UTC
From: I121171@amsat.org
Message-ID: <41er8h$rlh@sgi.iunet.it>
Source record: 24296

```
RS 15 FREQS

beacon: 29352 MHz
downlink: 29354->29394 Mhz
uplink to follow... next message

De SWL I1-21171 Maurice in Italy
```

1789. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-23 00:00:00 UTC
From: stephens@ngis.geod.emr.ca
Message-ID: <DDs0o7.Ayz@emr1.emr.ca>
Source record: 24297

Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
: Does anyone access domestic Russian television from Molniya satellites,
: over the north pole? How difficult is it to do it? Can I use surplus
: C-band equipment?
: If you know of a good written description of how to do this little stunt,
: I'd really like to know the title of the publication reference.
: -Dick

: ----------
: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

I am sorry but I do not have a reference, but the Molniya satellites
used to use a form of sound in vision in which the sound channel was
carried as a pulse (width, position modulated?) in the sync area od the
flyback of each line. A demodulator was described in a radio magazine about
ten years ago, but that I am afraid is all I can remember.

--
Dave Stephenson
Geological Survey of Canada *Who ever knew the heavens menace so?
Ottawa, Ontario, Canada *Those that have known the earth so
Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

1790. Re: Seeking M2 Eggbeater Antenna Experiences

Newsgroup: rec.radio.amateur.space
Date: 1995-08-23 00:00:00 UTC
From: kory@avatar.com
Message-ID: <41fl1d$65q@avatar.avatar.com>
Source record: 24298

In article <rtm-1908951516240001@ng53.netgate.net>,
Bob Martin N6MZV <rtm@ftp.netgate.net> wrote:
>I've got the 2 meter m2 eggbeater- works well. I've used it to work the
>Shuttle and MIR on 2 meters, running about 30 watts into 50 feet of 9913.
>Also use it for 137 MHz WX sats. Here in Silicon Gulch, the 28 degree shuttle
>orbits only give us about a 12 degree elevation at maximum- so the antenna
>works well down low as well as on overhead passes for the wx birds. I'd like
>to put a preamp up on the mast, but around here, I'm going to need filters
>(probably switchable) ahead of the preamp to cut down on local noise (I'm
>still looking for something that's effective for dealing with louts keying
>up on the downlink).
>
>73-
>
>--
>
>Bob Martin N6MZV * rtm@ftp.netgate.net

Hi Rob,

Did you purchases the optional radials? If so, can you tell me the length
of them? I'm trying to build a 144 and 440 mhz eggbeater and can't find the
formula for calculating the length of the radials.

Also, have you worked any other Sats like AO-27 or AO-13 with the eggbeater?

Thanks,
Kory

1791. ARLS012 Amateur radio on Mir

Newsgroup: rec.radio.amateur.space
Date: 1995-08-23 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls012.1995@ampr.org>
Source record: 24299
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB SPACE @ ARL $ARLS012
ARLS012 Amateur radio on Mir

ZCZC AS91
QST de W1AW
Space Bulletin 012 ARLS012
From ARRL Headquarters
Newington, CT August 23, 1995
To all radio amateurs

SB SPACE ARL ARLS012
ARLS012 Amateur radio on Mir

German Cosmonaut Thomas Reiter, DF4TR, will join the Russian space
station Mir, and operate signing DP0MIR, during the European Space
Agency's ''EUROMIR 95'' mission beginning September 2, 1995.

Reiter will use the 2-meter FM rig aboard Mir during the 135 days
planned for his flight. Primary frequencies to be used (preferably
in split mode) are 145.800, 145.550, and perhaps 145.200 MHz.

QSLs for DP0MIR should be sent to DARC QSL bureau.
NNNN
/EX
```

1792. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-24 00:00:00 UTC
From: Ben@mn.interact.net
Message-ID: <41i332$ber@sven.mn.interact.net>
Source record: 24300

In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:

Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.

problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
Note a fairly cheap computer can do this ie) Apple][, although
I have heard stories of people MANUALLY re-pointing their dish
every 15-30 mins.

Problem 2) Need a fairly big dish, 10' minimum, 16-32' preferred.

Problem 3) SECAM TV format. can be displayed on multiformat monitors.

Problem 4) Audio not above video but mixed into horiz blanking area.
Note: This has been fixed by them adding 2nd audio signal
above video signal to be more compatable with cheaper
western TVRO RX gear.

Problem 5) Language in Russian. Although the pictures are nice. Its weird
seeing Fraggle Rock dubbed in Russian but they SING in english.

Problem 6) Ocassionally one or more of the Four satellites in the constillation
is 'on the blink'.

Several colleges have a setup to receive this for their Russian Studies.
if you see a dish NOT pointed to the SW, SE or S but to the NE then they have
such a setup. U of IA and Crighton in Omaha come to mind.

There are a few firms out there that will sell you a turnkey system installed for
about $50,000-$100,000.

If you live EAST of the Missippi or better yet east of the OHIO river vallely
you can pick up the signal from their Geo-sync birds.

Hope this helps.
Ben
>
>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>: Does anyone access domestic Russian television from Molniya satellites,
>: over the north pole? How difficult is it to do it? Can I use surplus
>: C-band equipment?
>: If you know of a good written description of how to do this little stunt,
>: I'd really like to know the title of the publication reference.
>: -Dick
>
>
>: ----------
>: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

>
>I am sorry but I do not have a reference, but the Molniya satellites
>used to use a form of sound in vision in which the sound channel was
>carried as a pulse (width, position modulated?) in the sync area od the
>flyback of each line. A demodulator was described in a radio magazine about
>ten years ago, but that I am afraid is all I can remember.
>
>
>--
>Dave Stephenson
>Geological Survey of Canada *Who ever knew the heavens menace so?
>Ottawa, Ontario, Canada *Those that have known the earth so
>Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

1793. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-24 00:00:00 UTC
From: stevekit@eznet.net
Message-ID: <41gq0i$750_001@dialin-47.eznet.net>
Source record: 24301

In article <DDs0o7.Ayz@emr1.emr.ca>,
stephens@ngis.geod.emr.ca (Dave Stephenson) wrote:
>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>: Does anyone access domestic Russian television from Molniya satellites,
>: over the north pole? How difficult is it to do it? Can I use surplus
>: C-band equipment?
>: If you know of a good written description of how to do this little stunt,
>: I'd really like to know the title of the publication reference.
>: -Dick

I check into the Molniya satellites awhile ago, and found that the
satellites are no longer transmitting TV signals. I cannot personally
confirm this.

****
* __/__/\ Steve Kittelsen ______ *
* / /\ \ Rochester, New York \ / *
* I I I I " stevekit@eznet.net " \ / *
* \ __\/__ / * OPEN YOUR MIND * \/ PRIDE *
****

1794. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-24 00:00:00 UTC
From: mbv@ti.com
Message-ID: <41irim$7qr@superb.csc.ti.com>
Source record: 24302

```
In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple ][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
agree with my what I have read.

Ken mbv@ti.com

1795. Yaseu 5400B problem...

Newsgroup: rec.radio.amateur.space
Date: 1995-08-24 00:00:00 UTC
From: Chris Oesterling <chris@angus.mystery.com>
Message-ID: <omNcaD3w165w@angus.mystery.com>
Source record: 24303

Hi. I've been using a Yaseu 5400B for years but now am having a problem. The azimuth reading (via KCT) is wrong. I checked the output of the 5400's din plug and indeed the voltage is jumping several volts in a random pattern. The elevation is working just fine. One last thing, the analog display on the 5400 does show the proper az position. Anyone ever have this problem? Thanks, Chris N8UDK

--
Chris Oesterling (chris@angus.mystery.com)
Mystery Spot BBS, Royal Oak, MI ----------?--

1796. Re: NOAA decoder wanted!!

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: tfugate@pop.uky.edu
Message-ID: <41khkt$pak@service1.uky.edu>
Source record: 24304

In article <413bkr$519@kryten.awinc.com>, danichol@microage-ll.awinc.com (David Nicholson) says:
>
>oe5kco@sbox.tu-graz.ac.at (Christian Koubek) you spake to us
>
>
>I have a program that works with .wav and .voc files, but you have to
>have a sound blaster board or similar that has 44khz 8 bit sampling.
>If you are interested e-mail me, I use it regularly.
>
>David Nicholson danichol@microage-ll.awinc.com
>Lloydminster, Saskatchewan, Canada
>
How can we get a copy of your program? Could you post it on the
oak.oakland ftp.site? Or should I send you a diskette(s) and an IRC?
Thanks
Terry Fugate
WN4ISX
****
****
**********PLEASE EXCUSE THESE GRABAGE LINES BUT OUR STUPID MAIL SERVER
**********INSISTS ON MORE NEW THAN INCLUDED TEXT GRRR :(**********
****
****
****

1797. JVFAX APT CONFUSION

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: tfugate@pop.uky.edu
Message-ID: <41kkoe$27h@service1.uky.edu>
Source record: 24305

I have received several Emails concerning a reply that I had made
regarding NOAA APT reception with JVFAX 7.0. I was told that
"you can only receive hf style sefax with the 'simplest' demodulator"
Diagram AMFMFAX.GIF show a circuit using the XR2206. This is a
converter that goes in front of the op-amp cirucit. It detects the
AM NAOO APT FAX and CONVERTS it into a FM(HF) FAX signal. The diagram
text is in GERMAN but the circuit does work and works fairly well.
It is a full wave detector driving a VCO. There is a graph,
AMFMFAX1.GIF, that show the transfer curve. It is reasonalbly linear.
I used a 8ohm to 1000ohm transformer. I used a 2n2222 for T1.
While I now use a better demodulator, I decided to keep this one around
for field operation.
TO any and all that emailed me, I am sorry to reply this way, but UK is
having MAJOR mail problems. They switched us all from CC mail to Eudora.
I have had a nightmare trying to post mail off campus and have been
told by freinds that a lot of mail sent to me is bouncing. Our campus
access to the news groups has been kind of spooty also.
The bottom line is this simple method does work. And, while a better
demodulator is a real good idea, you can toss the "simplest" adaptor and
the xr2206 converter togather in a evening. The only problem that the
simplest/xr2206 had was in saving. My old pc, a 20mc 80386, just got
"lost" while trying to save images.(or it might have been the MAXTOR
hard file..it was a GREEN energy saver that would auto-spin down.
You could hear the drive stop and then tJVFAX would lock up..sometimes)
I tried it again last night on NOAA12, I had a good 50 degree pass last
night, and captured the entire pass with the simplest/XR2206 demod.
I currently have a 80486DX66(I use the maxtor as my boot drive(c:) and
capture to a seagate 80meg). Give it a shot. It is a thrill to see your
first capture.
Oh, and don't try to record the pass on audio tape and expect to play
it back and captur it after the fact. Almost all audio tape recorders,
either reeel to rel or cassette, have so much wow and flutter that the
resultant image will be barely if at all usefull. You might be able to
record the pass on a VHS vcr and play it back. Be sure to feed a good
stong clean local video signal in the video input.(most home vcrs will
allow you to tune in a local tv station and plug in an external audio
source). VCRs have a seperate control track that might keep the tape
speed constant(or least close enouge for our purposes). I have had good
luck with a borrowed NAGRA reel to reel audio recorder. The NAGRA was
designed to be used with a file camera and has a 100hz crystal
refferenced audio track. During playback it "locks" the tape speed to
the internal clock. I mention this just to save you the frustration that
I have already been through in trying to tape a pass.
.....

Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.
If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

1798. Wisp, KCT, and Win95

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: pflynn@ibm.net
Message-ID: <41kp65$2ei0@news-s01.ny.us.ibm.net>
Source record: 24306

I am having trouble with Win95 reconizing the OEMSETUP.INF file supplied with the wkctdrv.zip file. Seems to me I seen something somewhere that said this file had to be edited before Win95 would install the Windows KCT driver in Win95. Wisp is up and running just fine, but can't get the KCT driver to load. Can anyone help me on this?

1799. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: Ben@mn.interact.net
Message-ID: <41kq10$hcr@sven.mn.interact.net>
Source record: 24307

In article <41irim$7qr@superb.csc.ti.com>, mbv@ti.com (Ken Durham) says:
>
>In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>>
>>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>>
>>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>>
>>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
>> Note a fairly cheap computer can do this ie) Apple][, although
>> I have heard stories of people MANUALLY re-pointing their dish
>> every 15-30 mins.
>~~~~~~
~~~~~~~~~~~~~~~~~~~~
>
>Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
>three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
>agree with my what I have read.
>
>Ken mbv@ti.com

If you have a BEAM that wide you need REALLY good signal processing to
get the signal back out.

Most dishes have a beam 1-2 degrees wide, about 2-4 full moon widths.
It's a BIG sky, over 25,000 places to point and only a few will work.
The satellites are NOT that close together. EVERY working system
I've seen has ACTIVE alt-azi pointing that updates the position every
few seconds. The Apple][system used TLEs to get close when the bird
came up then used a 'random move'/ signal strength check to track.
(hey... it worked...)

BTW:
Problem 7:
There is a few minutes of signal dropout when EVERYBODY switches to the
NEXT 'rising' satellite when the current one 'sets'.

Sorta like our Geosync Sun outages except it happens several times each
day.
~~~~~~~~~~~~~~~~~~~~

1800. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: Ben@mn.interact.net
Message-ID: <41kqbo$hcr@sven.mn.interact.net>
Source record: 24308

In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.
>
>Problem 2) Need a fairly big dish, 10' minimum, 16-32' preferred.
>
>Problem 3) SECAM TV format. can be displayed on multiformat monitors.
>
>Problem 4) Audio not above video but mixed into horiz blanking area.
> Note: This has been fixed by them adding 2nd audio signal
> above video signal to be more compatable with cheaper
> western TVRO RX gear.
>
>Problem 5) Language in Russian. Although the pictures are nice. Its weird
> seeing Fraggle Rock dubbed in Russian but they SING in english.
>
>Problem 6) Ocassionally one or more of the Four satellites in the constillation
> is 'on the blink'.
>
Problem 7) They have circularized (left/right)polarization and we have
linear (horiz/vert) signals. Yet another adaptor required.
Actually just cram a 'special' piece of plastic in your feed
horn.

Problem 8) There is a few minutes of signal loss every 6 hrs or so when
EVERYBODY switches from the setting satellite to the Rising
satellite. Sorta like our solar outages except its several
times EVERY day.

>Several colleges have a setup to receive this for their Russian Studies.
>if you see a dish NOT pointed to the SW, SE or S but to the NE then they have
>such a setup. U of IA and Crighton in Omaha come to mind.
>
>There are a few firms out there that will sell you a turnkey system installed for
>about $50,000-$100,000.
>
>If you live EAST of the Missippi or better yet east of the OHIO river vallely
>you can pick up the signal from their Geo-sync birds.

>
>Hope this helps.
>Ben
>>
>>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>>: Does anyone access domestic Russian television from Molniya satellites,
>>: over the north pole? How difficult is it to do it? Can I use surplus
>>: C-band equipment?
>>: If you know of a good written description of how to do this little stunt,
>>: I'd really like to know the title of the publication reference.
>>: -Dick
>>
>>
>>: ----------
>>: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov
>>
>>I am sorry but I do not have a reference, but the Molniya satellites
>>used to use a form of sound in vision in which the sound channel was
>>carried as a pulse (width, position modulated?) in the sync area od the
>>flyback of each line. A demodulator was described in a radio magazine about
>>ten years ago, but that I am afraid is all I can remember.
>>
>>
>>--
>>Dave Stephenson
>>Geological Survey of Canada *Who ever knew the heavens menace so?
>>Ottawa, Ontario, Canada *Those that have known the earth so
>>Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

1801. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: stephens@ngis.geod.emr.ca
Message-ID: <DDvCCr.9Fv@emr1.emr.ca>
Source record: 24309

```
Ken Durham (mbv@ti.com) wrote:
: In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
: >
: >In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
: >
: >Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
: >
: >problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
: > Note a fairly cheap computer can do this ie) Apple ][, although
: > I have heard stories of people MANUALLY re-pointing their dish
: > every 15-30 mins.
: ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

: Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
: three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
: agree with my what I have read.

: Ken mbv@ti.com

I did not ask the original question. Yes the Molniya birds are in
Molniya orbits ( what else) and usually have 3 operational birds plus
one running spare plus some stand bys. Of course there are also the
military com sats and presumably still some U.S. jumpseats up there
chasing each other in orbits similar to the initial orbit of Oscar 13.
The problems of tracking a Molniya should be about the same as tracking
Oscar 13 with a microwave dish.

Thanks for bringing me up to date on those birds.

Dave VE3PYG

--
Dave Stephenson
Geological Survey of Canada *Who ever knew the heavens menace so?
Ottawa, Ontario, Canada *Those that have known the earth so
Internet: stephens@geod.emr.ca *full of faults! [ W.S. (JC. A1, S3)]
```

1802. Re: Email by radio from Yacht - HELP?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: pa0mjr@euronet.nl
Message-ID: <41kmjt$lkb@news.euro.net>
Source record: 24310
Cross-posted to: rec.radio.shortwave,uk.amateur.radio,rec.radio.amateur.space,alt.radio.digital

On 22 Aug 1995 17:59:05 GMT
mbv@ti.com (ken) wrote about
Re: Email by radio from Yacht - HELP?

>In article <41cmgg$dmg@etech.aladdin.co.uk>, geoff@aladdin.co.uk (Geoff Lynch) says:
>>
>Probably not by Amateur satellite, but by Inmarsat, which is a commercial
>system. I don't have any information on how to get started using the
>system except that it uses a frequency of around 2Ghz and you need a
>small (2-3ft) dish to access it. I believe the system is intended to be
>used primarily by underdeveloped countries for emergency medical communications.

Freq.s up/downlink for the vessel are in 1.5Ghz/1.6GHz, duplex distance
100Mhz.

Best for ur purpose is Inmarsat C. wich can run completely from 24V DC.
Antenna is small and not a dish but a Qudrifiller type antenna.

The Inmarsat C system is using a 600Bps up down link and is a store and
forward system. You can send/receive Msgs frm INT telex network, PSTN,
AX25 etc. You can also send an ASCII datafile to a fax machine ashore.

Best sold unit is from Thrane & Thrane in Denmark. Unit is sold
worldwide.

Sending receiving MSG's to the Internet is possible on some
coaststations, but is quit experimental on the moment of writing using
the X400 network.

>There are some systems designed to be used by ships for telephone
>traffic that could be used by individuals if they were willing to pay
>the price. Contact a marine radio salesman through a local marina for
>information. If your friends are in range of the Japanese digital cellular
>satellites, they could use them for worldwide communications. I don't think
>the US has its system in place yet.

There is also INMARSAT-M terminal, especial disigned for Portable work
and/or use ab a high sea going small vessel. Usage Telephony and low
speed FAX (2400 Bd), later on 2400Bd data will be added. 24V DC working
possible. No gyro compass needed.

For larger vessels there is a full size INMARSAT-B including full duplex
telephony, Telex, FAX at 9600Bd and DATA at 9600Bd.
The INMARSAT-B will replace the older INMARSAT-A.
For this equipment an AC supply (220V or 110V 50/60Hz) is needed aswel
as a good functioning gyro compass. 24V Emergency supply also available

for distres puposes.

INMARSAT has a worldwide coverage with 4 Stationairy satelites.

_
/\// __ __ __ |internet: pa0mjr@euronet.nl
/ / / / /_/ / / /\ / |ampr.net: pa0mjr@pa0mjr.ampr.org
/ / / / /\ / / / \/ |Martin de Radder,Schiedam,Holland

[Posted with Agent .99. For info, email agent-info@forteinc.com.]

1803. Re: Satellite Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: tfugate@pop.uky.edu
Message-ID: <41ku8i$f73@service1.uky.edu>
Source record: 24311

In article <41ae2u$cl1@newsbf02.news.aol.com>, headshrnkr@aol.com (HeadShrnkr) says:
>
>Hello.
>
>I have a few questions about sat. tracking software and modems. First, let
>me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and
>KLM 70cm antenna setup on a Yaesu GB5400 rotor.
>
>First, can anyone make a suggestion as to a good tracking program for DOS
>or Windows? Either commerical or shareware is fine.
>
>Second, I would like to have my rotor controlled by software, suggestions?
>Possibly a tracking and rotor control software package?
>
>Third, I do not understand the exact equipement required for digital
>transmission and reception. I am familar with Packet and use a PK 232 but
>the standard is different for the Digital Satellites? Is there any way to
>use or modify my PK 232 to function in this manner?
>
>I appericate your reply. If possible email to HeadShrnkr@aol.com.
>
>73,
>KB2VKJ
>
If you can afford it, Instant Track is propably the best tracking
program. Do a net search for amsat. I think you have to order it
via the phone with a credit card. Several of the sat gurus around here
use it. At the Amsat.ftp archive they have several different freeware/
shareware trackers. I know that IT supports computer control of your
rotor. I use PREDICT.EXE, it is a freeware text only tracker, schedular.
You can get the orbital elements for the airforce ftp. Since I switched
to netscape I can not quickly find net addresses. Do a net search.
Yesterday I downloaded a new(for me) tracker. STSORBIT. It appears
(from reading the docs) to be a good program. I think it came from the
AMSAT ftp, but I could have got it from the ARRL ftp sit..or to tell the
truth I was out netting and went all over the worl tracking down ham. I
was trying to find a German ftp site with the rumured new version of
JVFAX 8.0.
I am into NOAA WX sats and do not really know much about ham digital
formats. I suspect it is fairly high speed PSK. My MFJ1278 only does
AX25 1200buad, RTTY and AMTOR. You might post to the REC.RADIO.DIGITAL.
MISC. Those guys are into all sorts of digital stuff.
I hope some of this helps.

.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.
If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

1804. Re: Email by radio from Yacht - HELP?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-25 00:00:00 UTC
From: seven77@gate.net
Message-ID: <seven77.126.000EDFA1@gate.net>
Source record: 24312
Cross-posted to: rec.radio.shortwave,uk.amateur.radio,rec.radio.amateur.space,alt.radio.digital

I use a program called Notify! to take my e-mail messages, paginate them, and send out through an alphanumeric paging company. I put in an SMTP gateway between the Internet and Microsoft Mail. When you send a message to my other address, it ends up on my pager.

I know there are now global alphapagers where the signal comes from a sattelite. This COULD be a viable solution to your problem.

Mike (777)

1805. Station requirements for oscars

Newsgroup: rec.radio.amateur.space
Date: 1995-08-26 00:00:00 UTC
From: Andrew Naylor <anaylor@delphi.com>
Message-ID: <B-IDT-1.anaylor@delphi.com>
Source record: 24215

Is there a list out there detailing the station requirements for reasonable contacts? I have operated the modes A and K but am unfamillar with the other birds. Thanks, N0UJT

1806. REJECTED: Ham-Space Digest V95 #228

Newsgroup: rec.radio.amateur.space
Date: 1995-08-26 00:00:00 UTC
From: MAILER-DAEMON@RTP41.ceo.dg.COM
Message-ID: <9508261345.AA00021@rtp41.rtp.dg.com>
Source record: 24216

----- Mail rejected by CEO. -----
No Response from Remote Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #228
X-Ceo_Options: Document

<Original text message attached as document>

CEO document contents:

Ham-Space Digest Sat, 26 Aug 95 Volume 95 : Issue 228

Today's Topics:
Molniya over the pole?
Satellite Questions

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 24 Aug 1995 21:39:34 GMT
From: mbv@ti.com (Ken Durham)
Subject: Molniya over the pole?

In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.
~~~~~~
~~~~~~

Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
agree with my what I have read.

Ken mbv@ti.com

Date: 25 Aug 1995 16:37:38 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: Satellite Questions

In article <41ae2u$cl1@newsbf02.news.aol.com>, headshrnkr@aol.com (HeadShrnkr) says:
>
>Hello.
>
>I have a few questions about sat. tracking software and modems. First, let
>me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and
>KLM 70cm antenna setup on a Yaesu GB5400 rotor.
>
>First, can anyone make a suggestion as to a good tracking program for DOS
>or Windows? Either commerical or shareware is fine.
>
>Second, I would like to have my rotor controlled by software, suggestions?
>Possibly a tracking and rotor control software package?
>
>Third, I do not understand the exact equipement required for digital
>transmission and reception. I am familar with Packet and use a PK 232 but
>the standard is different for the Digital Satellites? Is there any way to
>use or modify my PK 232 to function in this manner?
>
>I appericate your reply. If possible email to HeadShrnkr@aol.com.
>
>73,
>KB2VKJ
>
If you can afford it, Instant Track is propably the best tracking program. Do a net search for amsat. I think you have to order it via the phone with a credit card. Several of the sat gurus around here use it. At the Amsat.ftp archive they have several different freeware/ shareware trackers. I know that IT supports computer control of your rotor. I use PREDICT.EXE, it is a freeware text only tracker, schedular. You can get the orbital elements for the airforce ftp. Since I switched to netscape I can not quickly find net addresses. Do a net search. Yesterday I downloaded a new(for me) tracker. STSORBIT. It appears (from reading the docs) to be a good program. I think it came from the AMSAT ftp, but I could have got it from the ARRL ftp sit..or to tell the truth I was out netting and went all over the worl tracking down ham. I was trying to find a German ftp site with the rumured new version of JVFAX 8.0.

I am into NOAA WX sats and do not really know much about ham digital
formats. I suspect it is fairly high speed PSK. My MFJ1278 only does
AX25 1200buad, RTTY and AMTOR. You might post to the REC.RADIO.DIGITAL.
MISC. Those guys are into all sorts of digital stuff.
I hope some of this helps.

.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.
If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

End of Ham-Space Digest V95 #228
****

1807. 440-->28 Rx Converters..

Newsgroup: rec.radio.amateur.space
Date: 1995-08-26 00:00:00 UTC
From: Andrew Naylor <anaylor@delphi.com>
Message-ID: <B9JAL78.anaylor@delphi.com>
Source record: 24217

Has anybody used a receive converter on the packet birds? What are the
main suppliers of converters in Kit/assembled form?
Thanks,
Andrew, N0UJT

1808. ARLK043 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-08-26 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk043.1995@ampr.org>
Source record: 24218
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK043
ARLK043 Keplerian data

ZCZC SK68
QST de W1AW
Keplerian Bulletin 43 ARLK043
From ARRL Headquarters
Newington, CT August 26, 1995
To all radio amateurs

SB KEP ARL ARLK043
ARLK043 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

AO-10
1 14129U 83058B 95226.51733708 -.00000116 00000-0 10000-3 0 3705
2 14129 26.4564 253.3162 5988239 301.4565 13.4548 2.05880986 63534
RS-10/11
1 18129U 87054A 95236.87737501 .00000019 00000-0 46891-5 0 1016
2 18129 82.9251 8.2870 0010199 263.4355 96.5639 13.72355384409397
UO-11
1 14781U 84021B 95237.03276446 .00000098 00000-0 24444-4 0 08464
2 14781 97.7843 236.3456 0011465 327.4158 32.6337 14.69369964614010
RS-12/13
1 21089U 91007A 95237.01705980 .00000018 00000-0 37085-5 0 08450
2 21089 82.9198 49.7281 0029588 344.3217 15.7001 13.74059515228226
AO-13
1 19216U 88051B 95237.15566405 .00000022 00000-0 -11521-3 0 819
2 19216 57.4664 168.4571 7320161 17.1024 358.0082 2.09719750 23618
UO-14
1 20437U 90005B 95237.21816493 -.00000019 00000-0 95985-5 0 01253
2 20437 98.5658 320.4730 0011362 0.4974 359.6214 14.29894568291610
RS-15
1 23439U 94085A 95237.15130553 -.00000039 00000-0 10000-3 0 00950
2 23439 64.8209 143.4547 0167104 250.4305 107.8505 11.27525014027292
AO-16
1 20439U 90005D 95237.18732610 .00000051 00000-0 36830-4 0 9198
2 20439 98.5770 322.2049 0012042 0.7737 359.3459 14.29949441291626
```

```
DO-17
1 20440U 90005E 95237.09904114 -.00000005 00000-0 15139-4 0 09234
2 20440 98.5786 322.6096 0012114 0.0907 0.0286 14.30090132291638
WO-18
1 20441U 90005F 95237.15266563 -.00000008 00000-0 13874-4 0 09317
2 20441 98.5784 322.6288 0012674 0.2460 359.8724 14.30061216291641
LO-19
1 20442U 90005G 95237.17052229 -.00000001 00000-0 16591-4 0 09235
2 20442 98.5802 323.0295 0012749 359.7135 0.4038 14.30164629291661
FO-20
1 20480U 90013C 95237.17740146 -.00000040 00000-0 -25229-4 0 08240
2 20480 99.0714 312.9470 0541176 77.1784 288.9202 12.83231277259799
AO-21
1 21087U 91006A 95236.87444491 .00000093 00000-0 82657-4 0 06351
2 21087 82.9404 181.7422 0035317 318.1352 41.7103 13.74558423229162
UO-22
1 21575U 91050B 95237.15113884 -.00000012 00000-0 10441-4 0 06313
2 21575 98.3891 306.7480 0008611 72.2053 288.0077 14.36986952215400
KO-23
1 22077U 92052B 95237.01158108 -.00000037 00000-0 10000-3 0 5166
2 22077 66.0846 91.6728 0002569 174.4412 185.6637 12.86291464142587
KO-25
1 22828U 93061F 95236.15157933 -.00000012 00000-0 12866-4 0 03973
2 22828 98.6102 311.7451 0010839 12.9849 347.1610 14.28109104067573
IO-26
1 22826U 93061D 95237.15189675 .00000052 00000-0 38643-4 0 04234
2 22826 98.6140 312.6921 0009869 26.1044 334.0631 14.27778896099617
AO-27
1 22825U 93061C 95237.20318315 .00000020 00000-0 25798-4 0 04258
2 22825 98.6143 312.6351 0009450 24.4001 335.7618 14.27670392099611
PO-28
1 22829U 93061G 95237.21513168 -.00000020 00000-0 93678-5 0 04193
2 22829 98.6093 312.8311 0010699 11.3857 348.7552 14.28088771099647
Mir
1 16609U 86017A 95237.19163365 .00001322 00000-0 24494-4 0 02307
2 16609 51.6461 172.2191 0003342 29.2046 330.9132 15.57281055543681

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
August 29, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1809. Re: Satellite Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-08-26 00:00:00 UTC
From: bmuniz@rain.org
Message-ID: <bmuniz-2608951224340001@port12.simi.rain.org>
Source record: 24219

In article <41ku8i$f73@service1.uky.edu>, tfugate@pop.uky.edu (Terry
Fugate) wrote:
> Yesterday I downloaded a new(for me) tracker. STSORBIT. It appears
^^^^^^^^

Available as ftp://ftp.jpl.nasa/gov/pub/software/stsorb1.zip
& "/stsorb2.zip

Ben Muniz: President, California Space Development Council/National Space Society
BoD/Space Frontier Foundation/Space Studies Institute
International Space University'94:Systems Architecture&Mission Design
"Space Is A Place,Not A Program" McDonnell Douglas DC-X presentations

1810. Re: Email by radio from Yacht - HELP?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-26 00:00:00 UTC
From: davew@cruzio.com
Message-ID: <DDxzBp.K9B@cruzio.com>
Source record: 24220
Cross-posted to: rec.radio.shortwave,uk.amateur.radio,rec.radio.amateur.space,alt.radio.digital

In article <41cmgg$dmg@etech.aladdin.co.uk>, geoff@aladdin.co.uk (Geoff Lynch) writes:
> I am not an amateur radio person, but have some understanding of
> technology, unlike my friends. They are retired and sailing slowly
> round the world on 37' yacht (currently ashore for winter in N.Z.)
>
> I am informed that there is the possibility of sending email via radio
> to amateur satellites which then can connect into good old
> internet/compuserve......from a laptop or similar on board. The have a
> radio which from N.Z. they could "talk" to mid USA and as far west as
> Austria, so presumably it is quite powerful. They want this facility
> to be able to leave email for their agent in UK so they can get spares
> ordered before they get into port.......
>
> Anyone any ideas if this is so , and if so, how do they go about it?
>
> Any info gratefully recieved. Please email me as well as posting any
> response for the education of others.
>
> Thanks a bunch in advance, geoff@aladdin.net
This is possible over HF radio but I do not know how well it would work using
satellites. Amateur radio messages must be non-commercial and he may have
problems with third party messages but that would depend on where he is and
where he is licensed. If you would like some info on how to send Internet
e-mail over ham radio let me know and I will e-mail it to you.
.

--
Dave Wells KD6TO; INTERNET: davew@cruzio.com
Packet:KD6TO@K6LY.#CENCAL.CA.USA.NOAM; COMPUSERVE:74067,1755
(WA4UQQ Worldwide Amateur Radio Directory III KD6TO)
.

1811. NORAD Two-Line Orbital Element Sets (TLE664)

Newsgroup: rec.radio.amateur.space
Date: 1995-08-26 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.809402877@dolphin>
Source record: 24313

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #664 -
Alouette 1
1 00424U 62049A 95233.01059892 .00000028 00000-0 22336-4 0 1292
2 00424 80.4635 220.9111 0024599 88.0896 272.3062 13.67848012641162
ATS 1
1 02608U 66110A 95235.01105310 .00000102 00000-0 10000-3 0 9420
2 02608 14.6443 355.9733 0010162 70.9499 289.2146 1.00349976 21861
ATS 3
1 03029U 67111A 95234.58214654 -.00000116 00000-0 10000-3 0 3917
2 03029 14.8539 2.9307 0008160 261.8737 169.7588 1.00272725101761
Cosmos 398
1 04966U 71016A 95237.18966502 .00239219 93227-5 21244-3 0 9779
2 04966 51.3997 263.5294 0487851 336.2911 21.6248 15.18670761835607
Starlette
1 07646U 75010A 95235.43935319 -.00000102 00000-0 31887-4 0 9093
2 07646 49.8308 247.6267 0205707 323.7759 34.9352 13.82189871 37642
LAGEOS
1 08820U 76039A 95234.35816735 .00000021 00000-0 10000-3 0 1308
2 08820 109.8530 283.2917 0043994 193.5108 166.4568 6.38664459194689
ETS-2
1 09852U 77014A 95230.33108114 -.00000310 00000-0 10000-3 0 342
2 09852 12.8246 36.3584 0004636 90.5898 269.5636 1.00012838 14607
GOES 2
1 10061U 77048A 95236.57413887 .00000059 00000-0 10000-3 0 5682
2 10061 11.9248 40.5052 0013224 123.3808 199.9600 1.00289576 11451
IUE
1 10637U 78012A 95235.97741597 -.00000235 00000-0 10000-3 0 1625
2 10637 35.3149 87.9248 1335564 48.7251 145.8385 1.00309716 16947
GPS BI-01
1 10684U 78020A 95232.37952196 -.00000020 00000-0 10000-3 0 3822
2 10684 64.8575 32.8065 0061007 162.1674 198.0928 1.98068959113435
```

```
GPS BI-02
1 10893U 78047A 95232.26210690 .00000034 00000-0 10000-3 0 1784
2 10893 63.2955 270.6801 0223941 14.0302 346.6813 2.01627455126729
GOES 3
1 10953U 78062A 95235.46301689 .00000110 00000-0 10000-3 0 5242
2 10953 10.8942 43.3828 0006203 118.3403 183.1688 1.00344751 16055
SeaSat 1
1 10967U 78064A 95235.67017473 -.00000061 00000-0 24586-4 0 4236
2 10967 108.0017 277.1281 0003020 247.7269 112.3549 14.38049969898533
GPS BI-03
1 11054U 78093A 95232.17488147 .00000038 00000-0 10000-3 0 3448
2 11054 63.0044 269.0700 0045929 180.6328 179.4421 1.93505341122814
Nimbus 7
1 11080U 78098A 95236.14765559 -.00000073 00000-0 -28543-4 0 5241
2 11080 98.9903 107.1955 0009682 49.8814 310.3185 13.83705800849958
GPS BI-04
1 11141U 78112A 95232.61220958 -.00000017 00000-0 10000-3 0 9961
2 11141 64.8785 34.7323 0049197 28.1554 332.1434 1.92894795 12068
GPS BI-05
1 11690U 80011A 95228.71793061 -.00000035 00000-0 10000-3 0 9305
2 11690 65.1999 34.4921 0142050 192.1129 167.6601 2.00566075128074
GPS BI-06
1 11783U 80032A 95236.99318031 .00000057 00000-0 10000-3 0 944
2 11783 62.4347 263.6454 0219024 29.2596 332.0369 2.03457214112782
GOES 5
1 12472U 81049A 95236.41760200 -.00000282 00000-0 10000-3 0 8731
2 12472 7.6510 53.2568 0007723 36.5565 323.6502 1.00250239 10111
Cosmos 1383
1 13301U 82066A 95234.39315647 .00000029 00000-0 16267-4 0 4285
2 13301 82.9311 353.6013 0027690 349.7502 10.3077 13.68067360656385
LandSat 4
1 13367U 82072A 95236.63257781 -.00000009 00000-0 78326-5 0 7644
2 13367 98.1210 290.8230 0007310 357.5302 2.5860 14.57154501697188
DMSP B5D2-1
1 13736U 82118A 95236.53363421 .00000050 00000-0 39428-4 0 8334
2 13736 98.6292 64.6627 0008309 170.5557 189.5779 14.25747991658654
IRAS
1 13777U 83004A 95236.53700505 .00000237 00000-0 19315-3 0 591
2 13777 98.9669 63.3595 0011798 194.6051 165.4770 13.99242876311744
Cosmos 1447
1 13916U 83021A 95233.54081165 .00000012 00000-0 -24740-5 0 5257
2 13916 82.9408 53.4073 0036553 271.1053 88.5908 13.74329105622447
TDRS 1
1 13969U 83026B 95234.44208343 .00000080 00000-0 00000+0 0 4541
2 13969 8.4847 46.6536 0001864 153.6807 150.4498 1.00279739 18378
GOES 6
1 14050U 83041A 95235.31293610 -.00000126 00000-0 10000-3 0 4365
2 14050 6.4701 56.5501 0004306 23.1663 260.8347 1.00327394103199
OSCAR 10
1 14129U 83058B 95226.51733708 -.00000116 00000-0 10000-3 0 3705
```

```
2 14129 26.4564 253.3162 5988239 301.4565 13.4548 2.05880986 63534
LandSat 5
1 14780U 84021A 95236.66810923 -.00000018 00000-0 59053-5 0 3312
2 14780 98.1058 291.2734 0005185 8.7203 351.4085 14.57162182610606
UoSat 2
1 14781U 84021B 95234.03647434 .00000099 00000-0 24564-4 0 8217
2 14781 97.7842 233.4890 0011577 337.1409 22.9279 14.69369028613578
GPS BI-09
1 15039U 84059A 95232.64308770 -.00000028 00000-0 10000-3 0 3595
2 15039 64.5494 29.0984 0082072 18.4308 341.8926 1.92302406 81635
Cosmos 1574
1 15055U 84062A 95236.69747556 .00000037 00000-0 22685-4 0 7276
2 15055 82.9581 105.3590 0029100 88.6651 271.7834 13.73625128560146
GPS BI-10
1 15271U 84097A 95234.86541496 .00000058 00000-0 10000-3 0 448
2 15271 62.1253 264.0879 0156535 354.0788 5.8107 2.00602259 79264
Cosmos 1602
1 15331U 84105A 95232.93142199 .00000205 00000-0 21401-4 0 4129
2 15331 82.5310 35.2461 0018598 220.5418 139.4405 14.84653534588277
NOAA 9
1 15427U 84123A 95237.03357468 .00000039 00000-0 44642-4 0 3742
2 15427 98.9949 296.1551 0016048 73.6346 286.6587 14.13725842551646
GPS BI-11
1 16129U 85093A 95231.70598477 -.00000022 00000-0 10000-3 0 6728
2 16129 65.2073 32.3523 0155494 86.5019 275.2972 1.89368120 16198
Mir
1 16609U 86017A 95236.87077485 .00003074 00000-0 48029-4 0 2135
2 16609 51.6446 173.8267 0003522 30.1197 329.9997 15.57282561543638
SPOT 1
1 16613U 86019A 95234.83646537 .00000090 00000-0 62356-4 0 8440
2 16613 98.6446 304.6881 0001349 17.2198 342.9011 14.20067245177827
Cosmos 1766
1 16881U 86055A 95235.09071053 .00000060 00000-0 43477-5 0 3289
2 16881 82.5196 91.0641 0017330 242.3957 117.5497 14.83649427489490
EGP
1 16908U 86061A 95236.85200225 -.00000083 00000-0 10000-3 0 238
2 16908 50.0086 191.1394 0011331 336.4235 23.6079 12.44412973 79389
NOAA 10
1 16969U 86073A 95236.97207501 .00000010 00000-0 22528-4 0 2864
2 16969 98.5103 237.7824 0013477 137.1496 223.0737 14.24951936464276
MOS-1
1 17527U 87018A 95234.20911824 .00000092 00000-0 10000-3 0 2398
2 17527 98.9812 297.6517 0000973 205.6700 154.4414 13.95257788433038
GOES 7
1 17561U 87022A 95236.39198081 .00000074 00000-0 10000-3 0 5141
2 17561 2.4691 71.7106 0002353 313.1975 313.3837 1.00262230 14311
Kvant-1
1 17845U 87030A 95236.80662382 .00005993 00000-0 87205-4 0 3607
2 17845 51.6450 174.1499 0003569 30.4007 329.8369 15.57285292477767
DMSP B5D2-3
```

```
1 18123U 87053A 95236.98669569 -.00000009 00000-0 17915-4 0 1125
2 18123 98.7761 67.0622 0015154 25.6944 334.4980 14.15414559422451
RS-10/11
1 18129U 87054A 95236.87737501 .00000019 00000-0 46891-5 0 1016
2 18129 82.9251 8.2870 0010199 263.4355 96.5639 13.72355384409397
Meteor 2-16
1 18312U 87068A 95232.50376198 .00000012 00000-0 -27546-5 0 4194
2 18312 82.5507 231.3486 0012746 355.9844 4.1213 13.84060888404442
Meteor 2-17
1 18820U 88005A 95236.20249214 .00000011 00000-0 -39351-5 0 7042
2 18820 82.5411 284.1446 0018284 46.3879 313.8791 13.84742384382280
DMSP B5D2-4
1 18822U 88006A 95236.58269565 .00000001 00000-0 18853-4 0 524
2 18822 98.4011 77.5974 0006075 146.0053 214.1515 14.23162276392245
Glonass 34
1 19163U 88043A 95232.79231325 .00000000 00000-0 10000-3 0 126
2 19163 65.1525 95.9817 0007887 153.2882 206.8359 2.13102648 55813
Glonass 36
1 19165U 88043C 95232.84886109 .00000001 00000-0 10000-3 0 4158
2 19165 65.1423 95.9493 0002553 73.3537 286.6858 2.13102211 56431
METEOSAT 3
1 19215U 88051A 95235.19548103 -.00000279 00000-0 10000-3 0 1653
2 19215 2.6437 69.5372 0002836 84.6417 176.9801 1.00252651 14248
AO-13
1 19216U 88051B 95237.15566405 .00000022 00000-0 -11521-3 0 819
2 19216 57.4664 168.4571 7320161 17.1024 358.0082 2.09719750 23618
OKEAN 1
1 19274U 88056A 95235.37373555 .00000252 00000-0 28363-4 0 280
2 19274 82.5132 191.2623 0021437 31.7054 328.5443 14.82372791385107
Meteor 3-2
1 19336U 88064A 95233.92355120 .00000051 00000-0 10000-3 0 4172
2 19336 82.5412 18.8925 0015877 267.6924 92.2379 13.16973798339958
Glonass 39
1 19503U 88085C 95233.34658424 -.00000077 00000-0 10000-3 0 3099
2 19503 65.6789 334.8531 0007396 163.5808 196.4735 2.13101849 53938
NOAA 11
1 19531U 88089A 95236.98729343 .00000016 00000-0 33727-4 0 1829
2 19531 99.1974 242.1965 0012276 0.0415 0.0759 14.13061011356471
TDRS 2
1 19548U 88091B 95235.75812646 -.00000197 00000-0 00000+0 0 1412
2 19548 1.8898 74.0546 0006039 111.4375 143.9404 1.00265794 12539
Glonass 40
1 19749U 89001A 95234.79276459 .00000025 00000-0 10000-3 0 5212
2 19749 65.0880 95.4730 0005104 268.9569 91.0768 2.13101459 51476
Glonass 41
1 19750U 89001B 95232.50185254 -.00000003 00000-0 10000-3 0 4321
2 19750 65.1133 95.6078 0007130 229.1268 130.8956 2.13101921 51445
GPS BII-01
1 19802U 89013A 95235.99418082 -.00000006 00000-0 10000-3 0 921
2 19802 55.2495 122.4833 0029586 166.4902 193.6668 2.00553622 47738
```

```
Akebono
1 19822U 89016A 95234.21396302 .00006069 00000-0 28936-3 0 5588
2 19822 75.0966 297.1800 3777789 331.6199 12.1857 7.87128263143011
Meteor 2-18
1 19851U 89018A 95233.25921188 .00000055 00000-0 35469-4 0 4174
2 19851 82.5227 161.0246 0015827 97.7412 262.5547 13.84394477327198
MOP-1
1 19876U 89020B 95228.02741319 .00000047 00000-0 10000-3 0 1327
2 19876 1.3278 72.3380 0001783 205.4947 65.9465 1.00283054 3615
TDRS 3
1 19883U 89021B 95233.00000000 -.00000278 00000-0 00000+0 0 1080
2 19883 0.0078 71.9546 0004124 124.6847 91.2705 1.00273051196099
GPS BII-02
1 20061U 89044A 95235.33736065 -.00000026 00000-0 10000-3 0 1064
2 20061 54.3928 298.7147 0148629 215.9779 143.1270 2.00564393 45469
Nadezhda 1
1 20103U 89050A 95236.99822838 .00000052 00000-0 38426-4 0 4913
2 20103 82.9616 327.8436 0037844 159.4898 200.7784 13.73856403307876
GPS BII-03
1 20185U 89064A 95234.17831641 -.00000029 00000-0 10000-3 0 1276
2 20185 55.0154 123.1181 0023154 286.9826 73.1731 2.00568451 44013
GMS 4
1 20217U 89070A 95229.75237345 -.00000382 00000-0 10000-3 0 2316
2 20217 1.1591 76.0651 0001394 24.1741 256.1156 1.00264404 22362
INTERCOSMOS 24
1 20261U 89080A 95233.20551891 .00000134 00000-0 36436-4 0 4336
2 20261 82.5954 102.9878 1243175 6.0848 355.3851 12.47270788268383
GPS BII-04
1 20302U 89085A 95234.21525944 .00000047 00000-0 10000-3 0 1045
2 20302 53.3563 238.7544 0015947 188.7628 171.2461 2.00557528 42814
Meteor 3-3
1 20305U 89086A 95236.21696589 .00000044 00000-0 10000-3 0 3752
2 20305 82.5504 330.5976 0006529 329.0475 31.0241 13.04429418279354
COBE
1 20322U 89089A 95235.52194395 .00000059 00000-0 65400-4 0 1462
2 20322 98.9608 250.5569 0009785 143.6837 216.4991 14.03456040295032
Kvant-2
1 20335U 89093A 95236.80662382 .00005993 00000-0 87205-4 0 3628
2 20335 51.6450 174.1499 0003569 30.4007 329.8369 15.57285292326779
GPS BII-05
1 20361U 89097A 95236.72040216 .00000003 00000-0 10000-3 0 9607
2 20361 55.8044 65.0626 0089717 119.7084 241.3821 2.00563101 32348
COSMOS 2054 (Altair-1)
1 20391U 89101A 95236.90903525 -.00000141 00000-0 10000-3 0 2110
2 20391 3.2679 65.3402 0003900 71.6460 146.8793 1.00275275 21011
SPOT 2
1 20436U 90005A 95234.75297470 .00000169 00000-0 10000-3 0 9645
2 20436 98.7318 307.9783 0001601 98.2103 261.9254 14.20028849289344
UO-14
1 20437U 90005B 95236.23851338 -.00000010 00000-0 13093-4 0 1206
```

```
2 20437 98.5658 319.5093 0011428 3.2767 356.8482 14.29894602291474
UO-15
1 20438U 90005C 95233.22897006 .00000001 00000-0 17470-4 0 9160
2 20438 98.5618 314.9704 0010989 15.8980 344.2544 14.29212039290934
PACSAT
1 20439U 90005D 95237.18732610 .00000051 00000-0 36830-4 0 9198
2 20439 98.5770 322.2049 0012042 0.7737 359.3459 14.29949441291626
DO-17
1 20440U 90005E 95236.18948934 -.00000014 00000-0 11384-4 0 9194
2 20440 98.5787 321.7137 0012124 2.6882 357.4365 14.30089971291508
WO-18
1 20441U 90005F 95235.19359166 -.00000004 00000-0 15506-4 0 9232
2 20441 98.5787 320.6991 0012694 5.8460 354.2872 14.30061076291362
LO-19
1 20442U 90005G 95236.19105605 .00000004 00000-0 18303-4 0 9182
2 20442 98.5803 322.0642 0012829 2.4033 357.7209 14.30164582291526
GPS BII-06
1 20452U 90008A 95236.11545166 -.00000011 00000-0 10000-3 0 666
2 20452 54.0284 178.8931 0056480 81.6564 278.9506 2.00550600 40838
MOS-1B
1 20478U 90013A 95235.83809241 .00000091 00000-0 10000-3 0 8233
2 20478 99.0683 303.6769 0001044 3.6683 356.4487 13.95030015202960
DEBUT
1 20479U 90013B 95234.74878991 -.00000083 00000-0 -12144-3 0 9180
2 20479 99.0711 311.1276 0541030 82.1825 284.0315 12.83334001259498
FO-20
1 20480U 90013C 95235.15029754 -.00000045 00000-0 -36197-4 0 8152
2 20480 99.0714 311.2971 0541162 81.7549 284.4540 12.83231282259536
MOS-1B R/B
1 20491U 90013D 95234.83074415 .00000089 00000-0 23977-3 0 1646
2 20491 99.0538 6.9581 0468828 275.4279 79.3546 13.02972923262870
LACE
1 20496U 90015A 95227.86246416 .00000934 00000-0 35526-4 0 5681
2 20496 43.1022 150.8586 0009857 234.7977 125.1959 15.34727335306748
Nadezhda 2
1 20508U 90017A 95236.98033457 .00000033 00000-0 18522-4 0 4900
2 20508 82.9547 102.4361 0045849 111.9499 248.6536 13.73496931275096
OKEAN 2
1 20510U 90018A 95237.15235234 .00000109 00000-0 11846-4 0 4378
2 20510 82.5262 141.7772 0017116 206.6668 153.3666 14.78516537295782
GPS BII-07
1 20533U 90025A 95235.03160943 -.00000029 00000-0 10000-3 0 884
2 20533 54.7688 299.3707 0045998 79.0886 281.5138 2.00568337 39580
PegSat
1 20546U 90028A 95235.88453545 .00004406 00000-0 89121-4 0 8338
2 20546 94.1176 182.6154 0067756 76.8629 284.0174 15.44062444298923
HST
1 20580U 90037B 95235.23834410 .00000405 00000-0 24902-4 0 7047
2 20580 28.4706 339.9978 0005944 286.5651 73.4282 14.90917564 93922
MACSAT 2
```

```
1 20608U 90043B 95234.40412337 .00000136 00000-0 20515-4 0 1190
2 20608 89.9299 175.9236 0108031 25.0984 335.5411 14.64854437282402
Glonass 44
1 20619U 90045A 95236.56897190 -.00000055 00000-0 10000-3 0 2196
2 20619 65.2577 334.1291 0025600 208.2005 151.6902 2.13102389 40967
Glonass 45
1 20620U 90045B 95237.15694788 -.00000051 00000-0 10000-3 0 2255
2 20620 65.2946 334.1075 0007149 49.6354 310.4728 2.13102570 41011
Glonass 46
1 20621U 90045C 95234.40812593 -.00000071 00000-0 10000-3 0 8176
2 20621 65.2859 334.2565 0011881 189.8443 170.1822 2.13101662 40953
Kristall
1 20635U 90048A 95236.80662382 .00005993 00000-0 87205-4 0 1542
2 20635 51.6450 174.1499 0003569 30.4007 329.8369 15.57285292297601
ROSAT
1 20638U 90049A 95235.33408684 -.00000227 00000-0 39820-5 0 4861
2 20638 52.9891 204.7423 0010878 303.6743 56.3208 15.07226961287243
Meteor 2-19
1 20670U 90057A 95234.92392094 .00000003 00000-0 -10336-4 0 9178
2 20670 82.5418 225.5465 0016759 20.9487 339.2362 13.84162060260346
CRRES
1 20712U 90065A 95236.93417202 .00000622 00000-0 71013-3 0 1396
2 20712 18.1028 11.2429 7195009 155.1068 272.3282 2.35492093 36103
GPS BII-08
1 20724U 90068A 95232.85959846 -.00000042 00000-0 10000-3 0 9309
2 20724 54.8436 120.7757 0119182 174.6702 185.5108 2.00565377 35400
Feng Yun1-2
1 20788U 90081A 95237.22270878 -.00000027 00000-0 10000-4 0 4760
2 20788 98.8167 247.9281 0014751 246.3736 113.5832 14.01366754254504
Meteor 2-20
1 20826U 90086A 95233.22798306 .00000056 00000-0 37524-4 0 9288
2 20826 82.5283 163.8095 0012091 288.6687 71.3164 13.83612828247229
GPS BII-09
1 20830U 90088A 95233.90242279 -.00000010 00000-0 10000-3 0 9429
2 20830 55.7503 63.1507 0067797 99.8213 261.0116 2.00556614 36061
GPS BIIA-10
1 20959U 90103A 95234.81011431 -.00000021 00000-0 10000-3 0 9066
2 20959 55.0074 122.6935 0096942 231.2075 127.9504 2.00571714 34671
DMSP B5D2-5
1 20978U 90105A 95237.05914636 .00000046 00000-0 32343-4 0 3095
2 20978 98.6358 305.0450 0079096 327.5869 32.0465 14.32571131247174
Glonass 47
1 21006U 90110A 95235.84128427 .00000036 00000-0 10000-3 0 7890
2 21006 65.0757 94.7726 0059131 188.1010 171.8972 2.13102857 36658
Glonass 48
1 21007U 90110B 95232.74547659 .00000001 00000-0 10000-3 0 9141
2 21007 65.1053 94.9566 0035376 178.0313 182.0483 2.13101165 36575
Glonass 49
1 21008U 90110C 95235.92179170 .00000036 00000-0 10000-3 0 1144
2 21008 65.0753 94.7989 0008193 272.5773 87.4242 2.13099107 36636
```

```
AO-21
1 21087U 91006A 95235.85536390 .00000093 00000-0 82657-4 0 6257
2 21087 82.9404 182.4958 0035729 320.7399 39.1165 13.74558475229022
RS-12/13
1 21089U 91007A 95234.03153056 -.00000000 00000-0 -16144-4 0 8242
2 21089 82.9199 51.9430 0029731 352.4237 7.6454 13.74059301227819
MOP-2
1 21140U 91015B 95230.95373683 -.00000018 00000-0 10000-3 0 914
2 21140 0.1125 295.5006 0001478 166.5977 208.5840 1.00263696 18567
Nadezhda 3
1 21152U 91019A 95236.87632902 .00000007 00000-0 -89038-5 0 1817
2 21152 82.9240 5.9948 0043493 89.1990 271.4149 13.73522017222939
Glonass 50
1 21216U 91025A 95236.32926391 -.00000057 00000-0 10000-3 0 4328
2 21216 65.0191 333.7897 0005859 192.2815 167.7408 2.13102867 34179
Glonass 51
1 21217U 91025B 95232.17507765 -.00000081 00000-0 10000-3 0 8408
2 21217 65.0090 333.9301 0008550 236.1108 123.8642 2.13101556 34070
Glonass 52
1 21218U 91025C 95231.34800951 -.00000083 00000-0 10000-3 0 3115
2 21218 65.0162 333.9361 0017121 88.5725 271.5206 2.13103292 34060
GRO
1 21225U 91027B 95234.77034175 .00001658 00000-0 30806-4 0 2891
2 21225 28.4615 111.4276 0002982 73.1893 286.9021 15.42901175123621
Meteor 3-4
1 21232U 91030A 95233.48786184 .00000050 00000-0 10000-3 0 8270
2 21232 82.5356 225.3630 0012448 186.7835 173.3122 13.16468521207970
NOAA 12
1 21263U 91032A 95237.04719913 .00000106 00000-0 66546-4 0 6084
2 21263 98.5847 259.3370 0014172 58.4547 301.8013 14.22552458222217
OKEAN 3
1 21397U 91039A 95235.51005638 .00000142 00000-0 17168-4 0 1273
2 21397 82.5224 56.5917 0021024 293.6894 66.2133 14.76393068227290
GPS BIIA-11
1 21552U 91047A 95232.58395238 -.00000019 00000-0 10000-6 0 8841
2 21552 56.0385 60.9090 0064868 242.2423 117.1575 2.00562220 30222
ERS-1
1 21574U 91050A 95235.18677562 -.00000040 00000-0 14958-5 0 1898
2 21574 98.5468 308.5517 0001171 81.0048 279.1269 14.32250685214640
UO-22
1 21575U 91050B 95235.68890386 -.00000047 00000-0 -14667-5 0 6255
2 21575 98.3890 305.3222 0008611 76.3170 283.8983 14.36986591215197
ORBCOMM-X
1 21576U 91050C 95236.22236107 .00000045 00000-0 29966-4 0 7201
2 21576 98.3878 304.1805 0004838 81.4844 278.6887 14.36396253215173
TUBSAT-A
1 21577U 91050D 95236.21386955 -.00000003 00000-0 13533-4 0 6193
2 21577 98.3884 304.7144 0007518 78.1566 282.0459 14.36491455215203
SARA
1 21578U 91050E 95235.20574395 .00000171 00000-0 69239-4 0 8190
```

```
2 21578 98.4093 309.5798 0006017 79.5718 280.6139 14.39046568215339
TDRS 4
1 21639U 91054B 95235.50215870 .00000072 00000-0 00000+0 0 9316
2 21639 0.0482 92.1371 0002580 40.2816 205.3556 1.00271483108894
Meteor 3-5
1 21655U 91056A 95233.86178552 .00000051 00000-0 10000-3 0 8252
2 21655 82.5526 172.5697 0012467 196.0569 164.0166 13.16840470193148
UARS
1 21701U 91063B 95236.34545154 -.00000076 00000-0 14470-4 0 6964
2 21701 56.9837 223.5137 0005716 102.6322 257.5356 14.96416530215773
DMSP B5D2-6
1 21798U 91082A 95237.03797295 .00000024 00000-0 36233-4 0 9598
2 21798 98.9606 248.9407 0013182 354.8913 5.2122 14.13912140192931
Glonass 53
1 21853U 92005A 95234.37570219 .00000021 00000-0 10000-3 0 349
2 21853 65.0216 94.5171 0006915 193.0892 166.9894 2.13102310 27736
Glonass 54
1 21854U 92005B 95234.19579019 .00000019 00000-0 10000-3 0 1772
2 21854 65.0230 94.5093 0016292 20.5371 339.6172 2.13104122 27710
Glonass 55
1 21855U 92005C 95234.26027525 .00000020 00000-0 10000-3 0 1683
2 21855 65.0224 94.5178 0007055 197.3068 162.7612 2.13102057 27709
JERS-1
1 21867U 92007A 95236.81491550 .00000238 00000-0 24707-4 0 6499
2 21867 97.7150 312.8879 0001633 131.3087 228.8260 14.98651229193322
GPS BIIA-12
1 21890U 92009A 95237.03595007 .00000040 00000-0 10000-3 0 6888
2 21890 53.9503 238.9456 0055834 183.5469 176.3936 2.00572043 25684
GPS BIIA-13
1 21930U 92019A 95233.75118113 -.00000087 00000-0 10000-3 0 6666
2 21930 55.7211 0.6379 0038469 174.9709 185.0734 2.00565950 24545
EUVE
1 21987U 92031A 95234.54628074 .00000595 00000-0 17981-4 0 4771
2 21987 28.4319 37.0726 0009265 14.0939 345.9921 15.19382524178053
SAMPEX
1 22012U 92038A 95235.07135746 .00000402 00000-0 32564-4 0 6544
2 22012 81.6700 75.0984 0120056 69.2079 292.1947 14.91426142170647
GPS BIIA-14
1 22014U 92039A 95233.29383702 -.00000010 00000-0 10000-3 0 5798
2 22014 54.8602 180.5985 0089829 315.5988 43.6611 2.00569404 16375
Glonass 56
1 22056U 92047A 95235.56738151 -.00000063 00000-0 10000-3 0 813
2 22056 64.8613 333.9074 0005079 259.3632 100.6122 2.13103180 23821
Glonass 57
1 22057U 92047B 95235.39355066 -.00000064 00000-0 00000+0 0 754
2 22057 64.8700 333.9465 0006112 316.3361 43.6515 2.13102554 23797
Glonass 58
1 22058U 92047C 95235.33363275 -.00000065 00000-0 10000-3 0 385
2 22058 64.8775 333.9480 0007645 266.4698 93.5012 2.13102964 23844
TOPEX
```

```
1 22076U 92052A 95237.14157929 -.00000038 00000-0 10000-3 0 9018
2 22076 66.0364 109.6491 0008027 265.7134 94.2964 12.80930777142071
KO-23
1 22077U 92052B 95237.01158108 -.00000037 00000-0 10000-3 0 5166
2 22077 66.0846 91.6728 0002569 174.4412 185.6637 12.86291464142587
S80/T
1 22078U 92052C 95235.68031505 -.00000037 00000-0 10000-3 0 5136
2 22078 66.0763 93.2780 0002848 150.1037 210.0134 12.86575708142497
GPS BIIA-15
1 22108U 92058A 95236.24480933 .00000043 00000-0 10000-3 0 6094
2 22108 54.1437 239.7078 0117390 151.9277 208.7942 2.00569862 21618
FREJA
1 22161U 92064A 95235.57731024 -.00000041 00000-0 27721-4 0 5407
2 22161 62.9939 278.0266 0815499 352.6209 6.3368 13.21843552138952
LAGEOS II
1 22195U 92070B 95236.24181334 -.00000009 00000-0 10000-3 0 4267
2 22195 52.6435 179.9698 0137924 306.3386 52.4507 6.47294216 66983
GPS BIIA-16
1 22231U 92079A 95235.93041703 -.00000009 00000-0 10000-3 0 5875
2 22231 54.6266 181.6089 0024664 286.4216 73.2744 2.00562283 20181
GPS BIIA-17
1 22275U 92089A 95236.07786157 -.00000010 00000-0 10000-3 0 6030
2 22275 54.6744 179.1116 0142120 234.0075 123.5828 2.00565366 19593
TDRS 5
1 22314U 93003B 95234.34896296 -.00000292 00000-0 10000-3 0 5519
2 22314 1.9987 71.6026 0002091 136.0812 202.2788 1.00266142 9575
GPS BIIA-18
1 22446U 93007A 95237.14893800 -.00000019 00000-0 10000-3 0 5942
2 22446 54.3675 299.4607 0077562 5.4927 354.6748 2.00575674 18609
Glonass 59
1 22512U 93010A 95234.84647746 .00000027 00000-0 10000-3 0 7254
2 22512 65.0395 94.3602 0008324 178.8856 181.2085 2.13102128 19315
Glonass 60
1 22513U 93010B 95234.78558913 .00000026 00000-0 00000+0 0 7989
2 22513 65.0298 94.3662 0006910 185.7993 174.2827 2.13102456 19503
Glonass 61
1 22514U 93010C 95235.54832277 .00000033 00000-0 00000+0 0 7936
2 22514 65.0519 94.3263 0010466 181.2881 178.7990 2.13102679 19524
ASTRO-D
1 22521U 93011A 95234.23227710 .00000954 00000-0 61647-4 0 4309
2 22521 31.1048 176.9450 0056543 73.5162 287.1692 15.02386041137310
UFO F1
1 22563U 93015A 95234.69422558 -.00000207 00000-0 00000+0 0 4477
2 22563 25.8730 293.3118 0007201 239.9947 165.1726 0.99251004 13120
GPS BIIA-19
1 22581U 93017A 95236.29312407 -.00000080 00000-0 10000-3 0 4551
2 22581 55.2161 0.0693 0057086 36.2711 324.1100 2.00572972 17647
ARSENE
1 22654U 93031B 95230.98729458 -.00000151 00000-0 10000-3 0 3262
2 22654 2.6913 82.3186 2890383 217.5587 118.4468 1.42202922 7281
```

```
GPS BIIA-20
1 22657U 93032A 95235.42911775 -.00000084 00000-0 10000-3 0 5060
2 22657 55.2406 359.9373 0066197 201.6252 158.1027 2.00563197 12956
RADCAL
1 22698U 93041A 95235.67167347 .00000036 00000-0 10569-4 0 4257
2 22698 89.5398 287.0102 0089217 217.8642 141.6255 14.21350893112024
GPS BIIA-21
1 22700U 93042A 95234.39866424 .00000050 00000-0 10000-3 0 4493
2 22700 54.3077 240.5871 0040123 343.0433 16.8597 2.00566318 15739
NOAA 13
1 22739U 93050A 95236.86204001 -.00000081 00000-0 -19741-4 0 8734
2 22739 98.9986 185.8002 0010379 348.3331 11.7600 14.10939858105125
GPS BIIA-22
1 22779U 93054A 95236.97610176 -.00000020 00000-0 10000-3 0 5061
2 22779 54.5340 299.5049 0020121 246.9717 112.9003 2.00547843 14543
Meteor 2-21
1 22782U 93055A 95233.46497645 .00000036 00000-0 19253-4 0 4235
2 22782 82.5452 225.4491 0023908 98.3407 262.0468 13.83036605 99561
UFO F2
1 22787U 93056A 95237.05221065 -.00000073 00000-0 10000-3 0 5133
2 22787 4.4203 325.2632 0003345 174.8390 283.3939 1.00276987 5856
SPOT 3
1 22823U 93061A 95235.70977830 -.00000044 00000-0 00000+0 0 4668
2 22823 98.7326 308.9604 0000888 101.2886 258.8389 14.20022157 98873
STELLA
1 22824U 93061B 95236.69310973 -.00000057 00000-0 -53674-5 0 4113
2 22824 98.6130 311.7650 0007325 26.3877 333.7675 14.27101849 99504
AO-27
1 22825U 93061C 95235.24083113 .00000008 00000-0 20914-4 0 4133
2 22825 98.6145 310.7016 0009418 30.1106 330.0613 14.27670051 99338
IO-26
1 22826U 93061D 95235.75032293 .00000061 00000-0 42284-4 0 4125
2 22826 98.6143 311.3111 0009813 30.4512 329.7237 14.27778652 99415
HEATHSAT
1 22827U 93061E 95235.69524500 -.00000021 00000-0 90610-5 0 4737
2 22827 98.6114 311.1854 0010072 16.8473 343.3041 14.27902797 99413
ITAMSAT
1 22828U 93061F 95235.17070486 -.00000017 00000-0 10553-4 0 3900
2 22828 98.6102 310.7782 0010899 15.6981 344.4537 14.28108992 67439
PO-28
1 22829U 93061G 95234.69284752 -.00000046 00000-0 -83828-6 0 4046
2 22829 98.6091 310.3447 0010891 18.0146 342.1427 14.28088515 99282
KO-25
1 22830U 93061H 95235.17360027 .00000002 00000-0 17962-4 0 4237
2 22830 98.5094 303.2566 0011609 354.1696 5.9356 14.28095373 99354
GPS BIIA-23
1 22877U 93068A 95232.54395157 -.00000021 00000-0 10000-3 0 3039
2 22877 55.5519 61.2271 0036880 293.9339 65.7582 2.00575600 13349
METEOSAT 6
1 22912U 93073B 95234.95935905 -.00000099 00000-0 10000-3 0 3588
```

```
2 22912 0.6835 277.9654 0000855 299.4700 88.2901 1.00272298 4855
HST Array
1 22920U 90037C 95236.35346877 .00003049 00000-0 21655-3 0 3602
2 22920 28.4698 286.2208 0003767 175.8474 184.2119 15.01659211 94562
Meteor 3-6
1 22969U 94003A 95236.73752893 .00000051 00000-0 10000-3 0 1917
2 22969 82.5620 110.3828 0014144 263.7497 96.2006 13.16731496 75903
TUBSAT-B
1 22970U 94003B 95234.18726631 .00000051 00000-0 10000-3 0 1827
2 22970 82.5592 112.1116 0014800 267.3772 92.5654 13.16825369 75572
GPS BIIA-24
1 23027U 94016A 95236.61226727 -.00000078 00000-0 10000-3 0 2489
2 23027 55.0840 1.9133 0065696 196.5336 163.2600 2.00560521 10730
Glonass 62
1 23043U 94021A 95235.62639040 -.00000063 00000-0 00000+0 0 2477
2 23043 64.7450 334.3166 0007014 186.6904 173.3335 2.13102971 10644
Glonass 63
1 23044U 94021B 95236.44756444 -.00000057 00000-0 00000+0 0 2201
2 23044 64.7472 334.2887 0030284 203.2446 156.6541 2.13103061 10666
Glonass 64
1 23045U 94021C 95236.62390659 -.00000056 00000-0 00000+0 0 2269
2 23045 64.7324 334.2848 0010069 36.4059 323.6991 2.13103247 10666
GOES 8
1 23051U 94022A 95236.69538601 -.00000262 00000-0 10000-3 0 3664
2 23051 0.1609 85.4361 0004478 82.8571 339.5419 1.00262607 12382
MSTI 2
1 23101U 94028A 95235.55104829 .00002909 00000-0 51597-4 0 2251
2 23101 97.0956 67.8388 0011890 355.9912 4.1241 15.50985886 72969
STRV-1A
1 23125U 94034B 95233.89916816 .00003237 00000-0 85351-3 0 1883
2 23125 7.4976 3.8629 7267887 173.7047 208.4192 2.30180812 9167
STRV-1B
1 23126U 94034C 95232.44640356 .00002962 00000-0 66385-3 0 1685
2 23126 7.5011 4.9840 7273435 171.7948 215.4547 2.29812393 9177
Nadezhda 4
1 23179U 94041A 95236.70997707 .00000021 00000-0 60814-5 0 1259
2 23179 82.9453 97.0883 0034797 234.6773 125.1142 13.75670499 55896
Glonass 65
1 23203U 94050A 95236.29224706 .00000046 00000-0 00000+0 0 1840
2 23203 64.7959 214.1219 0006723 162.0698 197.9464 2.13102135 8053
Glonass 66
1 23204U 94050B 95235.58774567 .00000048 00000-0 00000+0 0 1917
2 23204 64.7772 214.1770 0015276 339.5663 20.3683 2.13102342 8035
Glonass 67
1 23205U 94050C 95235.47061534 .00000049 00000-0 00000+0 0 1785
2 23205 64.7897 214.1679 0003310 282.7518 77.2101 2.13102629 8030
DMSP B5D2-7
1 23233U 94057A 95237.03078063 .00000044 00000-0 47388-4 0 4594
2 23233 98.8734 294.4768 0012172 307.9947 52.0119 14.12630542 50872
OKEAN 1-7
```

```
1 23317U 94066A 95236.76838925 .00000136 00000-0 17329-4 0 890
2 23317 82.5442 332.6142 0026024 331.9421 28.0388 14.73952477 46728
ELEKTRO
1 23327U 94069A 95236.78142854 -.00000110 00000-0 10000-3 0 852
2 23327 0.6607 259.8420 0006485 196.2759 233.7352 1.00273555 3017
RESURS 1-3
1 23342U 94074A 95236.99019817 .00000011 00000-0 10000-4 0 2830
2 23342 98.0115 295.4020 0001174 101.1872 258.9453 14.69760699 43151
Glonass 68
1 23396U 94076A 95234.37563462 .00000021 00000-0 00000+0 0 1374
2 23396 64.9674 94.4564 0029840 188.7932 171.2495 2.13102574 5856
Glonass 69
1 23397U 94076B 95235.48966435 .00000033 00000-0 00000+0 0 1413
2 23397 64.9559 94.4300 0012133 324.8354 35.1789 2.13102396 5873
Glonass 70
1 23398U 94076C 95234.90386981 .00000027 00000-0 00000+0 0 1516
2 23398 64.9403 94.4362 0002137 287.4818 72.5877 2.13102522 5876
LUCH (Altair-2)
1 23426U 94082A 95236.67849858 -.00000285 00000-0 00000+0 0 1638
2 23426 2.0653 272.3531 0000854 345.2417 54.3007 1.00269210 2520
RS-15
1 23439U 94085A 95233.24877426 -.00000039 00000-0 10000-3 0 728
2 23439 64.8200 149.7639 0167213 251.0640 107.2095 11.27525037 26858
NOAA 14
1 23455U 94089A 95236.85997682 .00000070 00000-0 62972-4 0 2910
2 23455 98.9073 178.8472 0010175 6.9880 353.1431 14.11528934 33508
ODERACS II A
1 23471U 95004C 95237.11100759 .00029324 00000-0 11602-3 0 1765
2 23471 51.6453 136.0590 0012389 12.5095 347.6249 15.86409393 32101
ODERACS II B
1 23472U 95004D 95237.06597963 .00154437 21682-4 25101-3 0 2012
2 23472 51.6391 125.7132 0010518 50.3696 309.8757 16.02909310 32230
Glonass 71
1 23511U 95009A 95233.92559555 -.00000075 00000-0 00000+0 0 861
2 23511 64.7586 334.6405 0007172 209.9428 150.0458 2.13102790 3579
Glonass 72
1 23512U 95009B 95234.04304633 -.00000074 00000-0 00000+0 0 961
2 23512 64.7604 334.6461 0005221 310.5536 49.4303 2.13102504 3578
Glonass 73
1 23513U 95009C 95236.21347104 -.00000059 00000-0 00000+0 0 944
2 23513 64.7720 334.5767 0012192 200.8318 159.1567 2.13101638 3624
Soyuz TM-21
1 23519U 95010A 95236.80662382 .00005993 00000-0 87205-4 0 1731
2 23519 51.6450 174.1499 0003569 30.4007 329.8369 15.57285292 25525
SFU
1 23521U 95011A 95235.47976941 .00001984 00000-0 60656-4 0 912
2 23521 28.4616 335.8284 0019764 248.5231 111.3203 15.28724608 24243
GMS 5
1 23522U 95011B 95228.77185426 -.00000299 00000-0 10000-3 0 475
2 23522 0.7916 298.0325 0001141 185.2023 259.6091 1.00271639 1390
```

```
DMSP B5D2-8
1 23533U 95015A 95236.97183156 .00000041 00000-0 45928-4 0 1888
2 23533 98.8343 238.4022 0006692 170.3865 189.7434 14.12698569 21669
Microlab 1
1 23547U 95017C 95235.14605607 .00000106 00000-0 47082-4 0 449
2 23547 69.9785 143.9645 0015184 243.7422 116.2150 14.45398943 20459
OFEQ 3
1 23549U 95018A 95235.57760672 .00008839 00000-0 23944-3 0 961
2 23549 143.3701 217.1978 0250316 156.8409 204.3796 15.08323644 21144
GFZ-1
1 23558U 86017JE 95235.24673591 .00001611 00000-0 25630-4 0 525
2 23558 51.6517 179.4721 0006936 173.3732 186.7356 15.60255428543300
ERS-2
1 23560U 95021A 95236.18680556 .00000034 00000-0 28835-4 0 1109
2 23560 98.5468 309.5475 0001181 74.4752 285.6561 14.32251672 17915
Spektr
1 23579U 95024A 95236.80662382 .00005993 00000-0 87205-4 0 1136
2 23579 51.6450 174.1499 0003569 30.4007 329.8369 15.57285292 15081
GOES 9
1 23581U 95025A 95232.92247942 -.00000197 00000-0 10000-3 0 487
2 23581 0.4284 269.4966 0000870 270.4637 31.0703 1.00275619 909
Helios 1A
1 23605U 95033A 95234.54865106 .00000098 00000-0 27791-4 0 789
2 23605 98.0895 170.0399 0001684 79.5008 280.6384 14.63857735 6718
TDRS 6
1 23613U 95035B 95236.43776354 .00000119 00000-0 00000+0 0 352
2 23613 0.0600 89.3149 0000897 132.9959 117.1237 1.00272350 393
Progress M-28
1 23617U 95036A 95236.80662382 .00005993 00000-0 87205-4 0 423
2 23617 51.6450 174.1499 0003569 30.4007 329.8369 15.57285292 5577
Glonass 74
1 23620U 95037A 95236.93653263 .00000045 00000-0 00000+0 0 404
2 23620 64.8432 213.9349 0018509 172.2464 187.7704 2.13103429 674
Glonass 75
1 23621U 95037B 95236.17426612 .00000046 00000-0 00000+0 0 453
2 23621 64.8658 213.9650 0017872 184.0570 175.9212 2.13102246 658
Glonass 76
1 23622U 95037C 95233.88663333 .00000058 00000-0 00000+0 0 387
2 23622 64.8468 214.0339 0036525 167.3723 192.7219 2.13102251 609
1995037J
1 23630U 95037J 95235.00886610 .00000036 00000-0 17723-4 0 74
2 23630 64.8199 204.1360 5792849 296.2129 16.2700 4.23313745 1249
1995037K
1 23631U 95037K 95235.01002527 .00000035 00000-0 16469-4 0 90
2 23631 64.8848 204.0391 5792357 296.1876 16.2782 4.23296198 887
Prognoz-M2
1 23632U 95039A 95222.61896790 -.00000158 00000-0 00000+0 0 61
2 23632 62.4900 261.0150 9281119 314.1620 358.2420 0.26364502 15
1995039B
1 23633U 95039B 95236.90370319 .00111497 94835-5 46088-3 0 289
```

```
2 23633 62.8238 184.0370 0374317 115.0946 248.9712 15.25778181 3340
1995039C
1 23634U 95039C 95237.22688961 .00248164 69068-5 53219-3 0 388
2 23634 62.7993 182.7972 0401020 115.6237 248.6851 15.28850078 3397
1995039D
1 23635U 95039D 95222.54841510 -.00000133 00000-0 00000+0 0 47
2 23635 62.5430 261.1120 9272251 314.0610 359.8460 0.26922002 16
PAS 4
1 23636U 95040A 95230.83028400 -.00000086 00000-0 00000+0 0 155
2 23636 0.0228 74.1211 0009123 38.6346 223.7622 1.00366607 110
1995040B
1 23637U 95040B 95233.99066546 -.00000155 00000-0 10000-4 0 62
2 23637 4.2167 104.3754 7213998 192.4226 129.2100 2.18392358 390
Magion 4
1 23638U 95039E 95232.83345409 .15741816 78993-5 42535-2 0 250
2 23638 62.8069 195.5708 0062703 125.4505 235.2528 16.22182774 2548
1995041A
1 23639U 95041A 95236.78052576 -.00000202 00000-0 00000+0 0 307
2 23639 0.0719 78.2502 0228304 217.4717 51.3228 1.06422622 279
1995041B
1 23640U 95041B 95233.38310234 .00000144 00000-0 69738-4 0 100
2 23640 26.6786 224.8735 0290449 346.0533 13.2100 13.27556816 2110
1995041C
1 23641U 95041C 95234.15725206 -.00000138 00000-0 00000+0 0 89
2 23641 20.5695 297.8222 6440009 9.9892 358.4099 2.70396399 452
1995042A
1 23642U 95042A 95236.22746765 .00000467 00000-0 11577-2 0 284
2 23642 62.8309 299.7505 7435311 280.3464 10.9002 2.00572395 303
1995042B
1 23643U 95042B 95237.23631550 .00622037 81818-5 49864-3 0 490
2 23643 62.8163 239.2241 0089526 137.0433 223.7762 16.05538698 2585
1995042C
1 23644U 95042C 95237.29999104 .12766218 87352-5 17905-3 0 616
2 23644 62.8087 238.3590 0024525 127.5349 234.0840 16.46614548 2605
1995042D
1 23645U 95042D 95236.46326647 -.00000612 00000-0 15161-2 0 103
2 23645 62.8218 299.7989 7450980 280.3078 10.8291 1.95917827 306
1995039F
1 23646U 95039F 95215.39236111 .00000278 00000-0 00000+0 0 15
2 23646 63.2654 259.9492 9304461 314.4137 33.0930 0.26401563 04
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1812. QSL cards

Newsgroup: rec.radio.amateur.space
Date: 1995-08-26 00:00:00 UTC
From: kb8rjy@arbornet.org
Message-ID: <41ntdp$6qv@nntp.atlanta.com>
Source record: 24314
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space

Check this out - QSL cards!

With your own custom graphics, and text...

only $5.95 for 50!...

Custom design your cards with up to 80 Characters of text, and Your
own scanned
graphic / or antenna graphic.

Just fill out the following form, and send with total (check or money
order) to:
Shaun Qualheim, KB8RJY

QSL cards

Dept. BBS

224 Cherry Creek Road

Marquette, MI 49855

(Print, and cut here:)

Order Form: QSL Cards

Front Text:

(up to 80 characters on front) - back will have standard QSL reply
fields.
Is a graphic/photo to be scanned included? (yes/no) ____

Do you wish to have the antenna included on your qsl card instead?
(yes/no) ____
Number of sets: (50 in a set, $5.95 a set) ____ times $5.95 = ____

Plus Shipping and handling: ($1.50 per set) ____ times $5.95 = ____

Plus Scanning fee ($1.00) ____

TOTAL (sets + s & h + scan fee)
=____

(cut here)

Thank You

Shaun Qualheim, kb8rjy

Internet: kb8rjy@m-net.arbornet.org

1813. Digitalker chip of UoSAT Series

Newsgroup: rec.radio.amateur.space
Date: 1995-08-27 00:00:00 UTC
From: yokoyama@tkl.iis.u-tokyo.ac.jp
Message-ID: <YOKOYAMA.95Aug27143303@akasaka.tkl.iis.u-tokyo.ac.jp>
Source record: 24221

Hello.

I am searching for Spec. of Digitalker Chip that UoSAT-9,11 equips.
Can I get the chip from device shop still now? or Does anyone knows
more advanced Speech Synthesis System (Chip) for generating number
or some kind of word?

yama.

1814. REJECTED: Ham-Space Digest V95 #229

Newsgroup: rec.radio.amateur.space
Date: 1995-08-27 00:00:00 UTC
From: MAILER-DAEMON@RTP41.ceo.dg.COM
Message-ID: <9508271533.AC00036@rtp41.rtp.dg.com>
Source record: 24222

----- Mail rejected by CEO. -----
No Response from Remote Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #229
X-Ceo_Options: Document

<Original text message attached as document>

CEO document contents:

Ham-Space Digest Sun, 27 Aug 95 Volume 95 : Issue 229

Today's Topics:
ARLK042 Keplerian data
Molniya over the pole? (2 msgs)
NBSCOM.INI
QSL card for DOVE?
REJECTED: Ham-Space Digest V95 #228
Wisp, KCT, and Win95

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 22 Aug 1995 17:58:28 -0400
From: w1aw@arrl.org
Subject: ARLK042 Keplerian data

SB KEP @ ARL $ARLK042
ARLK042 Keplerian data

ZCZC SK67
QST de W1AW
Keplerian Bulletin 42 ARLK042

Date: 24 Aug 1995 14:41:38 GMT
From: Ben@mn.interact.net (Ben Huset)
Subject: Molniya over the pole?

In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:

Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.

problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
Note a fairly cheap computer can do this ie) Apple][, although
I have heard stories of people MANUALLY re-pointing their dish
every 15-30 mins.

Problem 2) Need a fairly big dish, 10' minimum, 16-32' preferred.

Problem 3) SECAM TV format. can be displayed on multiformat monitors.

Problem 4) Audio not above video but mixed into horiz blanking area.
Note: This has been fixed by them adding 2nd audio signal
above video signal to be more compatable with cheaper
western TVRO RX gear.

Problem 5) Language in Russian. Although the pictures are nice. Its weird
seeing Fraggle Rock dubbed in Russian but they SING in english.

Problem 6) Ocassionally one or more of the Four satellites in the constillation
is 'on the blink'.

Several colleges have a setup to receive this for their Russian Studies.
if you see a dish NOT pointed to the SW, SE or S but to the NE then they have
such a setup. U of IA and Crighton in Omaha come to mind.

There are a few firms out there that will sell you a turnkey system installed for
about $50,000-$100,000.

If you live EAST of the Missippi or better yet east of the OHIO river vallely
you can pick up the signal from their Geo-sync birds.

Hope this helps.
Ben
>
>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>: Does anyone access domestic Russian television from Molniya satellites,
>: over the north pole? How difficult is it to do it? Can I use surplus
>: C-band equipment?
>: If you know of a good written description of how to do this little stunt,
>: I'd really like to know the title of the publication reference.
>: -Dick
>
>
>: ----------
>: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov
>
>I am sorry but I do not have a reference, but the Molniya satellites
>used to use a form of sound in vision in which the sound channel was

>carried as a pulse (width, position modulated?) in the sync area od the
>flyback of each line. A demodulator was described in a radio magazine about
>ten years ago, but that I am afraid is all I can remember.
>
>
>--
>Dave Stephenson
>Geological Survey of Canada *Who ever knew the heavens menace so?
>Ottawa, Ontario, Canada *Those that have known the earth so
>Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: Tue, 22 Aug 1995 21:31:38 -0500
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Subject: Molniya over the pole?

Does anyone access domestic Russian television from Molniya satellites,
over the north pole? How difficult is it to do it? Can I use surplus
C-band equipment?
If you know of a good written description of how to do this little stunt,
I'd really like to know the title of the publication reference.
-Dick

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

Date: Wed, 23 Aug 95 01:29:46 GMT
From: bbd@connectnet1.connectnet.com (BnY)
Subject: NBSCOM.INI

Can anyone provide me with a sample of this INI file?

Thnaks, and please post here, not e-mail.
Brian

Date: 23 Aug 1995 00:34:48 GMT
From: Keith.Fritzinger@bbs.mhv.net (Keith Fritzinger)
Subject: QSL card for DOVE?

It took about 8 months to receive my card. I sent my report on 3/20/94.

Date: 26 Aug 95 09:30:34 GMT
From: MAILER-DAEMON@RTP41.ceo.dg.COM
Subject: REJECTED: Ham-Space Digest V95 #228

----- Mail rejected by CEO. -----
No Response from Remote Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #228
X-Ceo_Options: Document

<Original text message attached as document>

CEO document contents:

Ham-Space Digest Sat, 26 Aug 95 Volume 95 : Issue 228

Today's Topics:
Molniya over the pole?
Satellite Questions

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 24 Aug 1995 21:39:34 GMT
From: mbv@ti.com (Ken Durham)
Subject: Molniya over the pole?

In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson)
says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.
~~~~~~
~~~~~~~~~~~~~~~~~~~~~~~

Dave, it is my understanding that the orbit being eliptical and having redundent birds
(I believe there were
three), another bird is in the beamwidth of your dish before you lose signal from the
first. The other problems
agree with my what I have read.

Ken mbv@ti.com

Date: 25 Aug 1995 16:37:38 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: Satellite Questions

In article <41ae2u$cl1@newsbf02.news.aol.com>, headshrnkr@aol.com (HeadShrnkr) says:
>
>Hello.
>
>I have a few questions about sat. tracking software and modems. First, let
>me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and
>KLM 70cm antenna setup on a Yaesu GB5400 rotor.
>
>First, can anyone make a suggestion as to a good tracking program for DOS
>or Windows? Either commerical or shareware is fine.
>
>Second, I would like to have my rotor controlled by software, suggestions?
>Possibly a tracking and rotor control software package?
>
>Third, I do not understand the exact equipement required for digital
>transmission and reception. I am familar with Packet and use a PK 232 but
>the standard is different for the Digital Satellites? Is there any way to
>use or modify my PK 232 to function in this manner?
>
>I appericate your reply. If possible email to HeadShrnkr@aol.com.
>
>73,
>KB2VKJ
>
If you can afford it, Instant Track is propably the best tracking
program. Do a net search for amsat. I think you have to order it
via the phone with a credit card. Several of the sat gurus around here
use it. At the Amsat.ftp archive they have several different freeware/
shareware trackers. I know that IT supports computer control of your
rotor. I use PREDICT.EXE, it is a freeware text only tracker, schedular.
You can get the orbital elements for the airforce ftp. Since I switched
to netscape I can not quickly find net addresses. Do a net search.
Yesterday I downloaded a new(for me) tracker. STSORBIT. It appears
(from reading the docs) to be a good program. I think it came from the
AMSAT ftp, but I could have got it from the ARRL ftp sit..or to tell the
truth I was out netting and went all over the worl tracking down ham. I
was trying to find a German ftp site with the rumured new version of
JVFAX 8.0.
I am into NOAA WX sats and do not really know much about ham digital
formats. I suspect it is fairly high speed PSK. My MFJ1278 only does
AX25 1200buad, RTTY and AMTOR. You might post to the REC.RADIO.DIGITAL.
MISC. Those guys are into all sorts of digital stuff.
I hope some of this helps.

....
Terry Fugate
UKTV
University of Kentucky

"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.
If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

End of Ham-Space Digest V95 #228
****

Date: 25 Aug 1995 15:11:01 GMT
From: pflynn@ibm.net
Subject: Wisp, KCT, and Win95

I am having trouble with Win95 reconizing the OEMSETUP.INF file supplied with
the wkctdrv.zip file. Seems to me I seen something somewhere that said this
file had to be edited before Win95 would install the Windows KCT driver in
Win95. Wisp is up and running just fine, but can't get the KCT driver to load.
Can anyone help me on this?

Date: (null)
From: (null)

End of Ham-Space Digest V95 #229
****

1815. Re: Yaseu 5400B problem...

Newsgroup: rec.radio.amateur.space
Date: 1995-08-27 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Aug27.114622.19256@ke4zv.atl.ga.us>
Source record: 24223

In article <omNcaD3w165w@angus.mystery.com> chris@angus.mystery.com writes:
>Hi. I've been using a Yaseu 5400B for years but now am having a problem.
>The azimuth reading (via KCT) is wrong. I checked the output of the
>5400's din plug and indeed the voltage is jumping several volts in a
>random pattern. The elevation is working just fine. One last thing, the
>analog display on the 5400 does show the proper az position. Anyone ever
>have this problem? Thanks, Chris N8UDK

Clean or replace the dirty position indicating pot.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

1816. Re: 440-->28 Rx Converters..

Newsgroup: rec.radio.amateur.space
Date: 1995-08-27 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Aug27.123049.19491@ke4zv.atl.ga.us>
Source record: 24224

In article <B9JAL78.anaylor@delphi.com> Andrew Naylor <anaylor@delphi.com> writes:
>Has anybody used a receive converter on the packet birds? What are the
>main suppliers of converters in Kit/assembled form?

Kit, Hamtronics (not good, oscillator has spurs, and NF is poor,
overloads when used with a preamp, cheap, but you
supply case. Not recomended.)

Used, Microwave Modules (out of production, needs to be fronted with
a GASFET preamp, mast mounting possible)

New, SSB Electronics (good but expensive (abt $200), GASFET front end
included, mast mountable. *The* one to buy if
you go commercial.)

Homebrew, ARRL Handbook and Microwave Update or RSGB VHF/UHF book. Choose
a design with a Butler oscillator and a diode ring mixer. Front
with a GASFET preamp.

Alternative, a Down East Microwave transverter fronted by a mast mounted
GASFET preamp. This costs little more than a good converter,
and gives transmit capability too. Basic kit $155, amp and
W/T extra.

ARR used to offer a mast mount converter with GASFET, but I don't know if
it's still available (was abt $170). Good NF, but prone to lightning and
static damage.

A note on kits and homebrew, you need good test equipment to align and
tune up these things. You *can* get by with just a weak signal source
and a counter, but that isn't recomended. In particular, the Hamtronics
kit can *appear* to be operating properly, but be spurious as all hell.
Checking the LO with a spectrum analyzer immediately pinpoints the problem.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

1817. SARA

Newsgroup: rec.radio.amateur.space
Date: 1995-08-27 00:00:00 UTC
From: rs93463@midnet.com
Message-ID: <65535.73670877@midnet.com>
Source record: 24225

Hello All.
Can anybody help me with any info on the SARA Satelitte. The info I would like if possible is, 1. Is the sat still active, 2.What are the down link frequencies, 3. What Data mode is used ie AX25 or other, 4. Is there any decoding s/ware available for the Data.
If anybody can help please send any info to:- rs93463@midet.com or post to this conference, Thanks All.
73 Steve RS93463.

Stephen Reader

--- OffRoad 1.9e registered to Stephen Reader

* MidNet OnLine, Coventry, UK *

1818. NBSCOM.INI

Newsgroup: rec.radio.amateur.space
Date: 1995-08-28 00:00:00 UTC
From: bbd@pop3.connectnet.com
Message-ID: <41sc07$mlm@news.connectnet.com>
Source record: 24226

Does anyone have a sample of this INI file? Please post here if so. Thanks

Brian, KF6BL

1819. Re: Molniya over the pole?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-28 00:00:00 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <41sr6n$ld6@kocrsv08.delcoelect.com>
Source record: 24227

>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.

In <41irim$7qr@superb.csc.ti.com>, mbv@ti.com (Ken Durham) writes:
>Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
>three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
>agree with my what I have read.

The multiple-bird Molniya orbit does let you get away with pointing your
antenna in a fixed direction, but it works best from directly underneath
the apogee of the orbit. Over on the other side of the world, the angles
aren't as favorable.

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson | Ignorance can be fixed,
(I speak AT, not FOR, Delco Electronics) | but stupidity is permanent.

1820. SGP4 vs SDP4 models

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: milliron@ix.netcom.com
Message-ID: <41tpid$rfm@ixnews3.ix.netcom.com>
Source record: 24228

How accurate is the SGP4 model for HELO earth satellites. I have been playing with source code from SatTrack, SEESAT and a few others and it appears (?) to be accurate. Any feedback would be greatly appreciated.

1821. Re: SGP4 vs SDP4 models

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: ghorine@aol.com
Message-ID: <41u5m8$h7h@newsbf02.news.aol.com>
Source record: 24229

In article <41tpid$rfm@ixnews3.ix.netcom.com>, milliron@ix.netcom.com (William Milliron) writes:

>How accurate is the SGP4 model for HELO earth satellites. I have been >playing with source code from SatTrack, SEESAT and a few others and it >appears (?) to be accurate. Any feedback would be greatly appreciated.

William,
You might try corresponding with Dr. T.S. Kelso at the Air Force Institute of Technology (AFIT). He is the author of several satellite tracking packages and produces most of the two line element data seen on the internet. His email address is tkelso@afit.af.mil.

Greg Horine
N9PBD
GHorine@aol.com

1822. Re: Yaseu 5400B problem...

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <DE2qvA.Csp@murdoch.acc.Virginia.EDU>
Source record: 24230

Sounds like a dirty azimuth potentiometer inside the rotator.
The analog meter circuit may have some averaging or damping
feature (capacitor) so that it doesn't pick up the spikes??
--
-73's de WB4QKT
Stacey E. (Chuck) Mills
E-mail: sem2r@galen.med.virginia.edu

1823. Re: Wisp, KCT, and Win95

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <DE2r3J.D74@murdoch.acc.Virginia.EDU>
Source record: 24231

I haven't done this yet, but the problem has been well described on AMSAT-BB and also on the digital satellites. You need to setup the KCT/T under "old Windows". It will then run fine under WIN95, but in order to edit the setup file in WIN95, you'll have to manually edit the KCT/T.INI file (not it's correct name, but the appropriate "INI" file).

Chris Jackson is working on the driver for the KCT/T so that you can alter it in the usual way under WIN95. It'll probably be a month or so. Try setting it up on a computer under "old Windows" then copy the appropriate "INI" file to your WIN95. That should work fine for now.
--
-73's de WB4QKT
Stacey E. (Chuck) Mills
E-mail: sem2r@galen.med.virginia.edu

1824. 440-->28 Rx Converters..

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: MUENZLERK@uthscsa.edu
Message-ID: <01HUN2XC94QU00840Z@uthscsa.edu>
Source record: 24232

Andrew Naylor <anaylor@delphi.com> writes:

>Has anybody used a receive converter on the packet birds? What are the
>main suppliers of converters in Kit/assembled form?
>Thanks,
>Andrew, N0UJT

Try Down East Microwave. I don't think that they have one that goes
directly from 440 to 28 but they will have ones that go from 144 to
28 and from 440 to 144. They have them all the way up to 10GHz.
They have a pretty good assortment of linear amps for 440 and
144 too. Sorry I don't have the address or phone number but they
are usually in QST, CQ and 73 mags.

Kevin, WB5RUE
muenzlerk@uthscsa.edu

1825. Re: SGP4 vs SDP4 models

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: manfred@ssl.berkeley.edu
Message-ID: <41vm6n$ooh@agate.berkeley.edu>
Source record: 24233

In article <41tpid$rfm@ixnews3.ix.netcom.com>, milliron@ix.netcom.com (William Milliron) writes:

> How accurate is the SGP4 model for HELO earth satellites. I have been
> playing with source code from SatTrack, SEESAT and a few others and it
> appears (?) to be accurate. Any feedback would be greatly appreciated.

William,

the SatTrack (V3.1) implementation of the SGP4 model has a typical precision of better than 10 minutes of arc in azimuth and elevation angles for typical orbit predictions with two-line element sets that are not more than a few days old. The calculations of the latitude and longitude of the sub-satellite point are even more precise. A lot depends on how old your two-line element sets are.

For more details check the SatTrack web page at:

http://ssl.berkeley.edu/isi_www/sattrack.html

--Manfred

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720

1826. Re: 440-->28 Rx Converters..

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: landisj@nad.com
Message-ID: <1995Aug29.131824.354@nad.com>
Source record: 24234

In article <01HUN2XC94QU00840Z@uthscsa.edu>, MUENZLERK@uthscsa.edu (Muenzler, Kevin) writes:
> Andrew Naylor <anaylor@delphi.com> writes:
>
>>Has anybody used a receive converter on the packet birds? What are the
>>main suppliers of converters in Kit/assembled form?
>>Thanks,
>>Andrew, N0UJT
>
> Try Down East Microwave. I don't think that they have one that goes
> directly from 440 to 28 but they will have ones that go from 144 to
> 28 and from 440 to 144. They have them all the way up to 10GHz.
> They have a pretty good assortment of linear amps for 440 and
> 144 too. Sorry I don't have the address or phone number but they
> are usually in QST, CQ and 73 mags.
>
> Kevin, WB5RUE
> muenzlerk@uthscsa.edu

DEM is at 908-996-3584, in Frenchtown, NJ. At home, as I type, a partially assembled DEM 432-28mhz transverter sits on my bench. This is the design that is intended as an IF transverter for use behind a 10.368Ghz transverter. It is a nice, but bare bones kit, with separate Rx/Tx ports for both the 28mhz IF and the 432 side, and about a 4db NF, as I recall. (Remember this is an IF transverter) It sold for $109. When I have it up and running, my intent is to pick up the 10G modular transverter system. Steve also sells a high performance kit, with options available for switching, power, and packaging. I don't have the specs handy, but give him a call if you're interested.

Joe - AA3GN
--
Joe Landis - Systems and Network Manager - North American Drager - Telford, PA
landisj@nad.com ..speaking only for myself, of course..

1827. ARLK044 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk044.1995@ampr.org>
Source record: 24235
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK044
ARLK044 Keplerian data

ZCZC SK69
QST de W1AW
Keplerian Bulletin 44 ARLK044
From ARRL Headquarters
Newington, CT August 29, 1995
To all radio amateurs

SB KEP ARL ARLK044
ARLK044 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-69
1 99969U 95999A 95243.67864988 .00006920 00000-0 61149-4 0 29
2 99969 28.4664 35.4830 0004863 272.7368 87.2812 15.64893919 28
AO-10
1 14129U 83058B 95226.51733708 -.00000116 00000-0 10000-3 0 3705
2 14129 26.4564 253.3162 5988239 301.4565 13.4548 2.05880986 63534
RS-10/11
1 18129U 87054A 95237.82518397 .00000019 00000-0 46891-5 0 01078
2 18129 82.9256 7.5871 0010197 260.6605 99.3398 13.72355428409527
UO-11
1 14781U 84021B 95238.53090915 .00000096 00000-0 24014-4 0 8220
2 14781 97.7843 237.7738 0011274 322.3552 37.6863 14.69370358614230
RS-12/13
1 21089U 91007A 95238.54623317 .00000054 00000-0 41510-4 0 8257
2 21089 82.9196 48.5933 0029557 340.0849 19.9145 13.74059901228432
AO-13
1 19216U 88051B 95237.15566405 .00000022 00000-0 -11521-3 0 819
2 19216 57.4664 168.4571 7320161 17.1024 358.0082 2.09719750 23618
UO-14
1 20437U 90005B 95237.77796565 -.00000014 00000-0 11437-4 0 01288
2 20437 98.5659 321.0238 0011342 358.8574 1.2581 14.29894641291692
RS-15
1 23439U 94085A 95238.12693825 -.00000039 00000-0 10000-3 0 00752
2 23439 64.8207 141.8772 0167091 250.2855 107.9970 11.27525010027401
```

```
AO-16
1 20439U 90005D 95238.16694046 .00000005 00000-0 18784-4 0 09240
2 20439 98.5770 323.1695 0011952 358.0381 2.0745 14.29949148291765
DO-17
1 20440U 90005E 95240.24748976 -.00000032 00000-0 44841-5 0 9207
2 20440 98.5786 325.7126 0011892 351.4398 8.6583 14.30089986292084
WO-18
1 20441U 90005F 95239.25167314 -.00000013 00000-0 11926-4 0 9248
2 20441 98.5784 324.6973 0012591 354.3122 5.7908 14.30061335291946
LO-19
1 20442U 90005G 95240.24884437 -.00000008 00000-0 13871-4 0 9191
2 20442 98.5801 326.0638 0012512 351.1759 8.9197 14.30164794292102
FO-20
1 20480U 90013C 95239.20449893 -.00000088 00000-0 -13141-3 0 8163
2 20480 99.0712 314.5960 0541201 72.6021 293.3497 12.83230729260050
AO-21
1 21087U 91006A 95239.42214628 .00000093 00000-0 82657-4 0 6262
2 21087 82.9402 179.8564 0035028 310.8314 48.9789 13.74558561229512
UO-22
1 21575U 91050B 95239.72745743 .00000016 00000-0 19737-4 0 6267
2 21575 98.3891 309.2598 0008642 65.7512 294.4576 14.36987379215778
KO-23
1 22077U 92052B 95238.02233958 -.00000037 00000-0 10000-3 0 05211
2 22077 66.0844 89.5567 0002603 174.3662 185.7387 12.86291514142711
KO-25
1 22828U 93061F 95239.23432706 .00000003 00000-0 18809-4 0 3915
2 22828 98.6098 314.7834 0010788 4.4117 355.7153 14.28109571 68017
IO-26
1 22826U 93061D 95240.23535964 -.00000012 00000-0 12777-4 0 4139
2 22826 98.6139 315.7312 0009936 16.9811 343.1695 14.27778717100051
AO-27
1 22825U 93061C 95239.72620769 -.00000018 00000-0 10600-4 0 4148
2 22825 98.6141 315.1211 0009375 17.3716 342.7777 14.27670286 99977
PO-28
1 22829U 93061G 95238.75652762 -.00000001 00000-0 17126-4 0 4054
2 22829 98.6095 314.3506 0010589 7.2815 352.8518 14.28089040 99860
Mir
1 16609U 86017A 95240.40019317 .00003404 00000-0 52407-4 0 2153
2 16609 51.6471 156.1476 0003375 39.5024 320.6253 15.57309858544183

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
September 2, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1828. Re: NBSCOM.INI

Newsgroup: rec.radio.amateur.space
Date: 1995-08-29 00:00:00 UTC
From: wdeegan@cpcug.org
Message-ID: <wdeegan.36.0040013E@cpcug.org>
Source record: 24236

I hope this helps you. This works for me.

Bill AD3S

```
# This file contains parameters which control how we dial up the NIST ACTS
# The dial and hangup commands are the exact character strings we will use
# to make the modem dial and hangup. You may customize these for your
# modem. port tells us which serial port to use. set it to COM1 or COM2
# or COM3 or COM4. port_address and port_irq specify the hardware i/o
# address, and hardware interrupt number for the serial port. NORMALLY,
# you should leave these set to zero (which makes the program use the standard
# values). However, if you have a non-standard serial port, you will need to
# set these. The address and irq must be specified in hexadecimal.
# maxtime sets the maximum time (seconds) for a phone call.
#
#
port = COM2
port_address = 0
port_irq = 0
baud = 1200
dial = ATDT1-303-494-4774
hangup = ATH
maxtime = 0
```

In article <41sc07$mlm@news.connectnet.com> bbd@pop3.connectnet.com (BnY)
writes:>From: bbd@pop3.connectnet.com (BnY)
>Subject: NBSCOM.INI
>Date: Mon, 28 Aug 95 09:14:56 GMT

>Does anyone have a sample of this INI file? Please post here if so. Thanks

>Brian, KF6BL

1829. What Pre-Amps?

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: "Alan K. Adamson" <ne1h>
Message-ID: <420bfe$k67@wa4mei.radio.org>
Source record: 24237

Well,

I guess, I can start the next political question.

Does anyone have a recommendation for pre-amps for a satellite station
I have the KLM 2m/440 full length crossed yagis and was wondering what about
preamps.

If you have a preference, please post or email.

Thanks,
Alan Adamson
NE1H
ne1h@tornado.ne1h.radio.org

1830. Re: NBSCOM.INI

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: davew@cruzio.com
Message-ID: <DE3rHD.Jw6@cruzio.com>
Source record: 24238

```
# This file contains parameters which control how we dial up the NIST ACTS
# The dial and hangup commands are the exact character strings we will use
# to make the modem dial and hangup. You may customize these for your
# modem. port tells us which serial port to use. set it to COM1 or COM2
# or COM3 or COM4. port_address and port_irq specify the hardware i/o
# address, and hardware interrupt number for the serial port. NORMALLY,
# you should leave these set to zero (which makes the program use the standard
# values). However, if you have a non-standard serial port, you will need to
# set these. The address and irq must be specified in hexadecimal.
# maxtime sets the maximum time (seconds) for a phone call.
#
#
port = COM2
port address = 02E8
port IRQ = 3
baud = 1200
dial = ATS37=5DT1-303-494-4774
hangup = ATH
maxtime = 50

--
Dave Wells KD6TO; INTERNET: davew@cruzio.com
Packet:KD6TO@K6LY.#CENCAL.CA.USA.NOAM; COMPUSERVE:74067,1755
(WA4UQQ Worldwide Amateur Radio Directory III KD6TO)
.
```

1831. STS-69 Element_Set (95243.678)

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95243.678@thomsoft.com>
Source record: 24239
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 99969U 95999A 95243.67864988 .00006920 00000-0 61149-4 0 29
2 99969 28.4664 35.4830 0004863 272.7368 87.2812 15.64893919 28

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1832. (no subject)

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: gene@ilsi.COM
Message-ID: <199508300356.UAA28422@UCSD.EDU>
Source record: 24240

We would like to ask you to place a link from your site to our
homepage. Please check out our homepage and let us know what you think.

We have created a database to assist people that want to advertise on
the internet. Using this database, people with homepages will now be able
to easily find appropriate sites for links to their homepage.

We are Internet List Services Inc. and we would appreciate your help.
Please visit us at: http://www.ilsi.com/ilsi5.html

Thank you,

Gene

1833. Email FAILURE

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: tfugate@pop.uky.edu
Message-ID: <4222d6$5pt@service1.uky.edu>
Source record: 24241

To anyone and everyone who has tried to send me mail:
Our new pop mail server has died. Mail gets lost in either
direction. They claim that they will have it fixed withen the next
week.(sure and I will respect you tommorrow :)
I am sorry if you have expected an Email reply to any JVFAX
questions. Try again in a week or so. or post any comments or questions
this NG.
BTW JVFAX 8.0 for real? If so where can we get it?
.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government.
If you do not like my opinion, just get on with your life.
I will not change your mind and you damn sure can not change mine."

1834. TM-742A

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: rick.edwards@mogur.com
Message-ID: <950830093044445@mogur.com>
Source record: 24242

I have a new 742A. It is a great radio! I enjoy it very much.
However, I do have a couple of questions that I can't seem to find the
answer to in the manual. Maybe you can help me.

1) When using the autodialer, the button sequence is PTT, PF, & then the
autodialer memory number (#1 in my case). The transmitter turns on when
the PTT is pressed, of course, but then turns off when the PF button is
pressed and then back on for the DTMF string. However, there is no (or
very little) pause between the transmitter turn on and the sending out
of DTMF. I use two repeater autopatches and neither of them likes this
and it _usually_ results in a misdial. Question: Is there anyway to
add a pause or a brief wait between the transmitter turning back on and
the output of DTMF?

2) When using the 742A in a crossband repeat mode between a 220
repeater and my 2m HT, I have to wait for the 220 repeater to drop
before I can transmit. This becomes a real drag when on a roundtable
on the 220 repeater and it has a long hang time. Is there anyway
around this? Is there a way to make the 742A act like a single
frequency repeater on the 2m side (ie. sample the receive every few
hundred milliseconds)?

Thanks....<re>
---
* QMPro 1.50 41-9162 * Clinton: "Ted, will you drive Hillary home?"

1835. Re: Help, keepers for elements

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: robinso1@wis.com
Message-ID: <422b40$85k@newsie.wis.com>
Source record: 24243

Dave Stephenson (stephens@ngis.geod.emr.ca) wrote:
: Help, I need some stainless steel keepers for 3/16 and 1/4 rod
: for a satellite antenna. Keepers are the retainers that look like
: none slip washers and fit over antenna elements.
: Rutland Arrays used to supply them, but both their past telephone
: numbers are now out of service and they do not reply to mail.

: Anyone know of another supplier of small numbers of antenna parts?
: Thanks.

: VE3PYG/VE3GSC

: --
: Dave Stephenson
: Geological Survey of Canada *Who ever knew the heavens menace so?
: Ottawa, Ontario, Canada *Those that have known the earth so
: Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

The owner of Rutland Arrays passed away recently. I don't know the
status of future business but you may have found out.

73
Mark WB3JIS

1836. Re: Seeking M2 Eggbeater Antenna Experiences

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: bennerr@onlink.net
Message-ID: <420v71$d3d@onlink3.onlink.net>
Source record: 24244

regross1@aol.com (REGross1) wrote:

>I am considering ordering the 2m and 70 cm set of eggbeater antennas from
>M-square and am looking for someone who has actually used them for
>satellite communications. I plan to use them with an ICOM 820H and two TE
>Systems 160 watt output amplifiers having internal preamplifiers. Premium
>coax in anticipated in lengths of less than 75 feet.

>How effective are they? What are their benefits and limitations. I
>expect to ultimately have to use them in a housing development with
>covenants against outside antennas. I would consider putting them high in
>the attic. If you have any experiences with a similar arrangement, please
>share them.
>Robert E. Gross (KE3EM)
>REGROSS1@aol.com
I would give them consideration for use with the 1200 baud birds. If
you lived in a part of the world with low amateur density, they would
be fairly suitable on the 9600 birds. The competition over North
America and Europe is very high, with many high powered stations using
AZ/EL setups. Your Eggbeater setup just doesn't quite make it.
You definately need a good quality pre-amp for the downlink. I would
recommend that you order the ground-plane kit for each as well.

I switched to the M2 Oscar antennas with the Yaesu G5400B AZ/EL setup
and the Landwehr pre-amps. The antennas are controlled with the
KCTracker.

Good luck.

Rudy Benner

1837. Help, keepers for elements

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: stephens@ngis.geod.emr.ca
Message-ID: <DE4Kwr.KyG@emr1.emr.ca>
Source record: 24245

Help, I need some stainless steel keepers for 3/16 and 1/4 rod
for a satellite antenna. Keepers are the retainers that look like
none slip washers and fit over antenna elements.
Rutland Arrays used to supply them, but both their past telephone
numbers are now out of service and they do not reply to mail.

Anyone know of another supplier of small numbers of antenna parts?
Thanks.

VE3PYG/VE3GSC

--
Dave Stephenson
Geological Survey of Canada *Who ever knew the heavens menace so?
Ottawa, Ontario, Canada *Those that have known the earth so
Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

1838. Re: Got my SWL confirmation for STS-64

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: gsteve490@aol.com
Message-ID: <421tn2$mm7@newsbf02.news.aol.com>
Source record: 24246

nice hat Rick's wearin' eh?

N2LZH ===>STS-64 PKT Q #35

1839. Re: Satellite Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-08-30 00:00:00 UTC
From: jay <jbrew@psci.net>
Message-ID: <NEWTNews.809833381.16461.jbrew@jbrew.psci.net>
Source record: 24247

In Article<41ku8i$f73@service1.uky.edu>, <tfugate@pop.uky.edu> write:
> Path: psci.net!eddie.cioe.com!cioeserv.cioe.com!news.sprintlink.net!newsfeed.internetmci
.com!lamarck.sura.net!news.uky.edu!chuck
> From: tfugate@pop.uky.edu (Terry Fugate)
> Newsgroups: rec.radio.amateur.space
> Subject: Re: Satellite Questions
> Date: 25 Aug 1995 16:37:38 GMT
> Organization: IT
> Lines: 54
> Message-ID: <41ku8i$f73@service1.uky.edu>
> References: <41ae2u$cl1@newsbf02.news.aol.com>
> NNTP-Posting-Host: 128.163.13.56
> X-Newsreader: WinVN 0.92.6
>
> In article <41ae2u$cl1@newsbf02.news.aol.com>, headshrnkr@aol.com (HeadShrnkr) says:
> >
> >Hello.
> >
> >I have a few questions about sat. tracking software and modems. First, let
> >me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and
> >KLM 70cm antenna setup on a Yaesu GB5400 rotor.
> >
> >First, can anyone make a suggestion as to a good tracking program for DOS
> >or Windows? Either commerical or shareware is fine.
> >
> >Second, I would like to have my rotor controlled by software, suggestions?
> >Possibly a tracking and rotor control software package?
> >
> >Third, I do not understand the exact equipement required for digital
> >transmission and reception. I am familar with Packet and use a PK 232 but
> >the standard is different for the Digital Satellites? Is there any way to
> >use or modify my PK 232 to function in this manner?
> >
> >I appericate your reply. If possible email to HeadShrnkr@aol.com.
> >
> >73,
> >KB2VKJ
> >
> If you can afford it, Instant Track is propably the best tracking
> program. Do a net search for amsat. I think you have to order it
> via the phone with a credit card. Several of the sat gurus around here
> use it. At the Amsat.ftp archive they have several different freeware/
> shareware trackers. I know that IT supports computer control of your
> rotor. I use PREDICT.EXE, it is a freeware text only tracker, schedular.

> You can get the orbital elements for the airforce ftp. Since I switched
> to netscape I can not quickly find net addresses. Do a net search.
> Yesterday I downloaded a new(for me) tracker. STSORBIT. It appears
> (from reading the docs) to be a good program. I think it came from the
> AMSAT ftp, but I could have got it from the ARRL ftp sit..or to tell the
> truth I was out netting and went all over the worl tracking down ham. I
> was trying to find a German ftp site with the rumured new version of
> JVFAX 8.0.
> I am into NOAA WX sats and do not really know much about ham digital
> formats. I suspect it is fairly high speed PSK. My MFJ1278 only does
> AX25 1200buad, RTTY and AMTOR. You might post to the REC.RADIO.DIGITAL.
> MISC. Those guys are into all sorts of digital stuff.
> I hope some of this helps.
>
>
....
> Terry Fugate
> UKTV
> University of Kentucky
> "The opinions expressed herein are mine, and soley mine. They do not
> represent the official view of the University of Kentucky,
> the State of Kentucky, or any agency of any government or agency.
> If you do not like my opinion, just get on with your life.
> I will not change your mind
> and you damn sure can not change mine."
I like WISP software. It works with my kansas city tracker and g-5400b.
because it is window run it is supper easy. you can get it from AMSAT also. cu
on the birds. n9mfu Jay

1840. New!!! Roswell incident on CD-ROM - rosnews.wri (0/1)

Newsgroup: rec.radio.amateur.space
Date: 1995-08-31 00:00:00 UTC
From: 100101.407@compuserve.com
Message-ID: <4241m8$9t2@dub-news-svc-6.compuserve.com>
Source record: 24248

The ROSWELL incident.

The original film document now on CD-ROM and Video CD!!!

1841. NBSCOM.INI

Newsgroup: rec.radio.amateur.space
Date: 1995-08-31 00:00:00 UTC
From: BDONALDSON@HNS.COM
Message-ID: <1995Aug31.213710.3564@hns.com>
Source record: 24249

Seeking info on NBSCOM.INI. Anyone have a sample of this file?

Please E-Mail at my address above.

Thanks

,,, Waddayamean, it's NOT workin'?!
(o o)
==========oOO==(_)==OOo==========
Brian Donaldson, KF6BL Project Engineer, Customer Svc
Hughes Network Systems, Inc. TES, Terrestrial, et al...
10450 Pacific Center Ct. Email: bdonaldson@hns.com
San Diego, CA 92121 Phone: (619) 452-5175
Room 2077 Fax: (619) 452-4886
==========

1842. Re: Help, keepers for elements

Newsgroup: rec.radio.amateur.space
Date: 1995-08-31 00:00:00 UTC
From: Zack Lau <zlau@arrl.org>
Message-ID: <424pql$t6f@mgate.arrl.org>
Source record: 24250

VE3PYG/VE3GSC stephens@ngis.geod.emr.ca (Dave Stephenson) wrote:
>Help, I need some stainless steel keepers for 3/16 and 1/4 rod
>for a satellite antenna. Keepers are the retainers that look like
>none slip washers and fit over antenna elements.
>Rutland Arrays used to supply them, but both their past telephone
>numbers are now out of service and they do not reply to mail.
>
>Anyone know of another supplier of small numbers of antenna parts?
>Thanks.
>
Try Byers Chassis Kits
phone 717-292-4901 6 to 9:30 EST 8AM to 4 PM SAT
Run by K3IWK in Dover, PA
They have both sizes. If you just need the 3/16 inch,
Texas Towers the keepers and nylon insulators.

Zack Lau KH6CP/1
zlau@arrl.org

VHP+ plans: Sept 9-11 VHF Test Mt Equinox FN33KE 50MHz to 10 GHz

1843. Help with DO-17

Newsgroup: rec.radio.amateur.space
Date: 1995-08-31 00:00:00 UTC
From: kory@avatar.com
Message-ID: <4250r6$drk@avatar.avatar.com>
Source record: 24251

Hi everyone,

I been trying pickup the DO-17 downlink with little success. I can clearly hear it on the speaker, althought most of the time its not full quieting. Here's my setup:

- Yaesu FT-736R
- Diamond 510 omni ground plane
- TE Sestems 1412G amp & pre-amp
- AEA PK232

I have the TNC monitor more set to 4 (and I tried six) and its in packet mode. When I disconnect the TNC from audio out, I can clearly hear DO-17`s telemetry downlink, but most of the time its not full quieting.

Is there any special mode or option I need to set on the TNC? This configuration works great for regular terestrial packet. Also, for normal packet usage, do you squelch your radio and then adjust it so it unsquelchs when it starts reciving packets or do you futz around with the volume/treshold levels? The AEA manual sucks and wasn't very clear on how to calibrate everything.

Any help would be greatly appreciated.

Thanks,
Kory
KE6VWO

1844. Re: Help with DO-17

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <425n4t$t92@over.mhv.net>
Source record: 24252

Kory Hamzeh (kory@avatar.com) wrote:

: Hi everyone,

: I been trying pickup the DO-17 downlink with little success. I can clearly
: hear it on the speaker, althought most of the time its not full quieting.
: Here's my setup:

: - Yaesu FT-736R
: - Diamond 510 omni ground plane
: - TE Sestems 1412G amp & pre-amp
: - AEA PK232

: I have the TNC monitor more set to 4 (and I tried six) and its in packet
: mode. When I disconnect the TNC from audio out, I can clearly hear DO-17`s
: telemetry downlink, but most of the time its not full quieting.

: Is there any special mode or option I need to set on the TNC? This
: configuration works great for regular terestrial packet. Also, for
: normal packet usage, do you squelch your radio and then adjust it so it
: unsquelchs when it starts reciving packets or do you futz around with the
: volume/treshold levels? The AEA manual sucks and wasn't very clear on
: how to calibrate everything.

: Any help would be greatly appreciated.

: Thanks,
: Kory
: KE6VWO

Kory,
I think some of your problem may be obsticals in the way of the
antenna. Also remember the doppler effect. At the start of a pass I'm on
145.830, when at it's highest 145.825 and when it's past it's highest
145.820. Set your tnc as you do for normal packet work. I know where I
live what I recieve all depends on what's in the way. I.E. mountains,
buildings, trees. Don't neglect the low passes unless you know mountains
or something else will block it's signal. I set up my tnc as usual, Plug
in the radio cable - turn DOWN squelch and volume, then turn up volume
til the recieve just lights up then turn up squelch until recieve light
goes out. That should do it for you.

Tom - KB2SMS

1845. OSCAR 10 Advice Sought

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: leigh@rain.org
Message-ID: <425s4n$qq7@news.rain.org>
Source record: 24253

I'd like suggestions on working OSCAR 10 with extremely minimal gear. Thus far I'm using a small 2 meter beam and an older Icom 260 for recieving, and I can hear most SSB and nearly all CW signals.

My uplink gear consists of an Icom 3-watt 402 435 mhz SSB/CW rig, and a 19 element 432 beam. With just moving my balcony-mounted antennas by hand, I can sometimes weakly hear my CW on the downlink.

Yes, I'm planning on buying a 432 amp in the 50 to 100 watt range. For tracking I'm using TRAKSAT/version 2.80.

Question: when using minimal gear, what sections of a typical pass are the easiest to work? (I suppose the closer passes, but what else?)

Thanks and 73. --Leigh/KM6JE.

1846. Re: Email FAILURE

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: rdemar@mail.msen.com
Message-ID: <42646c$413@pravda.aa.msen.com>
Source record: 24254

In article <4222d6$5pt@service1.uky.edu>,
tfugate@pop.uky.edu (Terry Fugate) wrote:
>To anyone and everyone who has tried to send me mail:
> Our new pop mail server has died. Mail gets lost in either
>direction. They claim that they will have it fixed withen the next
>week.(sure and I will respect you tommorrow :)
>I am sorry if you have expected an Email reply to any JVFAX
>questions. Try again in a week or so. or post any comments or questions
>this NG.
>BTW JVFAX 8.0 for real? If so where can we get it?
>.....
.
>Terry Fugate
>UKTV
>University of Kentucky
>"The opinions expressed herein are mine, and soley mine. They do not
>represent the official view of the University of Kentucky,
>the State of Kentucky, or any agency of any government.
>If you do not like my opinion, just get on with your life.
>I will not change your mind and you damn sure can not change mine."

I was one such person... :) My NNTP server wouldn't let me post so I got desperate and tried the e-mail route. Anyhow, my question is this:

What are the available cross references for the am demod/fm mod chip in the JVFAX diagrams for the simple converter for NOAA/Meteor APT? I couldn't find a reference in my books for the chip number they specify. I am too used to ECG and LM #'s...

1847. Re: Home-building antennas for 137.xxx APT birds...

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: rdemar@mail.msen.com
Message-ID: <427jtt$q1a@pravda.aa.msen.com>
Source record: 24255

In article <426563$413@pravda.aa.msen.com>,
rdemar@mail.msen.com (Rick DeMar) wrote:
>Hello all,
>
>I have been a low-sat weather imaging hobbyist for some time now and have
>managed some nice images on a nearly nonexistent budget from the start. I am
>using a Uniden 100XLT (modified), a TV preamp, a 7 foot marconi type antenna,
>and DRIG's SBDSP software. Sounds crappy, yes, but it works well.
>
>I want to build a better antenna for this that I could possibly fit into the
>attic of my apartment. I have heard that the polar orbiters use a
"Circularity
>Polarization" antenna system. Does anyone know anything about this and how I
>can hand make a reasonably efficient antenna for it? Any help is greatly
>appreciated!

Thanks everyone for their fast responses to this post! Hopefully I will be
getting far better results from my NOAA efforts soon!

DISCLAIMER:
The views and/or opinions expressed herein do not neccessarily make sense.

This wonderful presentation
has been brought to you by: "She's gone from suck to blow!!!"
Rick DeMar, -Colonel Sanders, from
T H E "SpaceBalls"
N I G H T R U N N E R ! !
rdemar@mail.msen.com

Money is irrelevant. Long-distance is irrelevant. Resistance is futile...
(Hey, if the Borg had to dial long distance, they WOULD say that...)

1848. hearing meteors..how ?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: andromed@Breeze.cs.dal.ca
Message-ID: <DE8o78.A2L@cs.dal.ca>
Source record: 24256

Hello;

I have bought an old spectrum analizer and a 3 element Yaqi. The
frequencies of the machine are 20-79 Mhz, 120-179 Mhz, 450-519 Mhz.
Any help on a frequency to listen to would be appreciated...
Thanks...

Mike

1849. Re: hearing meteors..how ?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: n2oto@aol.com
Message-ID: <4280ni$hp7@newsbf02.news.aol.com>
Source record: 24257

What is it you want to listen to?
Meteor Satellites or ROCKS falling to Earth?

Also, where in Canada are you? This will help me to determine what
beacons for you to use, on 6, 2, 0.7 meters, for forward meteor scatter!

Rupert, N2OTO
****
>Hello;

I have bought an old spectrum analizer and a 3 element Yaqi. The
frequencies of the machine are 20-79 Mhz, 120-179 Mhz, 450-519 Mhz.
Any help on a frequency to listen to would be appreciated...
Thanks...Mike
****

1850. PK TNC's help needed

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: g8tzj@k2cc.sos.CLarkson.EDU
Message-ID: <10638@k2cc.sos.clarkson.edu>
Source record: 24258

I have received a request for help in getting a PK-900 and a KPC-9612
operational on the 9600 baud pacsats. I dont have any details of the
exact problems so ANY info on these 2 TNC's , mods, software fixes
etc would be helpful.

73, Andrew G8TZJ @ AMSAT.ORG

1851. KCT under Windows 95?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: headshrnkr@aol.com
Message-ID: <42855v$j4a@newsbf02.news.aol.com>
Source record: 24259

This may be an odd question, but has anyone tried running the KCT Tracker/Tuner and associated software under Windows 95 yet? Please email me to the following address. Thank you!

"We, the people are the rightful masters of both the congress and the courts - not to overthrow the constitition, but to overthrow men who pervert the constitution" - A. Lincoln

Bruce J. Howes
HeadShrnkr@aol.com

1852. NORAD Two-Line Orbital Element Sets (TLE668)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.809999766@dolphin>
Source record: 24260

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #668 -
Alouette 1
1 00424U 62049A 95241.42235304 .00000028 00000-0 22336-4 0 1313
2 00424 80.4634 212.6098 0024592 67.2141 293.1598 13.67848454642311
ATS 1
1 02608U 66110A 95235.01105310 .00000102 00000-0 10000-3 0 9420
2 02608 14.6443 355.9733 0010162 70.9499 289.2146 1.00349976 21861
ATS 3
1 03029U 67111A 95242.44592979 -.00000116 00000-0 10000-3 0 3943
2 03029 14.8490 2.8511 0008016 262.8274 127.6068 1.00272964101840
Cosmos 398
1 04966U 71016A 95243.17230725 .00260405 95133-5 21811-3 0 9832
2 04966 51.3997 234.9207 0477089 357.9367 1.9676 15.21674434836512
Starlette
1 07646U 75010A 95240.13903224 -.00000156 00000-0 -10655-4 0 9108
2 07646 49.8303 229.0813 0205582 339.2764 19.9883 13.82189360 38294
LAGEOS
1 08820U 76039A 95243.12728119 .00000018 00000-0 10000-3 0 1329
2 08820 109.8527 286.2966 0044029 191.4299 168.5552 6.38664586195240
ETS-2
1 09852U 77014A 95239.32964087 -.00000292 00000-0 10000-3 0 360
2 09852 12.8410 36.3178 0004749 88.6390 271.4365 1.00009419 14690
GOES 2
1 10061U 77048A 95243.26092969 .00000058 00000-0 10000-3 0 5702
2 10061 11.9328 40.4958 0013644 129.0445 88.5744 1.00291942 11520
IUE
1 10637U 78012A 95242.98369987 -.00000218 00000-0 10000-3 0 1646
2 10637 35.3274 87.8088 1336095 48.9276 155.8158 1.00307873 17016
GPS BI-01
1 10684U 78020A 95242.47692897 -.00000010 00000-0 10000-3 0 3844
2 10684 64.8754 32.5001 0060938 162.8426 197.3750 1.98069466113636
```

```
GPS BI-02
1 10893U 78047A 95242.18132234 .00000043 00000-0 10000-3 0 1794
2 10893 63.2960 270.3617 0224223 14.2551 346.3967 2.01627404126922
GOES 3
1 10953U 78062A 95242.37541571 .00000108 00000-0 10000-3 0 5254
2 10953 10.9047 43.2987 0006509 125.2938 153.4130 1.00347936 16124
SeaSat 1
1 10967U 78064A 95240.12215369 -.00000056 00000-0 26015-4 0 4240
2 10967 108.0018 286.3405 0003042 245.6444 114.4386 14.38050650899172
GPS BI-03
1 11054U 78093A 95243.02723368 .00000049 00000-0 10000-3 0 3465
2 11054 62.9920 268.7470 0045805 180.5698 179.4939 1.93505351123026
Nimbus 7
1 11080U 78098A 95240.19694102 -.00000047 00000-0 -42327-5 0 5255
2 11080 98.9898 111.0661 0009703 39.7205 320.4659 13.83705933850514
GPS BI-04
1 11141U 78112A 95232.61220958 -.00000017 00000-0 10000-3 0 9961
2 11141 64.8785 34.7323 0049197 28.1554 332.1434 1.92894795 12068
GPS BI-05
1 11690U 80011A 95238.68961572 -.00000016 00000-0 10000-3 0 9316
2 11690 65.2138 34.1960 0142272 194.4264 165.3712 2.00566031128273
GPS BI-06
1 11783U 80032A 95236.99318031 .00000057 00000-0 10000-3 0 944
2 11783 62.4347 263.6454 0219024 29.2596 332.0369 2.03457214112782
GOES 5
1 12472U 81049A 95242.40253235 -.00000281 00000-0 10000-3 0 8764
2 12472 7.6616 53.2367 0007672 37.9308 322.2502 1.00247986 10174
Cosmos 1383
1 13301U 82066A 95242.80385897 .00000002 00000-0 -14476-4 0 4309
2 13301 82.9320 347.4371 0026931 326.5098 33.4349 13.68067212657535
LandSat 4
1 13367U 82072A 95242.67532027 .00000018 00000-0 13960-4 0 7667
2 13367 98.1211 296.7146 0006997 339.0310 21.0600 14.57155433698065
DMSP B5D2-1
1 13736U 82118A 95242.00755785 .00000045 00000-0 37145-4 0 8373
2 13736 98.6292 70.0503 0008783 154.0953 206.0661 14.25749020659438
IRAS
1 13777U 83004A 95242.54355636 .00000020 00000-0 43988-4 0 651
2 13777 98.9671 69.2387 0011986 178.6728 181.4462 13.99242656312588
Cosmos 1447
1 13916U 83021A 95241.84044658 .00000042 00000-0 29166-4 0 5275
2 13916 82.9407 47.2654 0036357 246.8909 112.8416 13.74329687623589
TDRS 1
1 13969U 83026B 95243.06839019 .00000078 00000-0 00000+0 0 4557
2 13969 8.4991 46.5724 0001762 152.8267 25.6414 1.00283014 18466
GOES 6
1 14050U 83041A 95235.31293610 -.00000126 00000-0 10000-3 0 4365
2 14050 6.4701 56.5501 0004306 23.1663 260.8347 1.00327394103199
OSCAR 10
1 14129U 83058B 95226.51733708 -.00000116 00000-0 10000-3 0 3705
```

```
2 14129 26.4564 253.3162 5988239 301.4565 13.4548 2.05880986 63534
LandSat 5
1 14780U 84021A 95241.13147602 .00000567 00000-0 13546-3 0 3376
2 14780 98.1052 295.6173 0004987 355.0471 5.0677 14.57166093611255
UoSat 2
1 14781U 84021B 95243.02534179 .00000077 00000-0 20852-4 0 8231
2 14781 97.7846 242.0587 0010980 307.1158 52.9040 14.69371400614898
GPS BI-09
1 15039U 84059A 95242.52335601 -.00000015 00000-0 10000-3 0 3615
2 15039 64.5462 28.8243 0082154 18.3101 341.9839 1.92302261 81820
Cosmos 1574
1 15055U 84062A 95241.14077818 .00000056 00000-0 43061-4 0 7282
2 15055 82.9574 102.0807 0029194 77.0397 283.4014 13.73625624560753
GPS BI-10
1 15271U 84097A 95242.34280616 .00000050 00000-0 10000-3 0 468
2 15271 62.1241 263.8511 0156666 354.1236 5.7430 2.00602626 79418
Cosmos 1602
1 15331U 84105A 95241.82789621 .00000159 00000-0 15887-4 0 4145
2 15331 82.5314 26.9107 0019237 189.5777 170.5077 14.84656006589592
NOAA 9
1 15427U 84123A 95242.76629182 .00000100 00000-0 77018-4 0 3802
2 15427 98.9939 301.9171 0016063 58.9007 301.3737 14.13727643552458
GPS BI-11
1 16129U 85093A 95240.68323359 -.00000016 00000-0 10000-3 0 6734
2 16129 65.2112 32.1141 0155283 86.4568 275.3236 1.89368099 16368
Mir
1 16609U 86017A 95242.90284210 .00001152 00000-0 22178-4 0 2190
2 16609 51.6456 143.6198 0003738 49.2080 310.9235 15.57323056544572
SPOT 1
1 16613U 86019A 95241.38915708 .00000090 00000-0 62356-4 0 8469
2 16613 98.6442 311.0907 0001592 54.4660 305.6646 14.20067646178759
Cosmos 1766
1 16881U 86055A 95239.54195218 .00000152 00000-0 15448-4 0 3292
2 16881 82.5189 86.8917 0017508 226.3692 133.6073 14.83650720490157
EGP
1 16908U 86061A 95240.86768623 -.00000083 00000-0 10000-3 0 246
2 16908 50.0090 178.7925 0011324 347.0171 13.0370 12.44413027 79887
NOAA 10
1 16969U 86073A 95242.72993706 .00000018 00000-0 25580-4 0 2929
2 16969 98.5122 243.3689 0013722 121.0025 239.2497 14.24952564465093
MOS-1
1 17527U 87018A 95241.23675737 .00000092 00000-0 10000-3 0 2412
2 17527 98.9818 304.5015 0000646 184.5188 175.5960 13.95257396434011
GOES 7
1 17561U 87022A 95243.28672586 .00000074 00000-0 10000-3 0 5212
2 17561 2.4838 71.5924 0002262 320.9415 274.4647 1.00265152 14383
Kvant-1
1 17845U 87030A 95242.00451346 .00002057 00000-0 34323-4 0 3647
2 17845 51.6467 148.1197 0003733 51.4393 308.9895 15.57316698478572
DMSP B5D2-3
```

```
1 18123U 87053A 95242.42983286 -.00000024 00000-0 10000-4 0 1200
2 18123 98.7752 72.4190 0015004 9.8805 350.2660 14.15415759423225
RS-10/11
1 18129U 87054A 95241.39769571 .00000019 00000-0 46891-5 0 1022
2 18129 82.9257 4.9467 0010157 249.3730 110.6333 13.72355474410012
Meteor 2-16
1 18312U 87068A 95241.90168967 .00000041 00000-0 23582-4 0 4210
2 18312 82.5496 223.8918 0011912 329.6923 30.3549 13.84061635405743
Meteor 2-17
1 18820U 88005A 95243.13908615 .00000046 00000-0 27537-4 0 7105
2 18820 82.5392 278.6253 0017852 29.3350 330.8805 13.84742792383242
DMSP B5D2-4
1 18822U 88006A 95243.05086316 -.00000014 00000-0 11947-4 0 572
2 18822 98.4006 83.7687 0006394 127.5940 232.5821 14.23162731393164
Glonass 34
1 19163U 88043A 95241.70824991 .00000033 00000-0 10000-3 0 142
2 19163 65.1549 95.6893 0008033 152.8782 207.2437 2.13102610 56001
Glonass 36
1 19165U 88043C 95241.76519429 .00000033 00000-0 10000-3 0 4185
2 19165 65.1692 95.6710 0012226 92.0619 268.1690 2.13102264 56623
METEOSAT 3
1 19215U 88051A 95242.33722313 -.00000275 00000-0 10000-3 0 1706
2 19215 2.6582 69.4484 0002765 85.1488 234.1088 1.00250274 14318
AO-13
1 19216U 88051B 95237.15566405 .00000022 00000-0 -11521-3 0 819
2 19216 57.4664 168.4571 7320161 17.1024 358.0082 2.09719750 23618
OKEAN 1
1 19274U 88056A 95239.89629069 .00000271 00000-0 30767-4 0 298
2 19274 82.5133 187.0303 0021073 17.5830 342.6102 14.82375006385770
Meteor 3-2
1 19336U 88064A 95242.43238581 .00000051 00000-0 10000-3 0 4191
2 19336 82.5400 12.8680 0015674 245.6051 114.3429 13.16974172341074
Glonass 39
1 19503U 88085C 95243.20111625 -.00000043 00000-0 10000-3 0 3118
2 19503 65.6769 334.5218 0007224 164.7691 195.3052 2.13101886 54143
NOAA 11
1 19531U 88089A 95242.72268488 -.00000010 00000-0 20033-4 0 1883
2 19531 99.1979 248.0879 0012047 344.2396 15.8391 14.13061339357281
TDRS 2
1 19548U 88091B 95235.75812646 -.00000197 00000-0 00000+0 0 1412
2 19548 1.8898 74.0546 0006039 111.4375 143.9404 1.00265794 12539
Glonass 40
1 19749U 89001A 95239.48539011 .00000043 00000-0 10000-3 0 5220
2 19749 65.0902 95.3155 0005186 267.2392 92.8023 2.13101459 51571
Glonass 41
1 19750U 89001B 95241.88708998 .00000032 00000-0 10000-3 0 4341
2 19750 65.1167 95.2926 0007190 229.5955 130.4289 2.13101868 51640
GPS BII-01
1 19802U 89013A 95240.98009935 .00000017 00000-0 10000-3 0 964
2 19802 55.2458 122.2893 0029388 170.6014 189.5323 2.00554959 47839
```

```
Akebono
1 19822U 89016A 95240.18544592 .00008272 00000-0 39735-3 0 5607
2 19822 75.0952 293.7476 3776923 327.1653 14.2024 7.87215575143484
Meteor 2-18
1 19851U 89018A 95241.78759364 .00000047 00000-0 28549-4 0 4190
2 19851 82.5226 154.2273 0015949 75.0116 285.2801 13.84394966328375
MOP-1
1 19876U 89020B 95237.51502546 .00000059 00000-0 10000-3 0 1332
2 19876 1.3557 72.4864 0003898 164.2150 292.3249 1.00284519 3714
TDRS 3
1 19883U 89021B 95242.39764737 -.00000276 00000-0 00000+0 0 1130
2 19883 0.0312 339.3739 0004068 219.0540 241.8819 1.00270238196195
GPS BII-02
1 20061U 89044A 95242.31747333 -.00000021 00000-0 10000-3 0 1100
2 20061 54.3831 298.4195 0148210 215.5027 143.5716 2.00563056 45600
Nadezhda 1
1 20103U 89050A 95242.75172841 .00000035 00000-0 20280-4 0 4972
2 20103 82.9619 323.6025 0038347 143.5476 216.8302 13.73856393308662
GPS BII-03
1 20185U 89064A 95241.15801040 .00000016 00000-0 10000-3 0 1299
2 20185 55.0227 122.8388 0015714 295.3410 64.5798 2.00569464 44152
GMS 4
1 20217U 89070A 95241.82120440 -.00000374 00000-0 10000-3 0 2327
2 20217 1.1899 75.9828 0000855 288.2635 29.1558 1.00278499 22489
INTERCOSMOS 24
1 20261U 89080A 95241.62719716 .00000127 00000-0 35886-4 0 4355
2 20261 82.5941 97.6076 1242782 346.9419 10.2009 12.47272282269432
GPS BII-04
1 20302U 89085A 95240.19828676 .00000039 00000-0 10000-3 0 1082
2 20302 53.3519 238.5054 0018391 186.5778 173.4497 2.00557843 42933
Meteor 3-3
1 20305U 89086A 95243.27360455 .00000044 00000-0 10000-3 0 3835
2 20305 82.5487 325.7185 0007198 318.0201 42.0293 13.04419064280278
COBE
1 20322U 89089A 95238.01716572 -.00000044 00000-0 11045-6 0 1470
2 20322 98.9610 253.0148 0009794 137.0114 223.1802 14.03455338295384
Kvant-2
1 20335U 89093A 95242.00451568 .00002057 00000-0 34323-4 0 3664
2 20335 51.6467 148.1197 0003733 51.4393 309.0019 15.57316698327584
GPS BII-05
1 20361U 89097A 95242.70335765 -.00000003 00000-0 10000-3 0 9632
2 20361 55.8057 64.8268 0095832 117.0874 243.8987 2.00563166 32468
COSMOS 2054 (Altair-1)
1 20391U 89101A 95241.02780419 -.00000139 00000-0 10000-3 0 2144
2 20391 3.2771 65.3409 0003969 70.8433 194.5807 1.00275457 21059
SPOT 2
1 20436U 90005A 95241.79907212 .00000169 00000-0 10000-3 0 9672
2 20436 98.7289 314.9242 0001380 39.8077 320.3188 14.20028166290344
UO-14
1 20437U 90005B 95240.71691958 -.00000026 00000-0 68716-5 0 1215
```

```
2 20437 98.5656 323.9143 0011185 350.4167 9.6798 14.29894719292112
UO-15
1 20438U 90005C 95241.77000686 -.00000019 00000-0 97505-5 0 9189
2 20438 98.5618 323.3602 0010698 351.8945 8.2062 14.29212235292152
PACSAT
1 20439U 90005D 95241.24572787 -.00000042 00000-0 77501-6 0 9202
2 20439 98.5770 326.2027 0011698 349.5915 10.5021 14.29948811292200
DO-17
1 20440U 90005E 95240.24748976 -.00000032 00000-0 44841-5 0 9207
2 20440 98.5786 325.7126 0011892 351.4398 8.6583 14.30089986292084
WO-18
1 20441U 90005F 95239.25167314 -.00000013 00000-0 11926-4 0 9248
2 20441 98.5784 324.6973 0012591 354.3122 5.7908 14.30061335291946
LO-19
1 20442U 90005G 95240.24884437 -.00000008 00000-0 13871-4 0 9191
2 20442 98.5801 326.0638 0012512 351.1759 8.9197 14.30164794292102
GPS BII-06
1 20452U 90008A 95242.09877441 .00000029 00000-0 10000-3 0 684
2 20452 54.0276 178.6500 0056798 81.8165 278.8278 2.00551394 40959
MOS-1B
1 20478U 90013A 95242.22134689 .00000091 00000-0 10000-3 0 8253
2 20478 99.0722 309.9516 0000809 256.2929 103.8142 13.95032144203856
DEBUT
1 20479U 90013B 95239.19246235 -.00000052 00000-0 -52238-4 0 9190
2 20479 99.0706 314.7436 0541148 72.1510 293.7838 12.83333838260068
FO-20
1 20480U 90013C 95239.20449893 -.00000088 00000-0 -13141-3 0 8163
2 20480 99.0712 314.5960 0541201 72.6021 293.3497 12.83230729260050
MOS-1B R/B
1 20491U 90013D 95240.82001862 .00000436 00000-0 89524-3 0 1666
2 20491 99.0537 11.9921 0468838 261.3899 93.3849 13.02980235263650
LACE
1 20496U 90015A 95241.85483258 .00000998 00000-0 37361-4 0 5705
2 20496 43.1036 71.1067 0011040 317.1038 42.8956 15.34764697308895
Nadezhda 2
1 20508U 90017A 95242.73532258 .00000043 00000-0 29441-4 0 4962
2 20508 82.9536 98.1895 0045939 96.5158 264.1230 13.73497188275883
OKEAN 2
1 20510U 90018A 95241.75439403 .00000140 00000-0 16044-4 0 4384
2 20510 82.5261 137.5039 0017495 190.8162 169.2671 14.78517376296463
GPS BII-07
1 20533U 90025A 95242.51004667 -.00000022 00000-0 10000-3 0 923
2 20533 54.8097 299.0490 0045580 80.3717 280.2263 2.00569795 39737
PegSat
1 20546U 90028A 95239.83781101 .00006296 00000-0 12693-3 0 8359
2 20546 94.1171 184.8592 0067626 62.1062 298.7050 15.44113202299535
HST
1 20580U 90037B 95241.59786740 .00000350 00000-0 19507-4 0 7061
2 20580 28.4711 299.1344 0006311 352.3383 7.7112 14.90920250 94878
MACSAT 2
```

```
1 20608U 90043B 95243.21617461 .00000143 00000-0 21918-4 0 1213
2 20608 89.9309 175.8523 0106874 354.6772 5.3300 14.64856706283693
Glonass 44
1 20619U 90045A 95243.13864676 -.00000043 00000-0 10000-3 0 2232
2 20619 65.2709 333.9078 0024039 208.1689 151.7658 2.13102637 41108
Glonass 45
1 20620U 90045B 95237.62620215 -.00000048 00000-0 10000-3 0 2268
2 20620 65.2956 334.0893 0006799 46.5759 313.5154 2.13102533 41021
Glonass 46
1 20621U 90045C 95239.57001544 -.00000039 00000-0 10000-3 0 8180
2 20621 65.2865 334.0801 0011982 189.7863 170.2404 2.13101662 41068
Kristall
1 20635U 90048A 95242.00451568 .00002057 00000-0 34323-4 0 1588
2 20635 51.6467 148.1197 0003733 51.4393 309.0019 15.57316698298416
ROSAT
1 20638U 90049A 95243.22496573 .00000023 00000-0 20383-4 0 4880
2 20638 52.9890 169.2165 0010910 330.3815 29.6554 15.07232694288433
Meteor 2-19
1 20670U 90057A 95239.04424893 .00000001 00000-0 -12178-4 0 9184
2 20670 82.5421 222.2730 0016570 9.7691 350.3784 13.84161939260911
CRRES
1 20712U 90065A 95241.59322556 .00000714 00000-0 71008-3 0 1443
2 20712 18.1134 9.3533 7195899 158.6351 262.1263 2.35499493 36214
GPS BII-08
1 20724U 90068A 95239.83967425 .00000019 00000-0 10000-3 0 9310
2 20724 54.8519 120.4973 0119200 174.7496 185.4625 2.00565428 35546
Feng Yun1-2
1 20788U 90081A 95243.36292415 -.00000027 00000-0 10000-4 0 4932
2 20788 98.8153 253.8605 0014615 228.4382 131.5190 14.01110855255363
Meteor 2-20
1 20826U 90086A 95241.83349475 .00000030 00000-0 14303-4 0 9308
2 20826 82.5288 156.9660 0011780 261.5786 98.4036 13.83613179248419
GPS BII-09
1 20830U 90088A 95240.88276381 -.00000004 00000-0 10000-3 0 9440
2 20830 55.7499 62.8780 0067461 100.1134 260.6921 2.00556441 36203
GPS BIIA-10
1 20959U 90103A 95242.78705172 .00000005 00000-0 10000-3 0 9097
2 20959 55.0429 122.3676 0099372 230.7489 128.4573 2.00572203 34831
DMSP B5D2-5
1 20978U 90105A 95242.71650738 .00000072 00000-0 41696-4 0 3151
2 20978 98.6351 310.6790 0078718 310.7812 48.6559 14.32572545247984
Glonass 47
1 21006U 90110A 95239.59539381 .00000043 00000-0 10000-3 0 7923
2 21006 65.0766 94.6459 0058921 188.1071 171.9110 2.13102824 36731
Glonass 48
1 21007U 90110B 95239.78445247 .00000042 00000-0 10000-3 0 9158
2 21007 65.1066 94.7201 0035300 177.8514 182.2513 2.13101027 36720
Glonass 49
1 21008U 90110C 95240.14519290 .00000040 00000-0 10000-3 0 1162
2 21008 65.0760 94.6571 0008135 270.8854 89.1146 2.13099053 36729
```

```
AO-21
1 21087U 91006A 95242.84334939 .00000093 00000-0 82657-4 0 6271
2 21087 82.9399 177.3242 0035182 301.3057 58.4655 13.74558585229988
RS-12/13
1 21089U 91007A 95242.84248393 .00000019 00000-0 40310-5 0 8262
2 21089 82.9195 45.4057 0029160 328.0662 31.8729 13.74059730229020
MOP-2
1 21140U 91015B 95242.31451073 -.00000016 00000-0 10000-3 0 959
2 21140 0.1001 300.5963 0001077 198.6779 312.1707 1.00265519 18683
Nadezhda 3
1 21152U 91019A 95242.77689131 .00000036 00000-0 21831-4 0 1872
2 21152 82.9243 1.6241 0043530 73.2311 287.3614 13.73522249223744
Glonass 50
1 21216U 91025A 95241.02188755 -.00000037 00000-0 10000-3 0 4356
2 21216 65.0215 333.6256 0006765 197.1673 162.8652 2.13102797 34277
Glonass 51
1 21217U 91025B 95239.21399758 -.00000040 00000-0 10000-3 0 8428
2 21217 65.0271 333.7108 0006904 230.7002 129.2819 2.13101798 34229
Glonass 52
1 21218U 91025C 95241.20264512 -.00000037 00000-0 10000-3 0 3128
2 21218 65.0096 333.5987 0000655 40.4691 319.6050 2.13106748 34272
GRO
1 21225U 91027B 95243.04942020 .00002106 00000-0 40612-4 0 2916
2 21225 28.4601 53.7681 0003559 150.1409 209.9393 15.42931235124903
Meteor 3-4
1 21232U 91030A 95241.92396639 .00000051 00000-0 10000-3 0 8293
2 21232 82.5390 219.4014 0013015 165.0747 195.0750 13.16468712209085
NOAA 12
1 21263U 91032A 95242.74441119 .00000083 00000-0 56251-4 0 6140
2 21263 98.5844 264.8859 0014052 43.1142 317.1122 14.22553760223024
OKEAN 3
1 21397U 91039A 95239.98314783 .00000192 00000-0 24365-4 0 1285
2 21397 82.5219 52.4479 0020905 278.4269 81.4572 14.76394799227957
GPS BIIA-11
1 21552U 91047A 95241.05992392 -.00000006 00000-0 10000-6 0 8865
2 21552 56.0487 60.5758 0064598 242.2607 117.1250 2.00561434 30390
ERS-1
1 21574U 91050A 95241.19474604 .00000028 00000-0 26451-4 0 1916
2 21574 98.5465 314.4717 0001336 73.4989 286.6342 14.32252247215504
UO-22
1 21575U 91050B 95239.72745743 .00000016 00000-0 19737-4 0 6267
2 21575 98.3891 309.2598 0008642 65.7512 294.4576 14.36987379215778
ORBCOMM-X
1 21576U 91050C 95240.33223605 -.00000023 00000-0 66405-5 0 7215
2 21576 98.3874 308.1806 0004813 68.9681 291.2006 14.36396248215769
TUBSAT-A
1 21577U 91050D 95240.67174303 -.00000035 00000-0 25840-5 0 6202
2 21577 98.3877 309.0531 0007511 66.2533 293.9444 14.36491465215844
SARA
1 21578U 91050E 95239.23852136 .00000149 00000-0 62056-4 0 8206
```

```
2 21578 98.4093 313.5335 0005994 69.3610 290.8218 14.39047914215913
TDRS 4
1 21639U 91054B 95235.50215870 .00000072 00000-0 00000+0 0 9316
2 21639 0.0482 92.1371 0002580 40.2816 205.3556 1.00271483108894
Meteor 3-5
1 21655U 91056A 95242.21953586 .00000051 00000-0 10000-3 0 8271
2 21655 82.5531 166.6704 0012405 174.5629 185.5642 13.16840358194241
UARS
1 21701U 91063B 95240.35370868 -.00000032 00000-0 18282-4 0 6976
2 21701 56.9832 207.4519 0005808 104.3891 255.7793 14.96418324216370
DMSP B5D2-6
1 21798U 91082A 95242.76993310 .00000086 00000-0 69123-4 0 9660
2 21798 98.9607 254.6856 0012983 338.8758 21.1864 14.13913908193744
Glonass 53
1 21853U 92005A 95239.53755983 .00000043 00000-0 10000-3 0 350
2 21853 65.0234 94.3424 0006921 193.2419 166.8386 2.13102316 27842
Glonass 54
1 21854U 92005B 95241.23463450 .00000035 00000-0 10000-3 0 1808
2 21854 65.0302 94.2769 0016366 20.9764 339.1794 2.13104087 27860
Glonass 55
1 21855U 92005C 95242.23768607 .00000030 00000-0 00000+0 0 1712
2 21855 65.0261 94.2482 0007240 194.1357 165.9285 2.13102226 27874
JERS-1
1 21867U 92007A 95241.22165250 .00002448 00000-0 20893-3 0 6536
2 21867 97.7126 317.2447 0001965 120.7107 239.4383 14.98629081193985
GPS BIIA-12
1 21890U 92009A 95242.52007679 .00000051 00000-0 10000-3 0 6928
2 21890 53.9057 238.6782 0056007 185.0779 174.8463 2.00570588 25793
GPS BIIA-13
1 21930U 92019A 95243.22411856 -.00000061 00000-0 10000-3 0 6683
2 21930 55.7192 0.2617 0038580 175.5092 184.5338 2.00566096 24737
EUVE
1 21987U 92031A 95242.69117052 .00000875 00000-0 30794-4 0 4795
2 21987 28.4328 342.3437 0010258 104.1171 256.0569 15.19395129179299
SAMPEX
1 22012U 92038A 95239.56640397 .00000329 00000-0 26203-4 0 6557
2 22012 81.6698 70.3519 0119979 54.6556 306.5794 14.91427925171310
GPS BIIA-14
1 22014U 92039A 95237.28234174 -.00000001 00000-0 10000-3 0 5801
2 22014 54.8610 180.4387 0090650 318.1507 41.1097 2.00570394 16459
Glonass 56
1 22056U 92047A 95242.13703006 -.00000040 00000-0 00000+0 0 837
2 22056 64.8586 333.6852 0005246 257.0884 102.9074 2.13103209 23969
Glonass 57
1 22057U 92047B 95242.90171620 -.00000043 00000-0 00000+0 0 781
2 22057 64.8712 333.6848 0006744 313.5553 46.4401 2.13102916 23950
Glonass 58
1 22058U 92047C 95238.14915278 -.00000045 00000-0 10000-3 0 404
2 22058 64.8653 333.8498 0006867 272.4065 87.5397 2.13103007 23902
TOPEX
```

```
1 22076U 92052A 95241.27960143 -.00000038 00000-0 10000-3 0 9028
2 22076 66.0359 101.0531 0008057 266.1431 93.8662 12.80930918142600
KO-23
1 22077U 92052B 95241.05461510 -.00000037 00000-0 10000-3 0 5170
2 22077 66.0832 83.2066 0002639 173.3094 186.7961 12.86291619143109
S80/T
1 22078U 92052C 95240.03339134 -.00000037 00000-0 10000-3 0 5141
2 22078 66.0765 84.1591 0002870 145.8323 214.2880 12.86575775143053
GPS BIIA-15
1 22108U 92058A 95240.23313500 .00000041 00000-0 10000-3 0 6125
2 22108 54.1446 239.5416 0115567 152.7810 207.8529 2.00570742 21696
FREJA
1 22161U 92064A 95243.14238819 -.00000188 00000-0 -29131-4 0 5425
2 22161 62.9921 258.8609 0815881 353.2688 5.7868 13.21843758139950
LAGEOS II
1 22195U 92070B 95240.41225434 -.00000009 00000-0 10000-3 0 4272
2 22195 52.6445 177.3338 0137806 308.1349 50.6856 6.47294184 67257
GPS BIIA-16
1 22231U 92079A 95241.91342028 .00000031 00000-0 10000-3 0 5902
2 22231 54.6212 181.3644 0027512 285.8960 73.7853 2.00562455 20301
GPS BIIA-17
1 22275U 92089A 95240.06742606 .00000022 00000-0 10000-3 0 6048
2 22275 54.6775 178.9470 0158727 233.6611 124.8897 2.00565227 19673
TDRS 5
1 22314U 93003B 95239.81702403 -.00000288 00000-0 10000-3 0 5528
2 22314 2.0278 71.5912 0002780 138.2591 13.8670 1.00264150 9636
GPS BIIA-18
1 22446U 93007A 95243.13151895 -.00000024 00000-0 10000-3 0 5967
2 22446 54.3531 299.2063 0078041 4.5319 355.6093 2.00575526 18725
Glonass 59
1 22512U 93010A 95240.00834349 .00000041 00000-0 10000-3 0 7263
2 22512 65.0415 94.1849 0008260 179.3362 180.7536 2.13102103 19426
Glonass 60
1 22513U 93010B 95239.47818122 .00000043 00000-0 00000+0 0 8015
2 22513 65.0333 94.2061 0006904 184.3737 175.7174 2.13102719 19603
Glonass 61
1 22514U 93010C 95241.17942091 .00000035 00000-0 00000+0 0 7952
2 22514 65.0537 94.1328 0010755 180.9745 179.1144 2.13102907 19643
ASTRO-D
1 22521U 93011A 95243.06853784 .00001067 00000-0 69480-4 0 4327
2 22521 31.1043 120.6511 0056525 161.5591 198.7093 15.02403625138640
UFO F1
1 22563U 93015A 95240.00000000 -.00000088 00000-0 00000+0 0 4481
2 22563 25.8666 293.2270 0008919 250.6833 250.4530 0.99250408 13170
GPS BIIA-19
1 22581U 93017A 95239.28449005 -.00000067 00000-0 10000-3 0 4564
2 22581 55.2175 359.9497 0057070 36.3525 324.0509 2.00573106 17706
ARSENE
1 22654U 93031B 95238.72180237 -.00000109 00000-0 10000-3 0 3272
2 22654 2.7043 82.0642 2889691 218.0719 117.9428 1.42203439 7399
```

```
GPS BIIA-20
1 22657U 93032A 95241.41212511 -.00000061 00000-0 10000-3 0 5096
2 22657 55.2334 359.6921 0069443 206.9295 152.7233 2.00561853 13074
RADCAL
1 22698U 93041A 95240.17734554 .00000034 00000-0 92264-5 0 4260
2 22698 89.5392 286.7746 0089432 202.9604 156.7578 14.21351051112662
GPS BIIA-21
1 22700U 93042A 95239.88289234 .00000041 00000-0 10000-3 0 4502
2 22700 54.3008 240.3609 0040177 343.5044 16.3772 2.00566623 15843
NOAA 13
1 22739U 93050A 95243.31520454 .00000007 00000-0 28791-4 0 8781
2 22739 98.9989 192.2643 0010052 328.6828 31.3739 14.10940791106031
GPS BIIA-22
1 22779U 93054A 95241.46364383 -.00000020 00000-0 10000-3 0 5078
2 22779 54.5330 299.3156 0020445 247.5044 112.3700 2.00548285 14637
Meteor 2-21
1 22782U 93055A 95242.00172766 .00000043 00000-0 25868-4 0 4258
2 22782 82.5450 218.6819 0024256 75.9479 284.4373 13.83037029100741
UFO F2
1 22787U 93056A 95239.64557691 -.00000074 00000-0 10000-3 0 5149
2 22787 4.4176 325.3312 0003186 178.1884 136.1901 1.00277144 5871
SPOT 3
1 22823U 93061A 95239.72605932 -.00000044 00000-0 00000+0 0 4676
2 22823 98.7334 312.9253 0000983 93.8556 266.2732 14.20022343 99449
STELLA
1 22824U 93061B 95242.23194971 -.00000043 00000-0 29492-6 0 4125
2 22824 98.6112 317.2187 0007154 12.1691 347.9659 14.27102054100294
AO-27
1 22825U 93061C 95239.72620769 -.00000018 00000-0 10600-4 0 4148
2 22825 98.6141 315.1211 0009375 17.3716 342.7777 14.27670286 99977
IO-26
1 22826U 93061D 95240.23535964 -.00000012 00000-0 12777-4 0 4139
2 22826 98.6139 315.7312 0009936 16.9811 343.1695 14.27778717100051
HEATHSAT
1 22827U 93061E 95239.75945452 -.00000017 00000-0 10595-4 0 4740
2 22827 98.6112 315.1909 0010006 5.3724 354.7563 14.27903120 99994
ITAMSAT
1 22828U 93061F 95239.23432706 .00000003 00000-0 18809-4 0 3915
2 22828 98.6098 314.7834 0010788 4.4117 355.7153 14.28109571 68017
PO-28
1 22829U 93061G 95243.17052303 .00000033 00000-0 31028-4 0 4063
2 22829 98.6090 318.7017 0010490 354.6773 5.4296 14.28089955100494
KO-25
1 22830U 93061H 95239.72771181 -.00000027 00000-0 64438-5 0 4249
2 22830 98.5094 307.6940 0011468 340.8609 19.2139 14.28095431100004
GPS BIIA-23
1 22877U 93068A 95242.51501476 -.00000007 00000-0 10000-3 0 3067
2 22877 55.5092 60.8205 0037526 294.3942 65.2409 2.00574580 13541
METEOSAT 6
1 22912U 93073B 95241.31514677 -.00000096 00000-0 10000-3 0 3593
```

```
2 22912 0.6679 278.0079 0000817 307.6740 214.4215 1.00272672 4923
HST Array
1 22920U 90037C 95242.26850122 .00004047 00000-0 29126-3 0 3624
2 22920 28.4677 247.5623 0003280 248.2842 111.7459 15.01706188 95451
Meteor 3-6
1 22969U 94003A 95241.14470702 .00000051 00000-0 10000-3 0 1925
2 22969 82.5585 107.2706 0014117 251.4785 108.4804 13.16731046 76484
TUBSAT-B
1 22970U 94003B 95242.69705861 .00000051 00000-0 10000-3 0 1846
2 22970 82.5590 106.1064 0014789 243.9688 115.9904 13.16825776 76691
GPS BIIA-24
1 23027U 94016A 95240.60093558 -.00000063 00000-0 10000-3 0 2515
2 23027 55.0810 1.7558 0065287 197.8123 161.9738 2.00561401 10814
Glonass 62
1 23043U 94021A 95241.25751844 -.00000038 00000-0 00000+0 0 2494
2 23043 64.7388 334.1200 0007114 188.2039 171.8397 2.13103109 10767
Glonass 63
1 23044U 94021B 95242.07869545 -.00000040 00000-0 00000+0 0 2228
2 23044 64.7396 334.0948 0030575 203.7144 156.2038 2.13103256 10786
Glonass 64
1 23045U 94021C 95243.19356747 -.00000045 00000-0 00000+0 0 2302
2 23045 64.7245 334.0593 0009978 36.9242 323.1983 2.13102895 10809
GOES 8
1 23051U 94022A 95242.75862180 -.00000261 00000-0 10000-3 0 3704
2 23051 0.1744 85.7045 0004566 86.0243 4.6205 1.00260698 12442
MSTI 2
1 23101U 94028A 95240.51883658 .00004381 00000-0 76807-4 0 2276
2 23101 97.0947 72.7375 0011582 337.7173 22.3582 15.51030122 73736
STRV-1A
1 23125U 94034B 95239.95529920 .00003049 00000-0 78653-3 0 1903
2 23125 7.4962 1.5786 7267267 178.4427 187.2143 2.30220366 9302
STRV-1B
1 23126U 94034C 95241.54468589 .00002845 00000-0 53253-3 0 1693
2 23126 7.4996 1.2035 7275085 179.2999 183.2897 2.29859413 9383
Nadezhda 4
1 23179U 94041A 95241.07395797 .00000038 00000-0 23489-4 0 1261
2 23179 82.9449 93.8531 0034793 221.9139 137.9360 13.75670877 56496
Glonass 65
1 23203U 94050A 95240.51557228 .00000057 00000-0 00000+0 0 1851
2 23203 64.7947 213.9789 0006506 162.1135 197.8914 2.13102082 8145
Glonass 66
1 23204U 94050B 95240.28032337 .00000056 00000-0 00000+0 0 1933
2 23204 64.7818 214.0197 0015308 340.2061 19.7160 2.13102264 8131
Glonass 67
1 23205U 94050C 95242.04022579 .00000068 00000-0 00000+0 0 1806
2 23205 64.7917 213.9422 0003170 285.2697 74.6810 2.13102489 8173
DMSP B5D2-7
1 23233U 94057A 95242.62629148 .00000142 00000-0 10060-3 0 4653
2 23233 98.8726 300.0165 0011793 290.9132 69.0773 14.12632837 51664
OKEAN 1-7
```

```
1 23317U 94066A 95241.18098847 .00000199 00000-0 26929-4 0 900
2 23317 82.5447 328.5577 0025726 317.6395 42.2830 14.73954230 47379
ELEKTRO
1 23327U 94069A 95236.78142854 -.00000110 00000-0 10000-3 0 852
2 23327 0.6607 259.8420 0006485 196.2759 233.7352 1.00273555 3017
RESURS 1-3
1 23342U 94074A 95240.18992129 .00000011 00000-0 10000-4 0 2911
2 23342 98.0106 298.5437 0001414 102.8141 257.3255 14.69761735 43628
Glonass 68
1 23396U 94076A 95242.35301709 .00000029 00000-0 00000+0 0 1407
2 23396 64.9704 94.1879 0029947 188.4421 171.5913 2.13102771 6021
Glonass 69
1 23397U 94076B 95242.05927880 .00000031 00000-0 00000+0 0 1457
2 23397 64.9587 94.2073 0011985 324.8755 35.1327 2.13102591 6010
Glonass 70
1 23398U 94076C 95240.06571962 .00000040 00000-0 00000+0 0 1532
2 23398 64.9499 94.2521 0002299 288.2721 71.8000 2.13102428 5984
LUCH (Altair-2)
1 23426U 94082A 95242.22648848 -.00000283 00000-0 00000+0 0 1663
2 23426 2.0542 272.3885 0000566 353.1775 249.0112 1.00267492 2579
RS-15
1 23439U 94085A 95242.11816461 -.00000039 00000-0 10000-3 0 748
2 23439 64.8199 135.4226 0166997 249.6416 108.6495 11.27524896 27853
NOAA 14
1 23455U 94089A 95242.74338813 .00000029 00000-0 40326-4 0 2980
2 23455 98.9065 184.6869 0009840 351.1822 8.9181 14.11529566 34333
ODERACS II A
1 23471U 95004C 95240.82728618 .00028433 00000-0 11145-3 0 1804
2 23471 51.6455 116.6243 0011376 26.4009 333.7555 15.86640280 32698
ODERACS II B
1 23472U 95004D 95242.98498910 .00181698 26075-4 26235-3 0 2087
2 23472 51.6412 93.9510 0005556 46.8543 313.3030 16.04897208 33180
Glonass 71
1 23511U 95009A 95240.49524484 -.00000038 00000-0 00000+0 0 885
2 23511 64.7597 334.4117 0007400 206.5998 153.4143 2.13103022 3711
Glonass 72
1 23512U 95009B 95240.61271991 -.00000038 00000-0 00000+0 0 983
2 23512 64.7496 334.4215 0005177 307.9563 52.0571 2.13102757 3715
Glonass 73
1 23513U 95009C 95240.90606357 -.00000038 00000-0 00000+0 0 1008
2 23513 64.7546 334.4244 0014328 200.3529 159.6415 2.13103247 3727
Soyuz TM-21
1 23519U 95010A 95242.00451568 .00002057 00000-0 34323-4 0 1777
2 23519 51.6467 148.1197 0003733 51.4393 309.0019 15.57316698 26330
SFU
1 23521U 95011A 95240.44121151 .00002384 00000-0 74478-4 0 934
2 23521 28.4609 302.0189 0019415 304.5631 55.3137 15.28743046 25000
GMS 5
1 23522U 95011B 95238.58471356 -.00000292 00000-0 10000-3 0 489
2 23522 0.7738 298.1138 0001004 198.5834 188.4005 1.00268318 1484
```

```
DMSP B5D2-8
1 23533U 95015A 95242.49626374 .00000034 00000-0 41865-4 0 1941
2 23533 98.8345 243.8514 0006997 154.2149 205.9372 14.12699245 22442
Microlab 1
1 23547U 95017C 95239.15987585 .00000071 00000-0 37319-4 0 456
2 23547 69.9786 134.6524 0015071 238.9224 121.0434 14.45399884 21033
OFEQ 3
1 23549U 95018A 95241.60084757 .00009041 00000-0 24375-3 0 993
2 23549 143.3688 253.5187 0251010 207.0547 151.6880 15.08437337 22052
GFZ-1
1 23558U 86017JE 95242.80444550 .00002381 00000-0 34801-4 0 543
2 23558 51.6516 141.4572 0006551 199.7583 160.3117 15.60301607544485
ERS-2
1 23560U 95021A 95242.19477675 .00000034 00000-0 28835-4 0 1125
2 23560 98.5462 315.4665 0001031 68.3716 291.7577 14.32252461 18779
Spektr
1 23579U 95024A 95242.00451568 .00002057 00000-0 34323-4 0 1172
2 23579 51.6467 148.1197 0003733 51.4393 309.0019 15.57316698 15895
GOES 9
1 23581U 95025A 95241.31967188 -.00000194 00000-0 10000-3 0 499
2 23581 0.4127 269.7668 0001379 271.3964 181.2214 1.00274187 998
Helios 1A
1 23605U 95033A 95240.56375243 .00000006 00000-0 10181-4 0 803
2 23605 98.0910 175.9479 0001685 70.3674 289.7710 14.63858600 7590
TDRS 6
1 23613U 95035B 95242.41830035 .00000120 00000-0 00000+0 0 390
2 23613 0.0715 89.0870 0001025 127.1969 122.0899 1.00275290 451
Progress M-28
1 23617U 95036A 95242.00451568 .00002057 00000-0 34323-4 0 469
2 23617 51.6467 148.1197 0003733 51.4393 309.0019 15.57316698 6382
Glonass 74
1 23620U 95037A 95240.22133393 .00000056 00000-0 00000+0 0 411
2 23620 64.8465 213.8243 0018233 172.5868 187.4225 2.13103029 746
Glonass 75
1 23621U 95037B 95243.21314588 .00000073 00000-0 00000+0 0 476
2 23621 64.8624 213.7263 0017952 183.2509 176.7276 2.13102436 808
Glonass 76
1 23622U 95037C 95242.33327187 .00000069 00000-0 00000+0 0 417
2 23622 64.8494 213.7547 0036578 167.1285 192.9535 2.13102591 783
1995037J
1 23630U 95037J 95242.80457476 .00000159 00000-0 45595-4 0 90
2 23630 64.8173 201.2307 5790149 295.9033 16.4197 4.23314280 1574
1995037K
1 23631U 95037K 95239.97113216 .00000028 00000-0 -80970-5 0 112
2 23631 64.8156 202.1770 5787652 295.9350 16.3648 4.23294034 1098
Prognoz-M2
1 23632U 95039A 95245.49547350 .00000068 00000-0 00000+0 0 88
2 23632 63.2770 259.6870 9238460 314.5860 9.1800 0.26375601 85
1995039B
1 23633U 95039B 95242.86521741 .00115728 97258-5 48044-3 0 353
```

```
2 23633 62.8272 163.0182 0367975 115.8092 248.1465 15.27064829 4255
1995039C
1 23634U 95039C 95242.84689170 .00271224 69497-5 58253-3 0 477
2 23634 62.7968 162.8391 0388404 116.2956 247.8647 15.31612338 4257
1995039D
1 23635U 95039D 95222.54841510 -.00000133 00000-0 00000+0 0 47
2 23635 62.5430 261.1120 9272251 314.0610 359.8460 0.26922002 16
PAS 4
1 23636U 95040A 95230.83028400 -.00000086 00000-0 00000+0 0 155
2 23636 0.0228 74.1211 0009123 38.6346 223.7622 1.00366607 110
1995040B
1 23637U 95040B 95241.29371824 -.00000104 00000-0 10000-4 0 88
2 23637 4.2417 101.8346 7213173 197.5600 110.9057 2.18392215 552
Magion 4
1 23638U 95039E 95232.83345409 .15741816 78993-5 42535-2 0 250
2 23638 62.8069 195.5708 0062703 125.4505 235.2528 16.22182774 2548
1995041A
1 23639U 95041A 95242.73480917 -.00000372 00000-0 00000+0 0 389
2 23639 0.0725 20.7619 0004972 295.2018 42.8753 1.00182990 327
1995041B
1 23640U 95041B 95242.25686606 .00000113 00000-0 19049-4 0 123
2 23640 26.6777 180.5997 0290446 60.1938 302.7132 13.27556871 3290
1995041C
1 23641U 95041C 95234.15725206 -.00000138 00000-0 00000+0 0 89
2 23641 20.5695 297.8222 6440009 9.9892 358.4099 2.70396399 452
1995042A
1 23642U 95042A 95242.21033474 .00000097 00000-0 -66247-3 0 315
2 23642 62.8421 298.7904 7433243 280.3919 10.8579 2.00570262 429
1995042B
1 23643U 95042B 95243.19767441 .01161052 83641-5 55290-3 0 707
2 23643 62.8127 215.4556 0062576 139.1228 221.4659 16.16039752 3547
1995042C
1 23644U 95042C 95237.29999104 .12766218 87352-5 17905-3 0 616
2 23644 62.8087 238.3590 0024525 127.5349 234.0840 16.46614548 2605
1995042D
1 23645U 95042D 95243.09880542 -.00000244 00000-0 10000-4 0 132
2 23645 62.8339 298.7739 7449040 280.3590 10.7624 1.95896801 437
1995039F
1 23646U 95039F 95215.39236111 .00000278 00000-0 00000+0 0 15
2 23646 63.2654 259.9492 9304461 314.4137 33.0930 0.26401563 04
1995044A
1 23651U 95044A 95242.39483946 -.00000065 00000-0 10000-3 0 51
2 23651 3.7094 254.8613 5075688 177.7573 185.5680 1.85809421 19
1995044B
1 23652U 95044B 95242.89219539 .00121670 76667-6 27908-3 0 50
2 23652 6.8171 254.4320 7397871 178.7953 185.0374 2.19680950 36
1995045A
1 23653U 95045A 95242.57955425 -.00000161 00000-0 00000+0 0 18
2 23653 1.3720 278.8434 0020472 245.9459 113.5649 0.99836497 07
1995045B
```

```
1 23654U 95045B 95243.35845142 .01344872 12159-4 25526-3 0 50
2 23654 51.6456 278.1697 0003081 298.5150 61.5561 16.31216588 95
1995045C
1 23655U 95045C 95243.35860192 .09543375 12276-4 12639-2 0 72
2 23655 51.6353 278.1759 0006514 76.7877 283.4760 16.34664015 98
SICH-1
1 23657U 95046A 95243.34246728 .00000022 00000-0 00000+0 0 13
2 23657 82.5278 108.2506 0030717 270.9481 90.9912 14.74877992 06
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1853. Re: Help with DO-17

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: rargyle@cc.weber.edu
Message-ID: <1SEP199517560691@cc.weber.edu>
Source record: 24261

Kory Hamzeh (kory@avatar.com) wrote:

: Hi everyone,

: I been trying pickup the DO-17 downlink with little success. I can clearly
: hear it on the speaker, althought most of the time its not full quieting.
: Here's my setup:

: - Yaesu FT-736R
: - Diamond 510 omni ground plane
: - TE Sestems 1412G amp & pre-amp
: - AEA PK232

: I have the TNC monitor more set to 4 (and I tried six) and its in packet
: mode. When I disconnect the TNC from audio out, I can clearly hear DO-17`s
: telemetry downlink, but most of the time its not full quieting.

: Is there any special mode or option I need to set on the TNC? This
: configuration works great for regular terestrial packet. Also, for
: normal packet usage, do you squelch your radio and then adjust it so it
: unsquelchs when it starts reciving packets or do you futz around with the
: volume/treshold levels? The AEA manual sucks and wasn't very clear on
: how to calibrate everything.

: Any help would be greatly appreciated.

: Thanks,
: Kory
: KE6VWO

Be sure 'Monitor' is set ON, and you are in command mode (not transparent)
mode), to receive as ASCII. I use KISS mode.

Bob Argyle kb7kcl rargyle@cc.weber.edu

1854. Re: Home-building antennas for 137.xxx APT birds...

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: John Edwards <jedwards>
Message-ID: <4277rn$hv8@news.chattanooga.net>
Source record: 24262

Hey,

My dad (WADYD) is doing the same thing. I think he is building a turnstile type antenna which is circularly polarized and fits in the attic! It's simple AND cheap!

I believe if you look in the 1981 or 1982 ARRL Amateur Radio Handbook you will find the design for it. If you don't have access to it I can mail it to you... just send me some mail back with your address.

Later,
--

John W. Edwards (KB4BKV)
Accurate Automation Corporation
jedwards@accurate-automation.com
Office - (615) 894 - 4646

1855. faq/MIR info

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: djadams@silver.ucs.indiana.edu
Message-ID: <427gan$j0m@usenet.ucs.indiana.edu>
Source record: 24263

s there a faq for this qroup? I'm looking for info on
MIR. I have keps data for it, but don't know what
freqs/type of contacts are available.

73 de dave, n9uxu

1856. Home-building antennas for 137.xxx APT birds...

Newsgroup: rec.radio.amateur.space
Date: 1995-09-01 00:00:00 UTC
From: rdemar@mail.msen.com
Message-ID: <426563$413@pravda.aa.msen.com>
Source record: 24264

Hello all,

I have been a low-sat weather imaging hobbyist for some time now and have managed some nice images on a nearly nonexistent budget from the start. I am using a Uniden 100XLT (modified), a TV preamp, a 7 foot marconi type antenna, and DRIG's SBDSP software. Sounds crappy, yes, but it works well.

I want to build a better antenna for this that I could possibly fit into the attic of my apartment. I have heard that the polar orbiters use a "Circularity Polarization" antenna system. Does anyone know anything about this and how I can hand make a reasonably efficient antenna for it? Any help is greatly appreciated!

1857. ?? What Radio to Buy ??

Newsgroup: rec.radio.amateur.space
Date: 1995-09-02 00:00:00 UTC
From: dpmoore@rain.org
Message-ID: <428jmc$uu@news.rain.org>
Source record: 24165

I could use some advice on which radio is best for satellite (voice & packet)

I would like to get one of the new rigs like the IC-820H but haven't heard anything good about it. Then there's the Yaesu FT-736R and Kenwood TS-790A, both of these have been around awhile. Which radio is best, or should I just wait for someone to come out with something new?
If anyone has any practical advice regarding satellite rigs pleas send E-Mail to me at:
dpmoore@rain.org

-Dan WD6CYI

1858. Re: faq/MIR info

Newsgroup: rec.radio.amateur.space
Date: 1995-09-02 00:00:00 UTC
From: Keith Stein <us011192@pop3.interramp.com>
Message-ID: <428fgs$p8c@usenet1.interramp.com>
Source record: 24166

Hello David,

You can heard Mir on 145.200, 145.550, or 145.800 MHz. Most of the time it is packet transmissions. But at times, you'll hear voice from the crew. A new crew is scheduled to be launched on Sept 3 and they will be taking a German up with them. His call will be DP0MIR. Hope this helps. If you need anymore help, feel free to ask.

Keith

1859. Re: hearing meteors..how ?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-02 00:00:00 UTC
From: John Edwards <jedwards>
Message-ID: <429hv0$c2l@news.chattanooga.net>
Source record: 24167

andromed@Breeze.cs.dal.ca (Michael Boschat) wrote:
>Hello;
>
>I have bought an old spectrum analizer and a 3 element Yaqi. The
>frequencies of the machine are 20-79 Mhz, 120-179 Mhz, 450-519 Mhz.
>Any help on a frequency to listen to would be appreciated...
>Thanks...
>
> Mike
>
Wasnt there an article in QST magazine about a year ago dealing
with someone who did this? Hmmm.... Maybe it was the comet that
hit Jupiter (I think)... It may be worth checking out...

Later,
--

John W. Edwards (KB4BKV)
Accurate Automation Corporation
jedwards@accurate-automation.com
Office - (615) 894 - 4646

1860. ARLK045 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-09-02 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk045.1995@ampr.org>
Source record: 24168
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK045
ARLK045 Keplerian data

ZCZC SK70
QST de W1AW
Keplerian Bulletin 45 ARLK045
From ARRL Headquarters
Newington, CT September 2, 1995
To all radio amateurs

SB KEP ARL ARLK045
ARLK045 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-69
1 99969U 95999A 95250.68212214 .00007146 00000-0 63502-4 0 12
2 99969 28.4665 43.6365 0004877 272.2897 87.7275 15.64891157 20
Mir
1 16609U 86017A 95244.18623794 .00003186 00000-0 49439-4 0 2206
2 16609 51.6452 137.1901 0003457 57.4512 302.6820 15.57334961544774
AO-10
1 14129U 83058B 95226.51733708 -.00000116 00000-0 10000-3 0 3705
2 14129 26.4564 253.3162 5988239 301.4565 13.4548 2.05880986 63534
RS-10/11
1 18129U 87054A 95243.80367366 .00000019 00000-0 46891-5 0 01239
2 18129 82.9256 3.1685 0010131 241.8649 118.1483 13.72355489410343
UO-11
1 14781U 84021B 95243.97870607 .00000093 00000-0 23507-4 0 08298
2 14781 97.7847 242.9678 0010942 303.8593 56.1581 14.69371755615039
RS-12/13
1 21089U 91007A 95243.93475127 .00000014 00000-0 -67671-6 0 08323
2 21089 82.9194 44.5950 0028991 324.9568 34.9680 13.74059666229176
AO-13
1 19216U 88051B 95243.83129236 -.00000547 00000-0 -40906-4 0 822
2 19216 57.4633 167.2005 7321520 17.7333 358.0870 2.09726866 23758
UO-14
1 20437U 90005B 95244.21567344 -.00000007 00000-0 14124-4 0 01396
2 20437 98.5654 327.3554 0011112 340.1283 19.9464 14.29895132292618
```

```
RS-15
1 23439U 94085A 95244.06943007 -.00000039 00000-0 10000-3 0 00820
2 23439 64.8200 132.2679 0166923 249.3531 108.9420 11.27524953028077
AO-16
1 20439U 90005D 95244.18456851 .00000097 00000-0 54604-4 0 09285
2 20439 98.5709 329.0958 0011095 340.9729 19.1038 14.29950041292622
DO-17
1 20440U 90005E 95244.16555780 -.00000005 00000-0 14948-4 0 09351
2 20440 98.5783 329.5733 0011708 340.3097 19.7636 14.30090539292646
WO-18
1 20441U 90005F 95244.14935748 -.00000013 00000-0 11696-4 0 09273
2 20441 98.5750 329.5206 0012294 340.2673 19.8028 14.30061634292646
LO-19
1 20442U 90005G 95244.16670817 -.00000002 00000-0 16098-4 0 09368
2 20442 98.5799 329.9255 0012481 339.5220 20.5463 14.30165170292669
FO-20
1 20480U 90013C 95244.19424140 -.00000033 00000-0 -78369-5 0 08182
2 20480 99.0708 318.6561 0541145 61.3126 304.1255 12.83231154260691
AO-21
1 21087U 91006A 95244.15359645 .00000093 00000-0 82657-4 0 06357
2 21087 82.9404 176.3558 0035300 297.6739 62.0834 13.74558754230160
UO-22
1 21575U 91050B 95244.18379085 .00000018 00000-0 20489-4 0 6274
2 21575 98.3890 313.6035 0008735 52.6608 307.5371 14.36988026216417
KO-23
1 22077U 92052B 95244.00913987 -.00000037 00000-0 10000-3 0 05369
2 22077 66.0833 77.0202 0002616 172.2879 187.8181 12.86291793143487
KO-25
1 22828U 93061F 95244.13869789 .00000011 00000-0 21987-4 0 03960
2 22828 98.6093 319.6167 0010706 350.7573 9.3410 14.28110107068710
IO-26
1 22826U 93061D 95244.15976606 -.00000015 00000-0 11428-4 0 04366
2 22826 98.6134 319.5980 0009921 5.5318 354.5970 14.27778796100610
AO-27
1 22825U 93061C 95244.21158324 -.00000002 00000-0 16916-4 0 04465
2 22825 98.6116 319.5404 0009325 4.4802 355.6460 14.27670688100611
PO-28
1 22829U 93061G 95244.15141074 .00000034 00000-0 31382-4 0 04116
2 22829 98.6089 319.6684 0010463 351.8666 8.2345 14.28090114100633

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
September 5, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1861. UHF SSB/2M MAST MOUNT PREAMP FOR SALE

Newsgroup: rec.radio.amateur.space
Date: 1995-09-02 00:00:00 UTC
From: lamb@execpc.com
Message-ID: <429r85$168@homer.alpha.net>
Source record: 24169

I have a Yaesu ft790R MKII UFH SSB/CW/FM 430-450 MHZ 25 Watts out transceiver used for satellite work for sale at $450...includes options.

Also, a Mirage KP2/2M mast mount 2 meter preamp at $100 also used for satellite work.

If interested, contact me at lamb@execpc.com

Everythging works, transceiver is in very good shape in original box, etc. Mastmount preamp works well, but doesn't look as nice since it has been out on the
mast for a year. I am original owner. Getting out of satellite hamming.

Greg

KD9EJ

1862. STS-69 Element_Set (95250.682)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-02 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95250.682@thomsoft.com>
Source record: 24170
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 99969U 95999A 95250.68212214 .00007146 00000-0 63502-4 0 12
2 99969 28.4665 43.6365 0004877 272.2897 87.7275 15.64891157 20

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1863. Re: Higher Speed Digital Satellites??

Newsgroup: rec.radio.amateur.space
Date: 1995-09-02 00:00:00 UTC
From: jedwards@harwood.com
Message-ID: <1995Sep2.132850.10890@harwood.com>
Source record: 24171

William Roth (n7ryw@teleport.com) wrote:
: In article <n9syw-1508951752350001@f181-111.net.wisc.edu>,
: n9syw@w9yt.engr.wisc.edu said...
: >
: >Are there any higher speed amateur digital satellites being planned?
: >(19.2k baud or faster) Adding 56k+ baud cability would greatly
: >enhance performance on low orbit satelites. It would allow modes like
: >digital voice and crosslinking of multiple satellites.

: I am in favor of higher speeds as well. The load on the present 9600 bps sats
: is maxed out when they are over populated areas. The biggest problem is in
: getting enough power to put out a readable signal from the satellite. The
: size of the sats are very limited, and there is only so much area for solar
: panels. There are some modulation schemes that conserve power, but the cost
: of the modems and special RF gear is pretty extreme.

: >I've heard rumors
: >that phase IIID might offer T1 speeds? That sounds great.

: Actually, user links will probably be at 9600 bps. These will link to
: groundstations through the satellite at high speed (64k) and allow for some
: really BIG storage availability.

: >But it's unwise to have all our faster digital hopes based on one one
: >satelite with no backup. We should also be building relitivly cheap
: >high speed digital satellites in low to medium orbits.
: >Anyways I do hope the designers of phase IIID are planning for the
: >future and implement 1.5 Mbps channels. This would allow for some
: >very powerfull capibilities in amateur radio.

: It would be nice, but the expense to a ground station to be able to receive
: at that speed would be very large. There's a lot more to it than just a
: $300.00 modem. 64k is starting to come down in price, and will much more now
: that ISDN is (finally) coming around. For now, I think it best we take it one
: step at a time and try for the 64k and get that tested and affordable. Then,
: lets move up some.

I'm a bit surprised that amateurs have not jumped onto the 56k bandwagon at
a greater pace... granted... as mentioned above, the equipment is still not
cheap, BUT I was reading the GRAPES WWW page and the modem has been redesiged
with costs, etc in mind... I guess time will tell. I'm not up on all the
sat stuff lately, but from what was said above I am a bit surprised that
there has not been serious talk of trying to fly 56k packet. Is it my
imagination or is progress slowing down as time goes on? Maybe I'm just
getting older and it seems that way...hihi.

```
--
-----------------------------------------------
-- John W. Edwards (KB4BKV)
-- jedwards@accurate-automation.com
-----------------------------------------------
```

1864. Ham Radio Test Simulators - Macintosh

Newsgroup: rec.radio.amateur.space
Date: 1995-09-03 00:00:00 UTC
From: john@wd1v.mv.com
Message-ID: <john-0309950822470001@wd1v.mv.com>
Source record: 24172

FREE - NEW Macintosh HAM TEST SIMULATORS

Studying for a ham test and have access to an Mac?

Upgrade Fast! Simulate the test and get S T I M U L A T E D!

Scores of 90% or > even get applause!

The new Macintosh Ham Test Simulators are HERE (and there if you can FTP)!

o Novice Ham Test 5.0 SA.sea
o Technician Ham Test 5.0 SA.sea
o General Ham Test 5.0 SA.sea
o Advanced Ham Test 5.1 SA.sea
o Extra Ham Test 5.0 SA.sea

The latest version "5" feature:

HyperCard 2.3 as a stand-alone application (SA) eliminating
your need to have HyperCard. All you need is a Mac with 4
Meg of memory and version System 7 or greater.

Each version "5" Ham Test Simulator has the latest questions
as prepared by the Question Pool Committee.

Each version "5" Ham Test Simulator is FREE OF CHARGE and work the
same way as the originals did (written by Diana, KC1SP).

You may obtain a version "5" Ham Test Simulator by mailing me a *FORMATTED
disk (1 per test) and include a Self Addressed and Stamped disk mailer for
the return.

Each version "5" Ham Test Simulator is also bundled with a shareware CW
program called MacMorse 1.4 written by Doug, WB0EON.

Also included in the version "5" collection are text files that relate an
interesting variety of ideas about the best way to study CW and prepare
for tests.

Or warm your phone line and get JUST the tests:

America On Line - Macintosh Ham Radio Section

or:

ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/AdvancedHamTest.sea.bin
(Aug 30th)
ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/ExtraHamTest.sea.bin
ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/GeneralHamTest.sea.bin

ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/NoviceHamTest.sea.bin
ftp://oak.oakland.edu//pub3/hamradio/mac/theory-and-morse/TechnicianHamTest.sea.bin

Your comments and suggestions for future versions are always welcome. Stay
in touch
and good luck with YOUR next test!

73,

\/
John D. Seney, WD1V Internet: john@wd1v.mv.com
144 Pepperidge Drive America On Line: jseney@aol.com
Manchester, NH 03103-6150 AX.25 Pkt: wd1v@wb1dsw.nh.usa.na
(H) 603-668-1096 Ampernet: wd1v@wd1v.ampr.org
\/
LeCroy Sales Engineering - Maine, New Hampshire, and Northeastern
Massachusetts
(O) 800-553-2769 (F) 603-627-1623 (P) 800-SKYPAGE #5956779

All opinions are my own, including Digital Storage Scope.FAQ

To obtain the latest copy automatically, simply send me an EMAIL
with "subscribe scope.faq" in the subject field.
\/

1865. Meteors by radio: the FAQs

Newsgroup: rec.radio.amateur.space
Date: 1995-09-03 00:00:00 UTC
From: steyaert@vvs.innet.be
Message-ID: <steyaert.6.000CAF95@vvs.innet.be>
Source record: 24173

Meteors by radio: the FAQs

METEOR SCATTER - the FAQs Rev. 2, Sep 3, 1995.

0. About these FAQs

These FAQs are the result of your various questions and remarks to the monthly RMOB (Radio Meteor Observation Bulletin), and discussions in the Radio Astronomy Forum of Compuserve.
Constantly amateur astronomers, radio amateurs and schools looking for new projects, get involved in observing meteors by radio methods, and need the same basic information.

0.1. Revision / posting frequency

As promised in Rev. 1, the references have been updated.
Several persons have been observing meteors by radio for the first at the occasion during the Perseids 1995. Accordingly, the practical sections how to build a meteor station and to recognize meteor reflections have been expanded.

Rev. 3 is due in November 1995.

0.2. Distribution

These FAQs are posted on:
sci.astro.amateur
rec.radio.amateur.space
uk.radio.amateur
Compuserve's Astronomy Forum, Section 11, Radio Astronomy.

Please let me know if you feel that other newsgroup are interesting too or more appropriate.

These FAQs are also e-mailed to the RMOB subscribers (see further).

0.3. Acknowledgement

Many thanks to Tom Ashcraft (72632.1427@compuserve.com) and other participants to Compuserve's Astronomy Forum for the stimulating discussions. Jeroen Van Wassenhove (100101.734@compuserve.com) compiled the larger part of the references, and made other useful comments.

1. What is meteor scatter (MS) ?

Meteor scatter is a form of electromagnetic wave propagation. The ionized trail of meteors (typically appearing between 100 km and 80 km high) acts temporarily as a reflector for radio waves.
A meteor does NOT generate detectable radio emission itself!

In the case of forward scatter, the transmitter and receiver are at different locations. Backscatter can be seen as a special case, whereby the sender and receiver coincide (typically the case of radar).

Meteor scatter can be used day and night, allowing daylight meteors streams to be studied.
Meteor scatter can also be used for secure communication.

Historically, meteor streams were conclusively detected by means of radar at the end of World War II.

2. How to observe MS ?

Tune to an "empty" frequency in the VHF band, and wait until a suitable oriented meteor trail reflects a distant broadcasting station. You hear a more or less short (a fraction of a second to tens of seconds) fragment of the remote broadcast. Occasionally, more than one station (together or one after the other) can be heard. Routinely, stations of 300 km to 1000 km away can be observed. The problem however in densely populated areas can be to find a non-locally used frequency.

2.1. Which frequencies to use ?

The lower the frequency, the better... but at too low frequencies, the radio- waves bend and follow the curvature of the Earth.
A lower practical limit is 40 MHz. More commonly, the VHF is suitable.
VHF Band I ranges from 41 to 68 MHz, and is used for TV.
The FM band (88 MHz - 108 MHz) is also used frequently. Try as low as possible in the band, and avoid free radio's in the upper band (104-108 MHz).
Not to forget are beacons at e.g. 50 MHz or 75 MHz.
Radio hams listen also to MS in the 2 m (144 MHz) band. The reflections are shorter and weaker than at the lower frequencies. Radio amateurs worldwide have standard procedures for using meteor scatter. They listen or transmit during well defined periods to well defined areas. For more information, please contact Bob Bruninga, WB4APR @ KA3RFE.MD (bruninga@greatlakes.nadn.navy.mil).
There is little use in trying MS at still higher frequencies.

2.2. Which equipment to use ?

A regular FM receiver is sufficient. An all-band receiver is of course better in terms of sensitivity and features such as bandwidth selection. Connect a horizontally polarized Yagi antenna with 4 to 6 elements (not too directive) to your receiver. The antenna can be pointed horizontally, or at a certain angle (the latter avoids direct reception from nearby stations). Keep the antenna feed cable short to minimize losses, or add an antenna amplifier.
With a good setup, it should be easy to obtain 10 to 20 meteor reflections per hour when no stream is active (the sporadic background). During streams, this number can get as high as several hundreds.
Due to the daily variation in meteor activity, more reflections are received during the morning hours (5h to 6h local time) than in the evening (18h). This can serve as a proof that you are actually observing meteors!

2.3. Always possible to observe ?

Unfortunately, other forms of propagation interfere with MS.
The worst one is sporadic-E or Es, consisting of conduction clouds in the high atmosphere that make permanent reception of remote stations possible during minutes to tens of minutes. The sporadic-E season is from May to July in large parts of the northern hemisphere. In some regions however, sporadic-E is unknown!

There are also tropospheric influences. A temperature inversion can also cause reception over wider ranges than normal.

Thunderstorms cause very sharp peaks. On FM, most of these (amplitude modulated) spikes are suppressed. However, DO NOT connect your antenna to your receiver during thunderstorms or when you are absent for longer time. Lightning strikes have ruined several radio shacks.

2.4. One step further: recording meteor reflections

Meteor reflections can easily be recognized by listening. But a better measure of the shape of the reflection can be obtained in accessing the signal strength and recording it, either on a pen recorder, either feeding it into a computer via an analog/digital (A/D) convertor. Special care has to be taken to shield well the computer, power supplies, add filters etc., or the computer signal will be more or less noticed in the receiver. Optocouplers can be used to separate the grounds. However, some sensitivity and linearity will be lost in using them.
Alternatively, the game port input of a PC can be used too. The sampling rate is lower (say 20 samples per second), but this is often good enough.

Meteor reflections can broadly be divided in two classes - underdense and overdense - with different reflection profiles. These profiles can be related to the physical characteristics of the meteors.

3. Who else is observing ?

During recent years, amateurs in following countries have been recording meteor reflections: Austria, Belgium, Denmark, Germany, Finland, Japan, the Netherlands, Portugal, the UK, the USA.

Some of them observe only during the periods of the great streams, others run continuous automated stations.

Only a few radars are still used for monitoring streams. One is run by O. Belkovitch (oleg@astro.kazan.su), at Kazan University.
K. Suzuki, Aichi, Japan operates the MU radar wave of Kyoto University (46.5 MHz, 1 MW) at Toyokawa Meteor Observatory in Aichi, Japan.

4. How to relate radio- to visual observations ?

Hearing and seeing a meteor is a unique experience. There is a fairly simple relation between the visual magnitude of a meteor and the duration of the reflection. At 70 MHz, a zero magnitude meteor gives typically rise to a 1 second reflection. (At higher frequencies, the duration is

shorter).

5. How to correct MS counts to standard conditions ?

The number of meteor reflections that will be observed from a certain stream is not a simple function of radiant height, as is the case with visual counts (cfr. the zenithal hourly rate).
Conversely, deriving the true number of meteors from the observed number of meteors is not a trivial matter, certainly not when more than one transmitter is involved. Certainly, a stream does not necessarily peak when the observed number of meteors is highest!

The various parameters, such as antenna characteristics, position of transmitter and receiver, radiant position and other stream characteristics, power of the transmitter etc. can be fed into a simulation program, such as FORWARD (by the undersigned). Although the general activity pattern can be reconstructed, one has to be careful.

For visual meteors, the observed number is highest when the radiant is in the zenith (all other remaining the same). This is not so for the number of meteor reflections: the maximum number is observed for a radiant elevation of 45 to 50 degr. When the radiant is too high (say more than 80 degr), very few reflections are received!

6. Where to find meteor stream data ?

The International Meteor Organization (IMO), specializing in visual meteor observations, issues a yearly meteor stream calendar, which can be found on several places on the Net and on Compuserve. Contact otherwise Juergen Rendtel (jrendtel@aip.de) or Peter Brown (peter@canlon.physics.uwo.ca).

Gary Kronk's home page [http://wums.wustl.edu/~kronk/index.html] gives also a good overview of the various streams.

7. Where to find observational data and reduction software ?

Ilkka Yrjola, OH51Y (ILKKA.YRJOLA@915000.KY.KYMMENE.MEMONET.mailnet.fi) makes his data available on ftp server FTP.FUNET.FI in directory pub/ham/vhf-work/mssoft42.zip. The software for viewing is available too, as well as stream data.

The author edits the monthly RMOB, which gives summaries of recent observations from all over the world. Included are the setup characteristics. Contact me for putting you on the distribution list.

8. References

8.1. Books

THE reference is still "Meteor Science and Engineering" by D.W.R. McKinley, McGrawHill 1961. A fantastic book, giving the theory and practical results of the heydays of the radio meteor science.

A recent, less astronomical and more communication oriented work is:
Meteor Burst Communications (Theory and Practice) Ed. Donald L. Schilling,

Wiley Series in Communications, 1993, ISBN 0-471-52212-0.
reference section.

A very concise, but technical, introduction to the subject is:
Schanker, Jacob Z., "Meteor Burst Communications", Artech House, Norwood, MA, 1990 ISBN 0-89006-444-X

Another classical work is "Meteor Astronomy, Lovell, A.C.B., University Press, Oxford, New York, 1954."

With their project write-up, "Automatic Registration of Meteors, University of Ghent, 1991.", B. Callens and P. Vauterin won an international science price. A thesis (in Dutch) built further onto this: " De automatische waarneming van meteoren door middel van radioreflecties op 66MHz., Van Bavinckhove, C., University of Ghent, 1994". It gives interesting results obtained with a dual setup in order to eliminate interference.

8.2. Periodicals

The regular astronomy magazines, such as Sky & Telescope, Astronomy, or Astronomy Now run occasionally contributions about forward scatter experiments.

WGN, the Journal of IMO, contains sometimes contributions and letters about radio observations of meteors.

8.2.1. General

Black, W.H., Observing Meteors by Radio. Sky & Telescope, July 1983, pp.61-62.

Pillon, K., Meteor astronomy at home (Computer Adventures). Popular Science, May 1984, pp. 80.

Black, W.H., A visual/radio meteor observing interface. WGN 17-4, 1989.

Lynch, J.L., A Different Way to Observe the Perseids. Sky & Telescope, August 1992, pp. 222-225.

Mason, J., Tuning in to meteor showers. Astronomy Now, February 1994.

8.2.2. Relation visual - radio meteor

Lindblad, B.A., The Relation between Visual Magnitudes of Meteors and the Durations of Radar Echoes, Smithsonian Contributions to Astrophysics, Vol. 7, pp.27-39.

Van Wassenhove, J., The Relation between Visual Magnitude and Echo Duration. WGN 15-4, 1987, pp.116-118.

8.2.3. Reduction of data

Jones J., and Morton J.D., The determination of meteor stream radiants from single station observations. Bulletin of the Astronomical Institutes of Czechoslovakia, Vol.28, 1977, pp.267-272.

Jones J., Meteor radiant distribution using spherical harmonic analysis. Bulletin of the Astronomical Institutes of Czechoslovakia, Vol.28, 1977, pp.272.

Simek, M., Regression method for long-term meteor shower radar data analysis. Bull. Astron. Inst. Czechosl. 36, 1985, pp.270-278.

Steyaert, C., FORWARD: A General Program for Calculating the Observability Function. WGN 15-3, 1987, pp.90-93.

Steyaert, C., FORWARD: Extension for Multiple Stations. WGN 15-6, 1987, pp.193-195.

Van Wassenhove, J., Forward Scatter Data and the Population Index. WGN 17-6, 1989, pp.265-266.

8.2.4. Technical literature

Black, W.H., An inexpensive A/D Converter for VIC 20 or C 64 Built form Readily Available Parts. WGN 17-3, 1989, pp.96-97.

Greneker, G., Signal Processing techniques for separating meteor echoes from those of aircraft. WGN 17-2, 1989, pp.43-48.

Van Doren, A., Data Acquisition Systems. Reston Publishing Company Inc., 1982.

Chris Steyaert Tel : +32 (14) 31 51 04
V.V.S. Astronomical Association Fax : +32 (14) 22 13 73
Belgium E-mail : steyaert@vvs.innet.be
Kruisven 66 Compuserve: 72650,3513
B 2400 Mol, Belgium 51 degr N, 5 degr E

1866. Re: hearing meteors..how ?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-03 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <42carq$72u@nnrp3.primenet.com>
Source record: 24174

In <DE8o78.A2L@cs.dal.ca>, andromed@Breeze.cs.dal.ca (Michael Boschat) writes:
>Hello;
>
>I have bought an old spectrum analizer and a 3 element Yaqi. The
>frequencies of the machine are 20-79 Mhz, 120-179 Mhz, 450-519 Mhz.
>Any help on a frequency to listen to would be appreciated...
>Thanks...
>
> Mike
>
According to the military studies, 30-50 MHz is the optimal frequencies for
meteor communication. There are lots of pagers and other non-voice services down
there. These are likely to be on 24 hours also.
Up a little higher, the FM broadcast band is a 24 hour service with high power
to boot.
You should be able to hear many pings on a daily basis in the low VHF band.

Jim N7TCF

1867. Re: What Pre-Amps?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-03 00:00:00 UTC
From: bob@texas.net
Message-ID: <42d6c7$nme@empire.texas.net>
Source record: 24175

In article <420bfe$k67@wa4mei.radio.org>, "Alan K. Adamson" <ne1h> says:

>Does anyone have a recommendation for pre-amps for a satellite station
>I have the KLM 2m/440 full length crossed yagis and was wondering what about
>preamps.

I have the SSB SP-2000 and SP-7000 preamps mast-mounted. They're
excellent--I'm using them with M2 30/14 el 440/144 antennas respectively.
Performance with these relatively modest antenna arrays is good in
conjunction with the SSB preamps.

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

1868. KCT and ICOM 820H

Newsgroup: rec.radio.amateur.space
Date: 1995-09-03 00:00:00 UTC
From: headshrnkr@aol.com
Message-ID: <42cgcn$lfk@newsbf02.news.aol.com>
Source record: 24176

Hello.

I am in the process of installing a Kansas City Tuner/Tracker board into my system. So far I have the tracker function running without a problem, works pretty slick too! I do have a problem connecting the Tuner function to my ICOM 820H. Taking the advise of the manual I did not use the ICOM CIV interface. I chose instead to run the radio at TTL levels direct from the KCT board. I can not seem to get the radio to change frequency.

If I use the TEST function supplied with the KCT software I can switch the radios mode, but not alter its frequency. Also I can not get the TEST function to reconize the radios address. I have the baud rate set at 1200 and the interface set to 66 as advised. What am I missing here? Do I need to create a file to "define" the radio for the Tuner software? Any assistance would be greatly appericated!

73,
KB2VKJ

Email to Headshrnkr@aol.com. Thanks for your time!

"We, the people are the rightful masters of both the congress and the courts - not to overthrow the constitition, but to overthrow men who pervert the constitution" - A. Lincoln

Bruce J. Howes
HeadShrnkr@aol.com

1869. Re: What Pre-Amps?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-03 00:00:00 UTC
From: Ed Garnett <ejg@acslink.net.au>
Message-ID: <42bi39$64k@dingo.cc.uq.oz.au>
Source record: 24177

Hi All,

My question is... does it matter?!

Certainly for 2mx it doesn't... I'd suggest saving your $ for the 70cm preamp...
At my station I use a homebrew 'fet' (not gaAs fet) preamp 'at the rig' which provides more than enough performance (this unit was tuned on air monitoring the AO-13 beacon!!). The 2mx antenna is a 20 element X-yagi.

For 70cm however, the story changes significantly...
Here, I use a commercial Mirage 70cm gaAs fet preamp. (There are probably better
quality units about but...) I use it mainly for 'low pass' digital spacecraft passes, just to get that few extra minutes connect time! Again, its mounted in the shack... yes I know, it would never do for 'moon bounce' but...

I guess, what I'm suggesting is, don't go to too much bother for 2mx satellite! Just about anything will do, just to lift the signal above the noise floor. Certainly don't bother putting it up the mast!! you won't be able to tell the difference!!!

70cm is another story... it will depend what you will mainly be using it for. Here, a mast mount preamp is most desirable and it may pay to invest in a good quality unit. I don't have the test eqipment available to me now days, so I opt for a commercial unit!

I think that is important to know when to 'build or buy'! Thats the difference between success and wasting money!

happy hammin' Ted VK1BL.

1870. PK TNC's help needed #2

Newsgroup: rec.radio.amateur.space
Date: 1995-09-03 00:00:00 UTC
From: g8tzj@bbs.n0iak.ampr.ORG
Message-ID: <463@N0IAK>
Source record: 24178

I have received a request for help in getting a PK-900 and a KPC-9612 operational on the 9600 baud pacsats. I dont have any details of the exact problems so ANY info on these 2 TNC's , mods, software fixes etc would be helpful.

73, Andrew G8TZJ @ AMSAT.ORG

1871. Re: Seeking M2 Eggbeater Antenna Experiences

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: talleyt@msn.com
Message-ID: <00001ff1+0000039b@msn.com>
Source record: 24179

What is the address and phone number for the
company who sales this antenna??

Tnx Tom Talley KA9QPG

1872. Re: Sat. Tracking Program?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: random@digital.net
Message-ID: <42dmps$8hl@ddi2.digital.net>
Source record: 24180

you are asking a question about sattrack on the Amiga?
write to the author at random@digital.net.

That's me. Randy N4RTL

In article <DAu8Ew.Etw@eskimo.com>, bobcast@eskimo.com says...
(nothing, the message was blank)

1873. Sat Tracking Program for the Amiga

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: random@digital.net
Message-ID: <42dmvm$8hl@ddi2.digital.net>
Source record: 24181

Are you an amiga user interested in taking the N4RTL sattrack code for the Amiga and continuing the development? If so, write me for details.

random@digital.net (Randy Stackhouse)

If you are interested in the current version, email me also :)

1874. Re: ?? What Radio to Buy ??

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: hamdan@ix.netcom.com
Message-ID: <42e2al$j2c@ixnews3.ix.netcom.com>
Source record: 24182

In <428jmc$uu@news.rain.org> dpmoore@rain.org (Dan Moore) writes:
>
>
>I could use some advice on which radio is best for satellite (voice &
>packet)
>
>I would like to get one of the new rigs like the IC-820H but haven't
>heard anything good about it. Then there's the Yaesu FT-736R and
Kenwood
>TS-790A, both of these have been around awhile. Which radio is best,
or
>should I just wait for someone to come out with something new?
>If anyone has any practical advice regarding satellite rigs pleas send

>E-Mail to me at:
> dpmoore@rain.org
>
>-Dan WD6CYI
FROM: Bernie, KF0QS

I have been quite pleased with my Yaesu FT-736R. I use it with a
marginal antenna setup (omnidirectional M Squared Eggbeaters on both
two and 70 cm, preamp on 70 cm, and a brick amp on two, about a 50 foot
run to the antennas with 9913 cable), and can access all the LEO's,
except that I haven't tried the 9600 baud birds yet (and have been
warned that I'd need an az/el setup). The 736 is quite versatile and,
though the QST review says it is quite complex to learn, I have done OK
with it (and I am no technical wizard). It does seem a bit delicate
(once, relatively mild static discharge when I was plugging in an
external keyer knocked out the cw keying function). It does have space
for two more band modules, and I understand the Kenwood only has space
for one more. The QST review is in the May 1990 QST at page 30.
Good luck. 73's de Bernie, KF0QS.

1875. Phase IIID Downlink Parms?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: dreynold@rad.net.id
Message-ID: <42end4$spt@ns1.rad.net.id>
Source record: 24183

Can anyone tell me where to get comprehensive information on the pre-flight predicted transponder parameters for IIID online? I want to run some link budgets.

Also... what new mode on IIID will be most popular? Someplace to start the link calcs.

Dave WB4ONA in Jakarta

1876. Re: Help with DO-17

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: tgliang@eskimo.com
Message-ID: <DEELwB.3KL@eskimo.com>
Source record: 24184

In article <4250r6$drk@avatar.avatar.com>, kory@avatar.com says...
>
>
>Hi everyone,
>
>I been trying pickup the DO-17 downlink with little success. I can clearly
>hear it on the speaker, althought most of the time its not full quieting.
>Here's my setup:
>
> - Yaesu FT-736R
> - Diamond 510 omni ground plane
> - TE Sestems 1412G amp & pre-amp
> - AEA PK232
>
>I have the TNC monitor more set to 4 (and I tried six) and its in packet
>mode. When I disconnect the TNC from audio out, I can clearly hear DO-17`s
>telemetry downlink, but most of the time its not full quieting.
>
>Is there any special mode or option I need to set on the TNC? This
>configuration works great for regular terestrial packet. Also, for
>normal packet usage, do you squelch your radio and then adjust it so it
>unsquelchs when it starts reciving packets or do you futz around with the
>volume/treshold levels? The AEA manual sucks and wasn't very clear on
>how to calibrate everything.
>
>Any help would be greatly appreciated.
>
>Thanks,
>Kory
>KE6VWO

Hi Kory! I have a YAESU FT-736R, an AEA DSP-1232, and M2 VHF and UHF antennas. I track DO-17, set my TNC for terrestial reception, i.e., 1200 FSK or modem 12 on my TNC, and data should come out on the screen. For DO-17 tracking is not necessary as I heard the digitized voice once on a handheld with a rubber duck. In short, all TNC and radio parameters can be set for terrestial use. Good luck! 73 de KC7EMC

1877. A PG Question

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: tgliang@eskimo.com
Message-ID: <DEEnEn.AwC@eskimo.com>
Source record: 24185

I recently had PG and PB running, and I had three acknowledgments of a message I uploaded to KO-23 sent to me. In the process to setting up PG, I turned on the "debug" option on the configuration file for PG. Now even if I took it out of the config file, it still gives an 8-column hex and ascii diagnostic. Is there a way of turning it off? Or, maybe something else is causing it. Any comments will be appreciated. 73 de KC7EMC

1878. Re: Seeking M2 Eggbeater Antenna Experiences

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: rtm@ftp.netgate.net
Message-ID: <rtm-0409951737160001@ng71.netgate.net>
Source record: 24186

In article <00001ff1+0000039b@msn.com>, talleyt@msn.com (Thomas Talley) wrote:

> What is the address and phone number for the
> company who sales this antenna??
>
> Tnx Tom Talley KA9QPG

M2
7560 Del Mar Ave
Fresno, CA 93711

(209) 432-8873
(209) 432-3059 (FAX)

73-

--

Bob Martin N6MZV * rtm@ftp.netgate.net

1879. FASat-ALFA, THE FIRST CHILEAN SATELLITE

Newsgroup: rec.radio.amateur.space
Date: 1995-09-04 00:00:00 UTC
From: root@asarginv.ORG.AR
Message-ID: <Pine.LNX.3.91.950904164551.3513A-100000@asarginv.org.ar>
Source record: 24187

FASat-ALFA, THE FIRST CHILEAN SATELLITE

INTRODUCTION.

FASat-Alfa will be the first Chilean satellite, and is being constructed under a Technology Transfer Program between the Chilean Air Force (FACH) and Surrey Satellite Technology Ltd (SSTL) of the United Kingdom. The primary goal of the Program is to obtain for Chile the scientific and technological experience required to develop a National space capability. The FASat-Alfa mission will create a group of engineers with aerospace experience who will operate the first Chilean satellite in orbit from the Mission Control Station (ECM-Santiago) in Chile.

FASat-Alfa Satellite.

The FASat-Alfa Satellite of 50 kg will use the modular UoSAT bus, proven in the previous missions. The satellite is being constructed at SSTL by a combined group of engineers from FACH and SSTL. FASat-Alfa was launched in the late August 1995 as a secondary payload into a circular orbit of 650 kilometers at 82.5 degrees inclination, on board a Tsyklon rocket made by KB Yuzhnoye of Ukranie form the Plesetsk Cosmodrome in Russia. The main payload of that launch is the Sich-1 spacecraft which is the first Ukranian satellite.

FASat-Alfa Bus System.

The FASat-Alfa is based on a bus that is integrated in a 600 mm by 350 mm by 350 mm box. The box is formed by 11 modules of heights between 26 and 50 mm. On top of these module boxes there is a structure called the Earth Observation Platform which encloses all the cameras and special sensors that need to point to the Earth.

The FASat-Alfa bus systems include a number of enhancements over previous SSTL missions. The main enhancements include the new local area network CAN, and a new On Board Computer (OBC) based on a INTEL 386EX processor.

EXPERIMENT PAYLOADS.

The experimental payloads on board FASat-Alfa will be the following:
1) Ozone Layer Monitoring Experiment (OLME).
2) Data Transfer Experiment (DTE).
3) Earth Imagine System (EIS).
4) Global Positioning System Experiment (GPS).
5) Solid State Date Recorder Experiment (SSDRE)
6) Educational Experiment (EdEx)

OLME

This experiment is very important for Chile because of the geographic location of the country within the depletion area of the Ozone Layer in the Antarctic. This experiment is based on the measurement of the ultraviolet solar backscattered radiation in frequency bands around 300 nanometers. The experiment will have two types of devices in order to measure that radiation, UV cameras, based on special CCDs, and UV photodiodes.
Measurements will be made in the Antarctic and sub-Antarctic regions of Chile, and the data collected with this experiment will be correlated with the ground based observations of the Ultraviolet Radiometric Network run by the Meteorological Directorate in Chile.

DTE Experiment.

The objective of the Data Transfer Experiment is to provide the Space Segment Infrastucture, i.e. necessary hardware, satellite interfaces, firmware and software, to allow a variety of data communications experiments and demonstration objectives to be supported. The potential experiment can be grouped into four major activities:

Uplink experiments data collection.
Duplex/Two-way experiments-data transfer(collection and distribution).
Downlink experiments data distribution.
Technology demonstration-enhanced modulation/data rates/small terminals.

The hardware for the DTE consists of two redundant receivers and a redundant Digital Signal Processing (DSP) unit based on a C31 processor. The FASat-Alfa uplink is in VHF and the Dowlink is UHF, both in the WARC92 "Litle Leo" frequency bands, and use a digital store and forward transponder. Even though FASat-Alfa is not an amateur satellite the operation is similar to UoSAT-5 and Kitsat 1 and 2.

EIS Experiment.

The Earth Imaging System on FASat-Alfa have two visible light cameras: a wide angle camera with a ground resolution of 1500 meters, and a narrow angle camera with a resolution of about 150 meters. The wide angle camera have the same field of view as the Ozone monitoring cameras. These cameras are located in the Earth Observation Platform. They provide snapshot images of the Earth, that are then stored on board the satellite for downloading at a later time.

GPS System.

The function of the GPS receiver is to determine the position of the satellite in space and use this information for on-board generation of Keplerian elements, using the 32 bit transputer system.

Solid State Data Recorder Experiment.

This system provides 2 GigaBits (256 Megabytes) of solid state storage memory based on new RAM technology. Each system of FASat-Alfa have access to this memory through the CAN local area network. Main users are the OLME and EIS payloads; the SSDRE will store more than 600 images of 300 KiloBytes each. This experiment is in collaboration with Sanders, a Lockheed Martin

company from the United States.

Educational Experiment.

This experiment is directed to Chilean youth, the idea is to generate a special mood about space with a satellite that they could feel more close to themselves. The EdEx uses the DTE experiment through digital processing in the DSP unit, in order to generate a telemetry signal that can be received by low cost receivers and a personal computer. DSP also produces digitized voice that can be received by simple receivers.

The experiment is intended to run during the Chilean academic year (April to November) transmitting one or two times a month. The benefit for the curricula of the students is that they will have to develop at least the following areas of knowledge related to space:

* Satellite tracking.
* Communications.
* Telemetry analysis of electric and thermodynamic parameters.

Mission Control Station, ECM-Santiago.

The ECM-Santiago station is a complete command and control groundstation from the SSTL product line of groundstation systems. Using this system, ground controllers can command the spacecraft both via the direct command link and via the on-board computer, collect and archive telemetry data, interact with the store-and-forward communications system, collect and archive spacecraft housekeeping data as well as data generated from the various experiments resident on the FASat-Alfa spacecraft platform. This will be the only station in Chile capable of controlling satellites, and will be located in a building at Los Cerrillos Air Force Base in Santiago. Installation was completed in February 1995.

The FASat-Alfa commissioning will be undertaken from ECM-Santiago By Chilean and SSTL engineers.

FASat-Alfa Projet Manager: Lt.Col., Aeronautical Engineer Fernando F. Mujica. Space Divison, Chilean Air Force & Msc. Nuclear Engineering (M.I.T)

Eduardo Sweet Biro

Internet e-mail: root@asarginv.org.ar
Amateur e-mail: lu7akc@lu3bgj.cf.arg.sa
Amateur tcp/ip: lu7akc@lu7akc.ampr.org [44.153.0.30]

1880. Re: OSCAR 10 Advice Sought

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <42him8$ccr@nnrp1.primenet.com>
Source record: 24188

In <425s4n$qq7@news.rain.org>, leigh@rain.org (Leigh) writes:
>I'd like suggestions on working OSCAR 10 with extremely minimal gear.
>Thus far I'm using a small 2 meter beam and an older Icom 260 for
>recieving, and I can hear most SSB and nearly all CW signals.
>
>My uplink gear consists of an Icom 3-watt 402 435 mhz SSB/CW rig, and a
>19 element 432 beam. With just moving my balcony-mounted antennas by
>hand, I can sometimes weakly hear my CW on the downlink.
-- CLIP--
>Thanks and 73. --Leigh/KM6JE.
>
I did a few QSOs with a similar station. Your best bet is CW, try to arrange a schedule so you can work out the bugs. I found calling or answering CQs very difficult. The other operator must be well-equipped and patient. The sat must be in just the right place. All the restrictions reduce your chances, but once you do connect, it is rewarding.
AO-10 is very erratic, try AO-13 also. Look for the low portion of the orbit when signals are stronger.
Traksat has version 3.1, 286 or better required.
I haven't been active on the high-flying birds because my station isn't up to the task. I did make some contacts, but once I build this CCI 432 amp, I plan to get radioactive again.

Jim N7TCF

1881. Message not deliverable

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Administrator@sil.ORG
Message-ID: <01HUWSNRPT8E000G52@SIL.ORG>
Source record: 24189

---------- Returned ----------
From: ham-space@UCSD.EDU at internet
Date: 8/27/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #229

Text item:

Ham-Space Digest Sun, 27 Aug 95 Volume 95 : Issue 229

Today's Topics:
ARLK042 Keplerian data
Molniya over the pole? (2 msgs)
NBSCOM.INI
QSL card for DOVE?
REJECTED: Ham-Space Digest V95 #228
Wisp, KCT, and Win95

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 22 Aug 1995 17:58:28 -0400
From: w1aw@arrl.org
Subject: ARLK042 Keplerian data

SB KEP @ ARL $ARLK042
ARLK042 Keplerian data

ZCZC SK67
QST de W1AW
Keplerian Bulletin 42 ARLK042

Date: 24 Aug 1995 14:41:38 GMT
From: Ben@mn.interact.net (Ben Huset)
Subject: Molniya over the pole?

In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:

Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.

problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
Note a fairly cheap computer can do this ie) Apple][, although
I have heard stories of people MANUALLY re-pointing their dish
every 15-30 mins.

Problem 2) Need a fairly big dish, 10' minimum, 16-32' preferred.

Problem 3) SECAM TV format. can be displayed on multiformat monitors.

Problem 4) Audio not above video but mixed into horiz blanking area.
Note: This has been fixed by them adding 2nd audio signal
above video signal to be more compatable with cheaper
western TVRO RX gear.

Problem 5) Language in Russian. Although the pictures are nice. Its weird
seeing Fraggle Rock dubbed in Russian but they SING in english.

Problem 6) Ocassionally one or more of the Four satellites in the constillation
is 'on the blink'.

Several colleges have a setup to receive this for their Russian Studies.
if you see a dish NOT pointed to the SW, SE or S but to the NE then they have
such a setup. U of IA and Crighton in Omaha come to mind.

There are a few firms out there that will sell you a turnkey system installed for
about $50,000-$100,000.

If you live EAST of the Missippi or better yet east of the OHIO river vallely
you can pick up the signal from their Geo-sync birds.

Hope this helps.
Ben
>
>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>: Does anyone access domestic Russian television from Molniya satellites,
>: over the north pole? How difficult is it to do it? Can I use surplus
>: C-band equipment?
>: If you know of a good written description of how to do this little stunt,
>: I'd really like to know the title of the publication reference.
>: -Dick
>
>
>: ----------
>: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov
>
>I am sorry but I do not have a reference, but the Molniya satellites
>used to use a form of sound in vision in which the sound channel was
>carried as a pulse (width, position modulated?) in the sync area od the
>flyback of each line. A demodulator was described in a radio magazine about
>ten years ago, but that I am afraid is all I can remember.
>

>
>--
>Dave Stephenson
>Geological Survey of Canada *Who ever knew the heavens menace so?
>Ottawa, Ontario, Canada *Those that have known the earth so
>Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: Tue, 22 Aug 1995 21:31:38 -0500
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Subject: Molniya over the pole?

Does anyone access domestic Russian television from Molniya satellites,
over the north pole? How difficult is it to do it? Can I use surplus
C-band equipment?
If you know of a good written description of how to do this little stunt,
I'd really like to know the title of the publication reference.
-Dick

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

Date: Wed, 23 Aug 95 01:29:46 GMT
From: bbd@connectnet1.connectnet.com (BnY)
Subject: NBSCOM.INI

Can anyone provide me with a sample of this INI file?

Thnaks, and please post here, not e-mail.
Brian

Date: 23 Aug 1995 00:34:48 GMT
From: Keith.Fritzinger@bbs.mhv.net (Keith Fritzinger)
Subject: QSL card for DOVE?

It took about 8 months to receive my card. I sent my report on 3/20/94.

Date: 26 Aug 95 09:30:34 GMT
From: MAILER-DAEMON@RTP41.ceo.dg.COM
Subject: REJECTED: Ham-Space Digest V95 #228

----- Mail rejected by CEO. -----
No Response from Remote Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #228

X-Ceo_Options: Document

<Original text message attached as document>

CEO document contents:

Ham-Space Digest Sat, 26 Aug 95 Volume 95 : Issue 228

Today's Topics:
Molniya over the pole?
Satellite Questions

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 24 Aug 1995 21:39:34 GMT
From: mbv@ti.com (Ken Durham)
Subject: Molniya over the pole?

In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.
~~~~~~

Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
agree with my what I have read.

Ken mbv@ti.com

Date: 25 Aug 1995 16:37:38 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: Satellite Questions
~~~~~~

In article <41ae2u$cl1@newsbf02.news.aol.com>, headshrnkr@aol.com (HeadShrnkr) says:
>
>Hello.
>
>I have a few questions about sat. tracking software and modems. First, let
>me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and
>KLM 70cm antenna setup on a Yaesu GB5400 rotor.
>
>First, can anyone make a suggestion as to a good tracking program for DOS
>or Windows? Either commerical or shareware is fine.
>
>Second, I would like to have my rotor controlled by software, suggestions?
>Possibly a tracking and rotor control software package?
>
>Third, I do not understand the exact equipement required for digital
>transmission and reception. I am familar with Packet and use a PK 232 but
>the standard is different for the Digital Satellites? Is there any way to
>use or modify my PK 232 to function in this manner?
>
>I appericate your reply. If possible email to HeadShrnkr@aol.com.
>
>73,
>KB2VKJ
>
If you can afford it, Instant Track is propably the best tracking
program. Do a net search for amsat. I think you have to order it
via the phone with a credit card. Several of the sat gurus around here
use it. At the Amsat.ftp archive they have several different freeware/
shareware trackers. I know that IT supports computer control of your
rotor. I use PREDICT.EXE, it is a freeware text only tracker, schedular.
You can get the orbital elements for the airforce ftp. Since I switched
to netscape I can not quickly find net addresses. Do a net search.
Yesterday I downloaded a new(for me) tracker. STSORBIT. It appears
(from reading the docs) to be a good program. I think it came from the
AMSAT ftp, but I could have got it from the ARRL ftp sit..or to tell the
truth I was out netting and went all over the worl tracking down ham. I
was trying to find a German ftp site with the rumured new version of
JVFAX 8.0.
I am into NOAA WX sats and do not really know much about ham digital
formats. I suspect it is fairly high speed PSK. My MFJ1278 only does
AX25 1200buad, RTTY and AMTOR. You might post to the REC.RADIO.DIGITAL.
MISC. Those guys are into all sorts of digital stuff.
I hope some of this helps.

....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.

If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

End of Ham-Space Digest V95 #228
****

Date: 25 Aug 1995 15:11:01 GMT
From: pflynn@ibm.net
Subject: Wisp, KCT, and Win95

I am having trouble with Win95 reconizing the OEMSETUP.INF file supplied with
the wkctdrv.zip file. Seems to me I seen something somewhere that said this
file had to be edited before Win95 would install the Windows KCT driver in
Win95. Wisp is up and running just fine, but can't get the KCT driver to load.
Can anyone help me on this?

Date: (null)
From: (null)

End of Ham-Space Digest V95 #229
****

1882. Message not deliverable

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Administrator@sil.ORG
Message-ID: <01HUWT6NMKFG000H4Q@SIL.ORG>
Source record: 24190
Body handling: 1 inline base64-encoded payload block was not displayed

From: ham-space@UCSD.EDU at internet
Date: 8/29/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #231

File item:

[Inline base64-encoded payload not displayed]
2A0D0A

1883. GOES-8 Signal Strength ?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com>
Message-ID: <42hhg9$aps@hpuerci.atl.hp.com>
Source record: 24191

I've been noticing a severe drop in signal strength from GOES-8 starting about noon (local time) degrading to essentially useless until after sundown. Is this normal? I'm usually not home during the day and most of my monitoring is at night. I'm using twin 44-element yagis to a QFAX card. Any ideas?

Regards,
Rolf

1884. MIR mission Time

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Buster <lathrop@azstarnet.com>
Message-ID: <42huap$ogl@news.azstarnet.com>
Source record: 24192

Anybody know what mission times are like for the nauts up
in MIR. I'd like to be able do other things when they won't be on the
radio. I'm hoping for a voice contact, but I don't want to stay up 'till
3am if they sleep then.

BUSTER

1885. Message not deliverable

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Administrator@sil.ORG
Message-ID: <01HUWWGQWYD20000LQ@SIL.ORG>
Source record: 24193
Body handling: 1 inline base64-encoded payload block was not displayed

From: ham-space@UCSD.EDU at internet
Date: 9/3/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #236

File item:

[Inline base64-encoded payload not displayed]

1886. Message not deliverable

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Administrator@sil.ORG
Message-ID: <01HUWURTXI24000BVF@SIL.ORG>
Source record: 24194

---------- Returned ----------
From: ham-space@UCSD.EDU at internet
Date: 8/31/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #233

Text item:

Ham-Space Digest Thu, 31 Aug 95 Volume 95 : Issue 233

Today's Topics:
440-->28 Rx Converters..
Got my SWL confirmation for STS-64
Help, keepers for elements

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 29 Aug 1995 09:38:17 -0500
From: MUENZLERK@uthscsa.edu (Muenzler, Kevin)
Subject: 440-->28 Rx Converters..

Andrew Naylor <anaylor@delphi.com> writes:

>Has anybody used a receive converter on the packet birds? What are the
>main suppliers of converters in Kit/assembled form?
>Thanks,
>Andrew, N0UJT

Try Down East Microwave. I don't think that they have one that goes
directly from 440 to 28 but they will have ones that go from 144 to
28 and from 440 to 144. They have them all the way up to 10GHz.
They have a pretty good assortment of linear amps for 440 and
144 too. Sorry I don't have the address or phone number but they
are usually in QST, CQ and 73 mags.

Kevin, WB5RUE
muenzlerk@uthscsa.edu

Date: 30 Aug 1995 10:48:02 -0400
From: gsteve490@aol.com (GSteve490)
Subject: Got my SWL confirmation for STS-64

nice hat Rick's wearin' eh?

N2LZH ===>STS-64 PKT Q #35

Date: Wed, 30 Aug 1995 13:17:15 GMT
From: stephens@ngis.geod.emr.ca (Dave Stephenson)
Subject: Help, keepers for elements

Help, I need some stainless steel keepers for 3/16 and 1/4 rod
for a satellite antenna. Keepers are the retainers that look like
none slip washers and fit over antenna elements.
Rutland Arrays used to supply them, but both their past telephone
numbers are now out of service and they do not reply to mail.

Anyone know of another supplier of small numbers of antenna parts?
Thanks.

VE3PYG/VE3GSC

--
Dave Stephenson
Geological Survey of Canada *Who ever knew the heavens menace so?
Ottawa, Ontario, Canada *Those that have known the earth so
Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: Wed, 30 Aug 1995 09:17:25 -0700
From: mailfail@ucsd.edu

End of Ham-Space Digest V95 #233
****

1887. Will STS-69 be a SAREX mission?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: BRETSKI <bap@storm.atms.purdue.edu>
Message-ID: <Pine.A32.3.91.950905150940.31688A-100000@storm.atms.purdue.edu>
Source record: 24195

Will STS-69 be a SAREX mission and how do we find out which
missions will be?

BRET A. PENNINGTON / COMPUTER TECHNICIAN /EARTH AND ATMOSPHERIC SCIENCES
CIVL 4252 317-494-0678 / PURDUE UNIVERSITY / WEST LAFAYETTE, INDIANA 47907
bap@storm.atms.purdue.edu / speaking only for myself.
/\/\/\/\/\/ __... /\/\/\/\/\/\/\/\ N9ZFF /\/\/\/\/\/ ...__ /\/\/\/\/\/\/\/\

1888. Message not deliverable

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Administrator@sil.ORG
Message-ID: <01HUWU8WXMOQ000BVF@SIL.ORG>
Source record: 24196

---------- Returned ----------
From: ham-space@UCSD.EDU at internet
Date: 8/30/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #232

Text item:

Ham-Space Digest Wed, 30 Aug 95 Volume 95 : Issue 232

Today's Topics:
(no subject)
JVFAX APT CONFUSION
Molniya over the pole? (3 msgs)
NOAA decoder wanted!!
SGP4 vs SDP4 models (2 msgs)
Wisp, KCT, and Win95
Yaseu 5400B problem...

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 30 Aug 95 03:55:44 GMT
From: gene@ilsi.COM (ILSI)
Subject: (no subject)

We would like to ask you to place a link from your site to our
homepage. Please check out our homepage and let us know what you think.

We have created a database to assist people that want to advertise on
the internet. Using this database, people with homepages will now be able
to easily find appropriate sites for links to their homepage.

We are Internet List Services Inc. and we would appreciate your help.
Please visit us at: http://www.ilsi.com/ilsi5.html

Thank you,

Gene

Date: 25 Aug 1995 13:55:26 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: JVFAX APT CONFUSION

I have received several Emails concerning a reply that I had made
regarding NOAA APT reception with JVFAX 7.0. I was told that
"you can only receive hf style sefax with the 'simplest' demodulator"
Diagram AMFMFAX.GIF show a circuit using the XR2206. This is a
converter that goes in front of the op-amp cirucit. It detects the
AM NAOO APT FAX and CONVERTS it into a FM(HF) FAX signal. The diagram
text is in GERMAN but the circuit does work and works fairly well.
It is a full wave detector driving a VCO. There is a graph,
AMFMFAX1.GIF, that show the transfer curve. It is reasonalbly linear.
I used a 8ohm to 1000ohm transformer. I used a 2n2222 for T1.
While I now use a better demodulator, I decided to keep this one around
for field operation.
TO any and all that emailed me, I am sorry to reply this way, but UK is
having MAJOR mail problems. They switched us all from CC mail to Eudora.
I have had a nightmare trying to post mail off campus and have been
told by freinds that a lot of mail sent to me is bouncing. Our campus
access to the news groups has been kind of spooty also.
The bottom line is this simple method does work. And, while a better
demodulator is a real good idea, you can toss the "simplest" adaptor and
the xr2206 converter togather in a evening. The only problem that the
simplest/xr2206 had was in saving. My old pc, a 20mc 80386, just got
"lost" while trying to save images.(or it might have been the MAXTOR
hard file..it was a GREEN energy saver that would auto-spin down.
You could hear the drive stop and then tJVFAX would lock up..sometimes)
I tried it again last night on NOAA12, I had a good 50 degree pass last
night, and captured the entire pass with the simplest/XR2206 demod.
I currently have a 80486DX66(I use the maxtor as my boot drive(c:) and
capture to a seagate 80meg). Give it a shot. It is a thrill to see your
first capture.
Oh, and don't try to record the pass on audio tape and expect to play
it back and captur it after the fact. Almost all audio tape recorders,
either reeel to rel or cassette, have so much wow and flutter that the
resultant image will be barely if at all usefull. You might be able to
record the pass on a VHS vcr and play it back. Be sure to feed a good
stong clean local video signal in the video input.(most home vcrs will
allow you to tune in a local tv station and plug in an external audio
source). VCRs have a seperate control track that might keep the tape
speed constant(or least close enouge for our purposes). I have had good
luck with a borrowed NAGRA reel to reel audio recorder. The NAGRA was
designed to be used with a file camera and has a 100hz crystal
refferenced audio track. During playback it "locks" the tape speed to
the internal clock. I mention this just to save you the frustration that
I have already been through in trying to tape a pass.
.....

Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.
If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

Date: 25 Aug 1995 15:25:20 GMT
From: Ben@mn.interact.net (Ben Huset)
Subject: Molniya over the pole?

In article <41irim$7qr@superb.csc.ti.com>, mbv@ti.com (Ken Durham) says:
>
>In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>>
>>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>>
>>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>>
>>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
>> Note a fairly cheap computer can do this ie) Apple][, although
>> I have heard stories of people MANUALLY re-pointing their dish
>> every 15-30 mins.
>~~~~~~
>
>Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
>three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
>agree with my what I have read.
>
>Ken mbv@ti.com

If you have a BEAM that wide you need REALLY good signal processing to
get the signal back out.

Most dishes have a beam 1-2 degrees wide, about 2-4 full moon widths.
It's a BIG sky, over 25,000 places to point and only a few will work.
The satellites are NOT that close together. EVERY working system
I've seen has ACTIVE alt-azi pointing that updates the position every
few seconds. The Apple][system used TLEs to get close when the bird
came up then used a 'random move'/ signal strength check to track.
(hey... it worked...)

BTW:
Problem 7:

There is a few minutes of signal dropout when EVERYBODY switches to the
NEXT 'rising' satellite when the current one 'sets'.

Sorta like our Geosync Sun outages except it happens several times each
day.

Date: 25 Aug 1995 15:31:04 GMT
From: Ben@mn.interact.net (Ben Huset)
Subject: Molniya over the pole?

In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.
>
>Problem 2) Need a fairly big dish, 10' minimum, 16-32' preferred.
>
>Problem 3) SECAM TV format. can be displayed on multiformat monitors.
>
>Problem 4) Audio not above video but mixed into horiz blanking area.
> Note: This has been fixed by them adding 2nd audio signal
> above video signal to be more compatable with cheaper
> western TVRO RX gear.
>
>Problem 5) Language in Russian. Although the pictures are nice. Its weird
> seeing Fraggle Rock dubbed in Russian but they SING in english.
>
>Problem 6) Ocassionally one or more of the Four satellites in the constillation
> is 'on the blink'.
>
Problem 7) They have circularized (left/right)polarization and we have
linear (horiz/vert) signals. Yet another adaptor required.
Actually just cram a 'special' piece of plastic in your feed
horn.

Problem 8) There is a few minutes of signal loss every 6 hrs or so when
EVERYBODY switches from the setting satellite to the Rising
satellite. Sorta like our solar outages except its several
times EVERY day.

>Several colleges have a setup to receive this for their Russian Studies.
>if you see a dish NOT pointed to the SW, SE or S but to the NE then they have
>such a setup. U of IA and Crighton in Omaha come to mind.
>

>There are a few firms out there that will sell you a turnkey system installed for
>about $50,000-$100,000.
>
>If you live EAST of the Missippi or better yet east of the OHIO river vallely
>you can pick up the signal from their Geo-sync birds.
>
>Hope this helps.
>Ben
>>
>>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>>: Does anyone access domestic Russian television from Molniya satellites,
>>: over the north pole? How difficult is it to do it? Can I use surplus
>>: C-band equipment?
>>: If you know of a good written description of how to do this little stunt,
>>: I'd really like to know the title of the publication reference.
>>: -Dick
>>
>>
>>: ----------
>>: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov
>>
>>I am sorry but I do not have a reference, but the Molniya satellites
>>used to use a form of sound in vision in which the sound channel was
>>carried as a pulse (width, position modulated?) in the sync area od the
>>flyback of each line. A demodulator was described in a radio magazine about
>>ten years ago, but that I am afraid is all I can remember.
>>
>>
>>--
>>Dave Stephenson
>>Geological Survey of Canada *Who ever knew the heavens menace so?
>>Ottawa, Ontario, Canada *Those that have known the earth so
>>Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: Fri, 25 Aug 1995 13:34:03 GMT
From: stephens@ngis.geod.emr.ca (Dave Stephenson)
Subject: Molniya over the pole?

Ken Durham (mbv@ti.com) wrote:
: In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
: >
: >In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
: >
: >Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
: >
: >problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
: > Note a fairly cheap computer can do this ie) Apple][, although
: > I have heard stories of people MANUALLY re-pointing their dish
: > every 15-30 mins.

: ~~~~~~

: Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
: three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
: agree with my what I have read.

: Ken mbv@ti.com

I did not ask the original question. Yes the Molniya birds are in
Molniya orbits (what else) and usually have 3 operational birds plus
one running spare plus some stand bys. Of course there are also the
military com sats and presumably still some U.S. jumpseats up there
chasing each other in orbits similar to the initial orbit of Oscar 13.
The problems of tracking a Molniya should be about the same as tracking
Oscar 13 with a microwave dish.

Thanks for bringing me up to date on those birds.

Dave VE3PYG

--
Dave Stephenson
Geological Survey of Canada *Who ever knew the heavens menace so?
Ottawa, Ontario, Canada *Those that have known the earth so
Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: 25 Aug 1995 13:02:21 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: NOAA decoder wanted!!

In article <413bkr$519@kryten.awinc.com>, danichol@microage-ll.awinc.com (David Nicholson) says:
>
>oe5kco@sbox.tu-graz.ac.at (Christian Koubek) you spake to us
>
>
>I have a program that works with .wav and .voc files, but you have to
>have a sound blaster board or similar that has 44khz 8 bit sampling.
>If you are interested e-mail me, I use it regularly.
>
>David Nicholson danichol@microage-ll.awinc.com
>Lloydminster, Saskatchewan, Canada
>
How can we get a copy of your program? Could you post it on the
oak.oakland ftp.site? Or should I send you a diskette(s) and an IRC?
Thanks
Terry Fugate
WN4ISX

****
****
**********PLEASE EXCUSE THESE GRABAGE LINES BUT OUR STUPID MAIL SERVER
**********INSISTS ON MORE NEW THAN INCLUDED TEXT GRRR :(**********
****
****
****

Date: 29 Aug 1995 01:12:45 GMT
From: milliron@ix.netcom.com (William Milliron)
Subject: SGP4 vs SDP4 models

How accurate is the SGP4 model for HELO earth satellites. I have been
playing with source code from SatTrack, SEESAT and a few others and it
appears (?) to be accurate. Any feedback would be greatly appreciated.

Date: 29 Aug 1995 18:27:35 GMT
From: manfred@ssl.berkeley.edu (Manfred Bester)
Subject: SGP4 vs SDP4 models

In article <41tpid$rfm@ixnews3.ix.netcom.com>, milliron@ix.netcom.com
(William Milliron) writes:

> How accurate is the SGP4 model for HELO earth satellites. I have been
> playing with source code from SatTrack, SEESAT and a few others and it
> appears (?) to be accurate. Any feedback would be greatly appreciated.

William,

the SatTrack (V3.1) implementation of the SGP4 model has a typical
precision of better than 10 minutes of arc in azimuth and elevation angles
for typical orbit predictions with two-line element sets that are not more
than a few days old. The calculations of the latitude and longitude of the
sub-satellite point are even more precise. A lot depends on how old your
two-line element sets are.

For more details check the SatTrack web page at:

http://ssl.berkeley.edu/isi_www/sattrack.html

--Manfred

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720

Date: Tue, 29 Aug 1995 13:35:43 GMT
From: sem2r@galen.med.Virginia.EDU (Stacey E. Mills)

Subject: Wisp, KCT, and Win95

I haven't done this yet, but the problem has been well described on AMSAT-BB and also on the digital satellites. You need to setup the KCT/T under "old Windows". It will then run fine under WIN95, but in order to edit the setup file in WIN95, you'll have to manually edit the KCT/T.INI file (not it's correct name, but the appropriate "INI" file).

Chris Jackson is working on the driver for the KCT/T so that you can alter it in the usual way under WIN95. It'll probably be a month or so. Try setting it up on a computer under "old Windows" then copy the appropriate "INI" file to your WIN95. That should work fine for now.
--
-73's de WB4QKT
Stacey E. (Chuck) Mills
E-mail: sem2r@galen.med.virginia.edu

Date: Tue, 29 Aug 1995 13:30:46 GMT
From: sem2r@galen.med.Virginia.EDU (Stacey E. Mills)
Subject: Yaseu 5400B problem...

Sounds like a dirty azimuth potentiometer inside the rotator. The analog meter circuit may have some averaging or damping feature (capacitor) so that it doesn't pick up the spikes??
--
-73's de WB4QKT
Stacey E. (Chuck) Mills
E-mail: sem2r@galen.med.virginia.edu

End of Ham-Space Digest V95 #232
****

1889. Re: Phase IIID Downlink Parms?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: mbv@ti.com
Message-ID: <42ifbg$l6u@superb.csc.ti.com>
Source record: 24197

In article <42end4$spt@ns1.rad.net.id>, dreynold@rad.net.id (DaveCom) says:
>
>Can anyone tell me where to get comprehensive information on the
>pre-flight predicted transponder parameters for IIID online?

>
>Also... what new mode on IIID will be most popular?
>~~~~~~`
Dave, for the information you need start with http://amsat.org/amsat/AmsatHome.html
or contact Paul Williamson KB5MU at kb5mu@amsat.org.

I believe from what I've read that mode LS (1296 up 2400 down) will be
the most active. Mode S (450 up 2400 down) may be the most active at
first until more equip. is available on 1296 at reasonable prices.

Ken K5MBV mbv@ti.com
>
>
>

1890. AO-27 SCHEDULE

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: mbv@ti.com
Message-ID: <42iftq$l6u@superb.csc.ti.com>
Source record: 24198

I gave up on AO-27 several months ago after it went off the air totally due to unknown (to me) causes. It had been operational during daylight hours on weekends only. Last weekend I was surprised to find it up and running and I could even hear it on my talkies rubber-ducky. Several Hams heard on the satellite mentioned that it was operational 7 days a week during daylight hours.

After much sweating in the Texas sun, I got the talkie, duplexer, 140 Watt amplifier and two antennas installed on the van. Instantrack showed that a pass would AOS at about 12:17 PM today. I listened for 20 minutes and heard....nothing.

Is this satellite functional during the week or is the schedule sporadic like it used to be?

Ken Durham K5MBV mbv@ti.com

1891. Message not deliverable

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Administrator@sil.ORG
Message-ID: <01HUWWFPAML60000LQ@SIL.ORG>
Source record: 24199

---------- Returned ----------
From: ham-space@UCSD.EDU at internet
Date: 9/2/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #235

Text item:

Ham-Space Digest Sat, 2 Sep 95 Volume 95 : Issue 235

Today's Topics:
440-->28 Rx Converters..
ARLK044 Keplerian data
hearing meteors..how ? (2 msgs)
NBSCOM.INI
Seeking M2 Eggbeater Antenna Experiences
TM-742A

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 29 Aug 95 13:18:24 EST
From: landisj@nad.com (Joe Landis - Systems & Network Mgr)
Subject: 440-->28 Rx Converters..

In article <01HUN2XC94QU00840Z@uthscsa.edu>, MUENZLERK@uthscsa.edu (Muenzler, Kevin)
writes:
> Andrew Naylor <anaylor@delphi.com> writes:
>
>>Has anybody used a receive converter on the packet birds? What are the
>>main suppliers of converters in Kit/assembled form?
>>Thanks,
>>Andrew, N0UJT
>
> Try Down East Microwave. I don't think that they have one that goes
> directly from 440 to 28 but they will have ones that go from 144 to

> 28 and from 440 to 144. They have them all the way up to 10GHz.
> They have a pretty good assortment of linear amps for 440 and
> 144 too. Sorry I don't have the address or phone number but they
> are usually in QST, CQ and 73 mags.
>
> Kevin, WB5RUE
> muenzlerk@uthscsa.edu

DEM is at 908-996-3584, in Frenchtown, NJ. At home, as I type, a partially assembled DEM 432-28mhz transverter sits on my bench. This is the design that is intended as an IF transverter for use behind a 10.368Ghz transverter. It is a nice, but bare bones kit, with separate Rx/Tx ports for both the 28mhz IF and the 432 side, and about a 4db NF, as I recall. (Remember this is an IF transverter) It sold for $109. When I have it up and running, my intent is to pick up the 10G modular transverter system. Steve also sells a high performance kit, with options available for switching, power, and packaging. I don't have the specs handy, but give him a call if you're interested.

Joe - AA3GN
--
Joe Landis - Systems and Network Manager - North American Drager - Telford, PA
landisj@nad.com ..speaking only for myself, of course..

Date: 29 Aug 1995 18:01:49 -0400
From: w1aw@arrl.org
Subject: ARLK044 Keplerian data

SB KEP @ ARL $ARLK044
ARLK044 Keplerian data

ZCZC SK69
QST de W1AW
Keplerian Bulletin 44 ARLK044

Date: 1 Sep 1995 18:16:18 -0400
From: n2oto@aol.com (N2OTO)
Subject: hearing meteors..how ?

What is it you want to listen to?
Meteor Satellites or ROCKS falling to Earth?

Also, where in Canada are you? This will help me to determine what beacons for you to use, on 6, 2, 0.7 meters, for forward meteor scatter!

Rupert, N2OTO
****
>Hello;

I have bought an old spectrum analizer and a 3 element Yaqi. The frequencies of the machine are 20-79 Mhz, 120-179 Mhz, 450-519 Mhz.

Any help on a frequency to listen to would be appreciated...
Thanks...Mike
****

Date: Fri, 1 Sep 1995 18:18:43 GMT
From: andromed@Breeze.cs.dal.ca (Michael Boschat)
Subject: hearing meteors..how ?

Hello;

I have bought an old spectrum analizer and a 3 element Yaqi. The
frequencies of the machine are 20-79 Mhz, 120-179 Mhz, 450-519 Mhz.
Any help on a frequency to listen to would be appreciated...
Thanks...

Mike

Date: Thu, 31 Aug 1995 21:37:09 GMT
From: BDONALDSON@HNS.COM (Brian Donaldson)
Subject: NBSCOM.INI

Seeking info on NBSCOM.INI. Anyone have a sample of this file?

Please E-Mail at my address above.

Thanks

,,, Waddayamean, it's NOT workin'?!
(o o)
==========oOO==(_)==OOo==========
Brian Donaldson, KF6BL Project Engineer, Customer Svc
Hughes Network Systems, Inc. TES, Terrestrial, et al...
10450 Pacific Center Ct. Email: bdonaldson@hns.com
San Diego, CA 92121 Phone: (619) 452-5175
Room 2077 Fax: (619) 452-4886
==========

Date: Wed, 30 Aug 1995 06:09:47 GMT
From: bennerr@onlink.net (Rudy Benner)
Subject: Seeking M2 Eggbeater Antenna Experiences

regross1@aol.com (REGross1) wrote:

>I am considering ordering the 2m and 70 cm set of eggbeater antennas from
>M-square and am looking for someone who has actually used them for
>satellite communications. I plan to use them with an ICOM 820H and two TE
>Systems 160 watt output amplifiers having internal preamplifiers. Premium
>coax in anticipated in lengths of less than 75 feet.

>How effective are they? What are their benefits and limitations. I
>expect to ultimately have to use them in a housing development with
>covenants against outside antennas. I would consider putting them high in
>the attic. If you have any experiences with a similar arrangement, please
>share them.
>Robert E. Gross (KE3EM)
>REGROSS1@aol.com
I would give them consideration for use with the 1200 baud birds. If
you lived in a part of the world with low amateur density, they would
be fairly suitable on the 9600 birds. The competition over North
America and Europe is very high, with many high powered stations using
AZ/EL setups. Your Eggbeater setup just doesn't quite make it.
You definately need a good quality pre-amp for the downlink. I would
recommend that you order the ground-plane kit for each as well.

I switched to the M2 Oscar antennas with the Yaesu G5400B AZ/EL setup
and the Landwehr pre-amps. The antennas are controlled with the
KCTracker.

Good luck.

Rudy Benner

Date: Wed, 30 Aug 1995 14:44:00 GMT
From: rick.edwards@mogur.com (Rick Edwards)
Subject: TM-742A

I have a new 742A. It is a great radio! I enjoy it very much.
However, I do have a couple of questions that I can't seem to find the
answer to in the manual. Maybe you can help me.

1) When using the autodialer, the button sequence is PTT, PF, & then the
autodialer memory number (#1 in my case). The transmitter turns on when
the PTT is pressed, of course, but then turns off when the PF button is
pressed and then back on for the DTMF string. However, there is no (or
very little) pause between the transmitter turn on and the sending out
of DTMF. I use two repeater autopatches and neither of them likes this
and it _usually_ results in a misdial. Question: Is there anyway to
add a pause or a brief wait between the transmitter turning back on and
the output of DTMF?

2) When using the 742A in a crossband repeat mode between a 220
repeater and my 2m HT, I have to wait for the 220 repeater to drop
before I can transmit. This becomes a real drag when on a roundtable
on the 220 repeater and it has a long hang time. Is there anyway
around this? Is there a way to make the 742A act like a single
frequency repeater on the 2m side (ie. sample the receive every few
hundred milliseconds)?

Thanks....<re>
---
* QMPro 1.50 41-9162 * Clinton: "Ted, will you drive Hillary home?"

```
------------------------------

Date: (null)
From: (null)

------------------------------

End of Ham-Space Digest V95 #235
******************************
```

1892. Re: MIR mission Time

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Keith Stein <us011192@pop3.interramp.com>
Message-ID: <42ilmq$k2l@usenet4.interramp.com>
Source record: 24200

The Mir crew works on Moscow Time which is 8 hours later then eastern daylight time. The crew currently gets up at 04:00 UTC and ends there day at 19:00 UTC, daily.

--
Keith Stein
E-mail: us011192@pop3.interramp.com
Home Page:
http://www.newspace.com/publications/LaunchReport/LaunchReport.html

1893. Re: A PG Question

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: tgliang@eskimo.com
Message-ID: <DEGFHJ.CLK@eskimo.com>
Source record: 24201

In article <DEEnEn.AwC@eskimo.com>, tgliang@eskimo.com says...
>
>I recently had PG and PB running, and I had three acknowledgments of a
>message I uploaded to KO-23 sent to me. In the process to setting up
PG, I
>turned on the "debug" option on the configuration file for PG. Now even
if
>I took it out of the config file, it still gives an 8-column hex and
ascii
>diagnostic. Is there a way of turning it off? Or, maybe something else
>is causing it. Any comments will be appreciated. 73 de KC7EMC
>
I am answering my own article. It was not the "debug" command. The
diagnostics were caused by the "trace" command in pg.tnc Now PG and PB
work great with my AEA DSP-1232.

1894. Ham-Space Digest V95 #239

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: ham-space@ucsd
Message-ID: <199509051938.MAA18200@mail.ucsd.edu>
Source record: 24202
Body handling: 1 inline base64-encoded payload block was not displayed

Ham-Space Digest Tue, 5 Sep 95 Volume 95 : Issue 239

Today's Topics:
Message not deliverable (2 msgs)
Sat. Tracking Program?
Sat Tracking Program for the Amiga
Seeking M2 Eggbeater Antenna Experiences

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 5 Sep 95 14:19:00 GMT
From: Administrator@sil.ORG
Subject: Message not deliverable

From: ham-space@ucsd.edu at internet
Date: 8/28/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@ucsd.edu at internet
Subject: Ham-Space Digest V95 #230

Text item:

Ham-Space Digest Mon, 28 Aug 95 Volume 95 : Issue 230

Today's Topics:
Molniya over the pole?
REJECTED: Ham-Space Digest V95 #229
SARA
Tracking software for Macintosh

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Thu, 24 Aug 95 03:00:34 GMT
From: stevekit@eznet.net (Steve kittelsen)
Subject: Molniya over the pole?

In article <DDs0o7.Ayz@emr1.emr.ca>,
stephens@ngis.geod.emr.ca (Dave Stephenson) wrote:
>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>: Does anyone access domestic Russian television from Molniya satellites,
>: over the north pole? How difficult is it to do it? Can I use surplus
>: C-band equipment?
>: If you know of a good written description of how to do this little stunt,
>: I'd really like to know the title of the publication reference.
>: -Dick

I check into the Molniya satellites awhile ago, and found that the
satellites are no longer transmitting TV signals. I cannot personally
confirm this.

****
* __/__/\ Steve Kittelsen ______ *
* / /\ \ Rochester, New York \ / *
* I I I I " stevekit@eznet.net " \ / *
* \ __\/__ / * OPEN YOUR MIND * \/ PRIDE *
****

Date: 27 Aug 95 09:30:24 GMT
From: MAILER-DAEMON@RTP41.ceo.dg.COM
Subject: REJECTED: Ham-Space Digest V95 #229

----- Mail rejected by CEO. -----
No Response from Remote Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #229
X-Ceo_Options: Document

<Original text message attached as document>

CEO document contents:

Ham-Space Digest Sun, 27 Aug 95 Volume 95 : Issue 229

Today's Topics:
ARLK042 Keplerian data
Molniya over the pole? (2 msgs)
NBSCOM.INI
QSL card for DOVE?
REJECTED: Ham-Space Digest V95 #228
Wisp, KCT, and Win95

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 22 Aug 1995 17:58:28 -0400
From: w1aw@arrl.org
Subject: ARLK042 Keplerian data

SB KEP @ ARL $ARLK042
ARLK042 Keplerian data

ZCZC SK67
QST de W1AW
Keplerian Bulletin 42 ARLK042

Date: 24 Aug 1995 14:41:38 GMT
From: Ben@mn.interact.net (Ben Huset)
Subject: Molniya over the pole?

In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:

Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.

problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
Note a fairly cheap computer can do this ie) Apple][, although
I have heard stories of people MANUALLY re-pointing their dish
every 15-30 mins.

Problem 2) Need a fairly big dish, 10' minimum, 16-32' preferred.

Problem 3) SECAM TV format. can be displayed on multiformat monitors.

Problem 4) Audio not above video but mixed into horiz blanking area.
Note: This has been fixed by them adding 2nd audio signal
above video signal to be more compatable with cheaper
western TVRO RX gear.

Problem 5) Language in Russian. Although the pictures are nice. Its weird
seeing Fraggle Rock dubbed in Russian but they SING in english.

Problem 6) Ocassionally one or more of the Four satellites in the constillation
is 'on the blink'.

Several colleges have a setup to receive this for their Russian Studies.
if you see a dish NOT pointed to the SW, SE or S but to the NE then they have
such a setup. U of IA and Crighton in Omaha come to mind.

There are a few firms out there that will sell you a turnkey system installed for
about $50,000-$100,000.

If you live EAST of the Missippi or better yet east of the OHIO river vallely
you can pick up the signal from their Geo-sync birds.

Hope this helps.
Ben
>
>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>: Does anyone access domestic Russian television from Molniya satellites,
>: over the north pole? How difficult is it to do it? Can I use surplus
>: C-band equipment?
>: If you know of a good written description of how to do this little stunt,
>: I'd really like to know the title of the publication reference.
>: -Dick
>
>
>: ----------
>: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov
>
>I am sorry but I do not have a reference, but the Molniya satellites
>used to use a form of sound in vision in which the sound channel was
>carried as a pulse (width, position modulated?) in the sync area od the
>flyback of each line. A demodulator was described in a radio magazine about
>ten years ago, but that I am afraid is all I can remember.
>
>
>--
>Dave Stephenson
>Geological Survey of Canada *Who ever knew the heavens menace so?
>Ottawa, Ontario, Canada *Those that have known the earth so
>Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: Tue, 22 Aug 1995 21:31:38 -0500
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Subject: Molniya over the pole?

Does anyone access domestic Russian television from Molniya satellites,
over the north pole? How difficult is it to do it? Can I use surplus
C-band equipment?
If you know of a good written description of how to do this little stunt,
I'd really like to know the title of the publication reference.
-Dick

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

Date: Wed, 23 Aug 95 01:29:46 GMT
From: bbd@connectnet1.connectnet.com (BnY)
Subject: NBSCOM.INI

Can anyone provide me with a sample of this INI file?

Thnaks, and please post here, not e-mail.
Brian

Date: 23 Aug 1995 00:34:48 GMT
From: Keith.Fritzinger@bbs.mhv.net (Keith Fritzinger)
Subject: QSL card for DOVE?

It took about 8 months to receive my card. I sent my report on 3/20/94.

Date: 26 Aug 95 09:30:34 GMT
From: MAILER-DAEMON@RTP41.ceo.dg.COM
Subject: REJECTED: Ham-Space Digest V95 #228

----- Mail rejected by CEO. -----
No Response from Remote Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #228
X-Ceo_Options: Document

<Original text message attached as document>

CEO document contents:

Ham-Space Digest Sat, 26 Aug 95 Volume 95 : Issue 228

Today's Topics:
Molniya over the pole?
Satellite Questions

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 24 Aug 1995 21:39:34 GMT
From: mbv@ti.com (Ken Durham)
Subject: Molniya over the pole?

In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson)
says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.

~~~~~~
~~~~~~~~~~~~~~~~~~~~~~~

Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
agree with my what I have read.

Ken mbv@ti.com

Date: 25 Aug 1995 16:37:38 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: Satellite Questions

In article <41ae2u$cl1@newsbf02.news.aol.com>, headshrnkr@aol.com (HeadShrnkr) says:
>
>Hello.
>
>I have a few questions about sat. tracking software and modems. First, let
>me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and
>KLM 70cm antenna setup on a Yaesu GB5400 rotor.
>
>First, can anyone make a suggestion as to a good tracking program for DOS
>or Windows? Either commerical or shareware is fine.
>
>Second, I would like to have my rotor controlled by software, suggestions?
>Possibly a tracking and rotor control software package?
>
>Third, I do not understand the exact equipement required for digital
>transmission and reception. I am familar with Packet and use a PK 232 but
>the standard is different for the Digital Satellites? Is there any way to
>use or modify my PK 232 to function in this manner?
>
>I appericate your reply. If possible email to HeadShrnkr@aol.com.
>
>73,
>KB2VKJ
>
If you can afford it, Instant Track is propably the best tracking
program. Do a net search for amsat. I think you have to order it
via the phone with a credit card. Several of the sat gurus around here
use it. At the Amsat.ftp archive they have several different freeware/
shareware trackers. I know that IT supports computer control of your
rotor. I use PREDICT.EXE, it is a freeware text only tracker, schedular.
You can get the orbital elements for the airforce ftp. Since I switched
to netscape I can not quickly find net addresses. Do a net search.
Yesterday I downloaded a new(for me) tracker. STSORBIT. It appears
(from reading the docs) to be a good program. I think it came from the
AMSAT ftp, but I could have got it from the ARRL ftp sit..or to tell the
truth I was out netting and went all over the worl tracking down ham. I

was trying to find a German ftp site with the rumured new version of
JVFAX 8.0.
I am into NOAA WX sats and do not really know much about ham digital
formats. I suspect it is fairly high speed PSK. My MFJ1278 only does
AX25 1200buad, RTTY and AMTOR. You might post to the REC.RADIO.DIGITAL.
MISC. Those guys are into all sorts of digital stuff.
I hope some of this helps.

.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.
If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

End of Ham-Space Digest V95 #228
****

Date: 25 Aug 1995 15:11:01 GMT
From: pflynn@ibm.net
Subject: Wisp, KCT, and Win95

I am having trouble with Win95 reconizing the OEMSETUP.INF file supplied with
the wkctdrv.zip file. Seems to me I seen something somewhere that said this
file had to be edited before Win95 would install the Windows KCT driver in
Win95. Wisp is up and running just fine, but can't get the KCT driver to load.
Can anyone help me on this?

Date: (null)
From: (null)

End of Ham-Space Digest V95 #229
****

Date: 27 Aug 1995 20:52:53 GMT
From: rs93463@midnet.com (Stephen Reader)
Subject: SARA

Hello All.
Can anybody help me with any info on the SARA Satelitte. The info I would
like if possible is, 1. Is the sat still active, 2.What are the down link
frequencies, 3. What Data mode is used ie AX25 or other, 4. Is there any
decoding s/ware available for the Data.
If anybody can help please send any info to:- rs93463@midet.com or post to
this conference, Thanks All.
73 Steve RS93463.

Stephen Reader

* MidNet OnLine, Coventry, UK *

Date: Sun, 20 Aug 95 08:11:33 -0000
From: Sean Sharkey <sean@g0oanint.demon.co.uk>
Subject: Tracking software for Macintosh

In article <michael-1908951023350001@rig-uk.demon.co.uk>, Michael Gill
writes:

>
> Does anyone know a source of shareware or freeware satellite
> tracking

Michael,

Have a look in ftp.demon.co.uk /pub/ham/mac

in there you'll find at least 2 sat tracking programmes (and lots
of other Mac stuff by the way).

Hope this helps,

Sean.

Date: Sun, 27 Aug 95 08:15:00 -0300
From: claudio.junior@dialdata.com.br (Claudio Junior)

End of Ham-Space Digest V95 #230
****

Date: 5 Sep 95 15:44:00 GMT
From: Administrator@sil.ORG
Subject: Message not deliverable

From: ham-space@UCSD.EDU at internet
Date: 9/3/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #236

File item:

[Inline base64-encoded payload not displayed]

Date: 4 Sep 1995 02:03:40 GMT
From: random@digital.net (Randy Stackhouse)
Subject: Sat. Tracking Program?

you are asking a question about sattrack on the Amiga?
write to the author at random@digital.net.

That's me. Randy N4RTL

In article <DAu8Ew.Etw@eskimo.com>, bobcast@eskimo.com says...
(nothing, the message was blank)

Date: 4 Sep 1995 02:06:46 GMT
From: random@digital.net (Randy Stackhouse)
Subject: Sat Tracking Program for the Amiga

Are you an amiga user interested in taking the N4RTL sattrack code for the
Amiga and continuing the development? If so, write me for details.

random@digital.net (Randy Stackhouse)

If you are interested in the current version, email me also :)

Date: Mon, 04 Sep 1995 17:37:16 -0700
From: rtm@ftp.netgate.net (Bob Martin N6MZV)
Subject: Seeking M2 Eggbeater Antenna Experiences

In article <00001ff1+0000039b@msn.com>, talleyt@msn.com (Thomas Talley) wrote:

> What is the address and phone number for the
> company who sales this antenna??
>
> Tnx Tom Talley KA9QPG

M2
7560 Del Mar Ave
Fresno, CA 93711

(209) 432-8873
(209) 432-3059 (FAX)

73-

Bob Martin N6MZV * rtm@ftp.netgate.net

End of Ham-Space Digest V95 #239
****

1895. Ham-Space Digest V95 #238

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: ham-space@ucsd
Message-ID: <199509051422.HAA23202@mail.ucsd.edu>
Source record: 24203
Body handling: 1 inline base64-encoded payload block was not displayed

Ham-Space Digest Tue, 5 Sep 95 Volume 95 : Issue 238

Today's Topics:
Message not deliverable (3 msgs)
Seeking M2 Eggbeater Antenna Experiences
What Pre-Amps?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 5 Sep 95 14:10:00 GMT
From: Administrator@sil.ORG
Subject: Message not deliverable

From: ham-space@UCSD.EDU at internet
Date: 8/27/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #229

Text item:

Ham-Space Digest Sun, 27 Aug 95 Volume 95 : Issue 229

Today's Topics:
ARLK042 Keplerian data
Molniya over the pole? (2 msgs)
NBSCOM.INI
QSL card for DOVE?
REJECTED: Ham-Space Digest V95 #228
Wisp, KCT, and Win95

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 22 Aug 1995 17:58:28 -0400
From: w1aw@arrl.org
Subject: ARLK042 Keplerian data

SB KEP @ ARL $ARLK042
ARLK042 Keplerian data

ZCZC SK67
QST de W1AW
Keplerian Bulletin 42 ARLK042

Date: 24 Aug 1995 14:41:38 GMT
From: Ben@mn.interact.net (Ben Huset)
Subject: Molniya over the pole?

In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:

Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.

problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
Note a fairly cheap computer can do this ie) Apple][, although
I have heard stories of people MANUALLY re-pointing their dish
every 15-30 mins.

Problem 2) Need a fairly big dish, 10' minimum, 16-32' preferred.

Problem 3) SECAM TV format. can be displayed on multiformat monitors.

Problem 4) Audio not above video but mixed into horiz blanking area.
Note: This has been fixed by them adding 2nd audio signal
above video signal to be more compatable with cheaper
western TVRO RX gear.

Problem 5) Language in Russian. Although the pictures are nice. Its weird
seeing Fraggle Rock dubbed in Russian but they SING in english.

Problem 6) Ocassionally one or more of the Four satellites in the constillation
is 'on the blink'.

Several colleges have a setup to receive this for their Russian Studies.
if you see a dish NOT pointed to the SW, SE or S but to the NE then they have
such a setup. U of IA and Crighton in Omaha come to mind.

There are a few firms out there that will sell you a turnkey system installed for
about $50,000-$100,000.

If you live EAST of the Missippi or better yet east of the OHIO river vallely
you can pick up the signal from their Geo-sync birds.

Hope this helps.
Ben
>

>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>: Does anyone access domestic Russian television from Molniya satellites,
>: over the north pole? How difficult is it to do it? Can I use surplus
>: C-band equipment?
>: If you know of a good written description of how to do this little stunt,
>: I'd really like to know the title of the publication reference.
>: -Dick
>
>
>: ----------
>: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov
>
>I am sorry but I do not have a reference, but the Molniya satellites
>used to use a form of sound in vision in which the sound channel was
>carried as a pulse (width, position modulated?) in the sync area od the
>flyback of each line. A demodulator was described in a radio magazine about
>ten years ago, but that I am afraid is all I can remember.
>
>
>--
>Dave Stephenson
>Geological Survey of Canada *Who ever knew the heavens menace so?
>Ottawa, Ontario, Canada *Those that have known the earth so
>Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: Tue, 22 Aug 1995 21:31:38 -0500
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Subject: Molniya over the pole?

Does anyone access domestic Russian television from Molniya satellites,
over the north pole? How difficult is it to do it? Can I use surplus
C-band equipment?
If you know of a good written description of how to do this little stunt,
I'd really like to know the title of the publication reference.
-Dick

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

Date: Wed, 23 Aug 95 01:29:46 GMT
From: bbd@connectnet1.connectnet.com (BnY)
Subject: NBSCOM.INI

Can anyone provide me with a sample of this INI file?

Thnaks, and please post here, not e-mail.
Brian

Date: 23 Aug 1995 00:34:48 GMT
From: Keith.Fritzinger@bbs.mhv.net (Keith Fritzinger)
Subject: QSL card for DOVE?

It took about 8 months to receive my card. I sent my report on 3/20/94.

Date: 26 Aug 95 09:30:34 GMT
From: MAILER-DAEMON@RTP41.ceo.dg.COM
Subject: REJECTED: Ham-Space Digest V95 #228

----- Mail rejected by CEO. -----
No Response from Remote Mail not sent to:gary rogers@dgc.ceo

----- Unsent message follows -----
From: ham-space@UCSD.EDU
To: Ham-Space@UCSD.EDU
Subject: Ham-Space Digest V95 #228
X-Ceo_Options: Document

<Original text message attached as document>

CEO document contents:

Ham-Space Digest Sat, 26 Aug 95 Volume 95 : Issue 228

Today's Topics:
Molniya over the pole?
Satellite Questions

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 24 Aug 1995 21:39:34 GMT
From: mbv@ti.com (Ken Durham)
Subject: Molniya over the pole?

In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.
~~~~~~

Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
~~~~~~

agree with my what I have read.

Ken mbv@ti.com

Date: 25 Aug 1995 16:37:38 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: Satellite Questions

In article <41ae2u$cl1@newsbf02.news.aol.com>, headshrnkr@aol.com (HeadShrnkr) says:
>
>Hello.
>
>I have a few questions about sat. tracking software and modems. First, let
>me describe my current setup. I have a ICOM 820H transceiver, a KLM 2m and
>KLM 70cm antenna setup on a Yaesu GB5400 rotor.
>
>First, can anyone make a suggestion as to a good tracking program for DOS
>or Windows? Either commerical or shareware is fine.
>
>Second, I would like to have my rotor controlled by software, suggestions?
>Possibly a tracking and rotor control software package?
>
>Third, I do not understand the exact equipement required for digital
>transmission and reception. I am familar with Packet and use a PK 232 but
>the standard is different for the Digital Satellites? Is there any way to
>use or modify my PK 232 to function in this manner?
>
>I appericate your reply. If possible email to HeadShrnkr@aol.com.
>
>73,
>KB2VKJ
>
If you can afford it, Instant Track is propably the best tracking
program. Do a net search for amsat. I think you have to order it
via the phone with a credit card. Several of the sat gurus around here
use it. At the Amsat.ftp archive they have several different freeware/
shareware trackers. I know that IT supports computer control of your
rotor. I use PREDICT.EXE, it is a freeware text only tracker, schedular.
You can get the orbital elements for the airforce ftp. Since I switched
to netscape I can not quickly find net addresses. Do a net search.
Yesterday I downloaded a new(for me) tracker. STSORBIT. It appears
(from reading the docs) to be a good program. I think it came from the
AMSAT ftp, but I could have got it from the ARRL ftp sit..or to tell the
truth I was out netting and went all over the worl tracking down ham. I
was trying to find a German ftp site with the rumured new version of
JVFAX 8.0.
I am into NOAA WX sats and do not really know much about ham digital
formats. I suspect it is fairly high speed PSK. My MFJ1278 only does
AX25 1200buad, RTTY and AMTOR. You might post to the REC.RADIO.DIGITAL.
MISC. Those guys are into all sorts of digital stuff.
I hope some of this helps.

.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.
If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

End of Ham-Space Digest V95 #228
****

Date: 25 Aug 1995 15:11:01 GMT
From: pflynn@ibm.net
Subject: Wisp, KCT, and Win95

I am having trouble with Win95 reconizing the OEMSETUP.INF file supplied with
the wkctdrv.zip file. Seems to me I seen something somewhere that said this
file had to be edited before Win95 would install the Windows KCT driver in
Win95. Wisp is up and running just fine, but can't get the KCT driver to load.
Can anyone help me on this?

Date: (null)
From: (null)

End of Ham-Space Digest V95 #229
****

Date: 5 Sep 95 14:36:00 GMT
From: Administrator@sil.ORG
Subject: Message not deliverable

From: ham-space@UCSD.EDU at internet
Date: 8/29/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #231

File item:

[Inline base64-encoded payload not displayed]
2A0D0A

Date: 5 Sep 95 14:54:00 GMT
From: Administrator@sil.ORG
Subject: Message not deliverable

From: ham-space@UCSD.EDU at internet
Date: 8/30/95 6:30AM
To: Norm Beasley at PNG
*To: Ham-Space@UCSD.EDU at internet
Subject: Ham-Space Digest V95 #232

Text item:

Ham-Space Digest Wed, 30 Aug 95 Volume 95 : Issue 232

Today's Topics:
(no subject)
JVFAX APT CONFUSION
Molniya over the pole? (3 msgs)
NOAA decoder wanted!!
SGP4 vs SDP4 models (2 msgs)
Wisp, KCT, and Win95
Yaseu 5400B problem...

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 30 Aug 95 03:55:44 GMT
From: gene@ilsi.COM (ILSI)
Subject: (no subject)

We would like to ask you to place a link from your site to our
homepage. Please check out our homepage and let us know what you think.

We have created a database to assist people that want to advertise on
the internet. Using this database, people with homepages will now be able
to easily find appropriate sites for links to their homepage.

We are Internet List Services Inc. and we would appreciate your help.
Please visit us at: http://www.ilsi.com/ilsi5.html

Thank you,

Gene

Date: 25 Aug 1995 13:55:26 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: JVFAX APT CONFUSION

I have received several Emails concerning a reply that I had made
regarding NOAA APT reception with JVFAX 7.0. I was told that
"you can only receive hf style sefax with the 'simplest' demodulator"
Diagram AMFMFAX.GIF show a circuit using the XR2206. This is a
converter that goes in front of the op-amp cirucit. It detects the
AM NAOO APT FAX and CONVERTS it into a FM(HF) FAX signal. The diagram
text is in GERMAN but the circuit does work and works fairly well.
It is a full wave detector driving a VCO. There is a graph,
AMFMFAX1.GIF, that show the transfer curve. It is reasonalbly linear.

I used a 8ohm to 1000ohm transformer. I used a 2n2222 for T1.
While I now use a better demodulator, I decided to keep this one around
for field operation.
TO any and all that emailed me, I am sorry to reply this way, but UK is
having MAJOR mail problems. They switched us all from CC mail to Eudora.
I have had a nightmare trying to post mail off campus and have been
told by freinds that a lot of mail sent to me is bouncing. Our campus
access to the news groups has been kind of spooty also.
The bottom line is this simple method does work. And, while a better
demodulator is a real good idea, you can toss the "simplest" adaptor and
the xr2206 converter togather in a evening. The only problem that the
simplest/xr2206 had was in saving. My old pc, a 20mc 80386, just got
"lost" while trying to save images.(or it might have been the MAXTOR
hard file..it was a GREEN energy saver that would auto-spin down.
You could hear the drive stop and then tJVFAX would lock up..sometimes)
I tried it again last night on NOAA12, I had a good 50 degree pass last
night, and captured the entire pass with the simplest/XR2206 demod.
I currently have a 80486DX66(I use the maxtor as my boot drive(c:) and
capture to a seagate 80meg). Give it a shot. It is a thrill to see your
first capture.
Oh, and don't try to record the pass on audio tape and expect to play
it back and captur it after the fact. Almost all audio tape recorders,
either reeel to rel or cassette, have so much wow and flutter that the
resultant image will be barely if at all usefull. You might be able to
record the pass on a VHS vcr and play it back. Be sure to feed a good
stong clean local video signal in the video input.(most home vcrs will
allow you to tune in a local tv station and plug in an external audio
source). VCRs have a seperate control track that might keep the tape
speed constant(or least close enouge for our purposes). I have had good
luck with a borrowed NAGRA reel to reel audio recorder. The NAGRA was
designed to be used with a file camera and has a 100hz crystal
refferenced audio track. During playback it "locks" the tape speed to
the internal clock. I mention this just to save you the frustration that
I have already been through in trying to tape a pass.
.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government or agency.
If you do not like my opinion, just get on with your life.
I will not change your mind
and you damn sure can not change mine."

Date: 25 Aug 1995 15:25:20 GMT
From: Ben@mn.interact.net (Ben Huset)
Subject: Molniya over the pole?

In article <41irim$7qr@superb.csc.ti.com>, mbv@ti.com (Ken Durham) says:
>

>In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>>
>>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>>
>>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>>
>>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
>> Note a fairly cheap computer can do this ie) Apple][, although
>> I have heard stories of people MANUALLY re-pointing their dish
>> every 15-30 mins.
>~~~~~~
~~~~~~~~~~~~~~~~~~~~
>
>Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
>three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
>agree with my what I have read.
>
>Ken mbv@ti.com

If you have a BEAM that wide you need REALLY good signal processing to
get the signal back out.

Most dishes have a beam 1-2 degrees wide, about 2-4 full moon widths.
It's a BIG sky, over 25,000 places to point and only a few will work.
The satellites are NOT that close together. EVERY working system
I've seen has ACTIVE alt-azi pointing that updates the position every
few seconds. The Apple][system used TLEs to get close when the bird
came up then used a 'random move'/ signal strength check to track.
(hey... it worked...)

BTW:
Problem 7:
There is a few minutes of signal dropout when EVERYBODY switches to the
NEXT 'rising' satellite when the current one 'sets'.

Sorta like our Geosync Sun outages except it happens several times each
day.

Date: 25 Aug 1995 15:31:04 GMT
From: Ben@mn.interact.net (Ben Huset)
Subject: Molniya over the pole?

In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
>
>In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
>
>Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
>
>problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
> Note a fairly cheap computer can do this ie) Apple][, although
~~~~~~~~~~~~~~~~~~~~

> I have heard stories of people MANUALLY re-pointing their dish
> every 15-30 mins.
>
>Problem 2) Need a fairly big dish, 10' minimum, 16-32' preferred.
>
>Problem 3) SECAM TV format. can be displayed on multiformat monitors.
>
>Problem 4) Audio not above video but mixed into horiz blanking area.
> Note: This has been fixed by them adding 2nd audio signal
> above video signal to be more compatable with cheaper
> western TVRO RX gear.
>
>Problem 5) Language in Russian. Although the pictures are nice. Its weird
> seeing Fraggle Rock dubbed in Russian but they SING in english.
>
>Problem 6) Ocassionally one or more of the Four satellites in the constillation
> is 'on the blink'.
>
Problem 7) They have circularized (left/right)polarization and we have
linear (horiz/vert) signals. Yet another adaptor required.
Actually just cram a 'special' piece of plastic in your feed
horn.

Problem 8) There is a few minutes of signal loss every 6 hrs or so when
EVERYBODY switches from the setting satellite to the Rising
satellite. Sorta like our solar outages except its several
times EVERY day.

>Several colleges have a setup to receive this for their Russian Studies.
>if you see a dish NOT pointed to the SW, SE or S but to the NE then they have
>such a setup. U of IA and Crighton in Omaha come to mind.
>
>There are a few firms out there that will sell you a turnkey system installed for
>about $50,000-$100,000.
>
>If you live EAST of the Missippi or better yet east of the OHIO river vallely
>you can pick up the signal from their Geo-sync birds.
>
>Hope this helps.
>Ben
>>
>>Richard David Glueck (glue9600@spacelink.msfc.nasa.gov) wrote:
>>: Does anyone access domestic Russian television from Molniya satellites,
>>: over the north pole? How difficult is it to do it? Can I use surplus
>>: C-band equipment?
>>: If you know of a good written description of how to do this little stunt,
>>: I'd really like to know the title of the publication reference.
>>: -Dick
>>
>>
>>: ----------

>>: Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov
>>
>>I am sorry but I do not have a reference, but the Molniya satellites
>>used to use a form of sound in vision in which the sound channel was
>>carried as a pulse (width, position modulated?) in the sync area od the
>>flyback of each line. A demodulator was described in a radio magazine about
>>ten years ago, but that I am afraid is all I can remember.
>>
>>
>>--
>>Dave Stephenson
>>Geological Survey of Canada *Who ever knew the heavens menace so?
>>Ottawa, Ontario, Canada *Those that have known the earth so
>>Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: Fri, 25 Aug 1995 13:34:03 GMT
From: stephens@ngis.geod.emr.ca (Dave Stephenson)
Subject: Molniya over the pole?

Ken Durham (mbv@ti.com) wrote:
: In article <41i332$ber@sven.mn.interact.net>, Ben@mn.interact.net (Ben Huset) says:
: >
: >In article <DDs0o7.Ayz@emr1.emr.ca>, stephens@ngis.geod.emr.ca (Dave Stephenson) says:
: >
: >Russian television via Molniya (Lighting) C-band satellites is SEMI-HARD.
: >
: >problem 1) Non geosync orbit requiring active tracking with ALT/AZI pointing.
: > Note a fairly cheap computer can do this ie) Apple][, although
: > I have heard stories of people MANUALLY re-pointing their dish
: > every 15-30 mins.
: ~~~~~~
~~~~~~~~~~~~~~~~~~~~~

: Dave, it is my understanding that the orbit being eliptical and having redundent birds (I believe there were
: three), another bird is in the beamwidth of your dish before you lose signal from the first. The other problems
: agree with my what I have read.

: Ken mbv@ti.com

I did not ask the original question. Yes the Molniya birds are in
Molniya orbits (what else) and usually have 3 operational birds plus
one running spare plus some stand bys. Of course there are also the
military com sats and presumably still some U.S. jumpseats up there
chasing each other in orbits similar to the initial orbit of Oscar 13.
The problems of tracking a Molniya should be about the same as tracking
Oscar 13 with a microwave dish.

Thanks for bringing me up to date on those birds.

Dave VE3PYG
~~~~~~~~~~~~~~~~~~~~~

--
Dave Stephenson
Geological Survey of Canada *Who ever knew the heavens menace so?
Ottawa, Ontario, Canada *Those that have known the earth so
Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

Date: 25 Aug 1995 13:02:21 GMT
From: tfugate@service1.uky.edu (Terry Fugate)
Subject: NOAA decoder wanted!!

In article <413bkr$519@kryten.awinc.com>, danichol@microage-ll.awinc.com (David Nicholson) says:
>
>oe5kco@sbox.tu-graz.ac.at (Christian Koubek) you spake to us
>
>
>I have a program that works with .wav and .voc files, but you have to
>have a sound blaster board or similar that has 44khz 8 bit sampling.
>If you are interested e-mail me, I use it regularly.
>
>David Nicholson danichol@microage-ll.awinc.com
>Lloydminster, Saskatchewan, Canada
>
How can we get a copy of your program? Could you post it on the
oak.oakland ftp.site? Or should I send you a diskette(s) and an IRC?
Thanks
Terry Fugate
WN4ISX
****
****
**********PLEASE EXCUSE THESE GRABAGE LINES BUT OUR STUPID MAIL SERVER
**********INSISTS ON MORE NEW THAN INCLUDED TEXT GRRR :(**************
****
****
****

Date: 29 Aug 1995 01:12:45 GMT
From: milliron@ix.netcom.com (William Milliron)
Subject: SGP4 vs SDP4 models

How accurate is the SGP4 model for HELO earth satellites. I have been
playing with source code from SatTrack, SEESAT and a few others and it
appears (?) to be accurate. Any feedback would be greatly appreciated.

Date: 29 Aug 1995 18:27:35 GMT
From: manfred@ssl.berkeley.edu (Manfred Bester)
Subject: SGP4 vs SDP4 models

In article <41tpid$rfm@ixnews3.ix.netcom.com>, milliron@ix.netcom.com
(William Milliron) writes:

> How accurate is the SGP4 model for HELO earth satellites. I have been
> playing with source code from SatTrack, SEESAT and a few others and it

> appears (?) to be accurate. Any feedback would be greatly appreciated.

William,

the SatTrack (V3.1) implementation of the SGP4 model has a typical
precision of better than 10 minutes of arc in azimuth and elevation angles
for typical orbit predictions with two-line element sets that are not more
than a few days old. The calculations of the latitude and longitude of the
sub-satellite point are even more precise. A lot depends on how old your
two-line element sets are.

For more details check the SatTrack web page at:

http://ssl.berkeley.edu/isi_www/sattrack.html

Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720

Date: Tue, 29 Aug 1995 13:35:43 GMT
From: sem2r@galen.med.Virginia.EDU (Stacey E. Mills)
Subject: Wisp, KCT, and Win95

I haven't done this yet, but the problem has been well
described on AMSAT-BB and also on the digital satellites. You
need to setup the KCT/T under "old Windows". It will then run
fine under WIN95, but in order to edit the setup file in WIN95,
you'll have to manually edit the KCT/T.INI file (not it's
correct name, but the appropriate "INI" file).

Chris Jackson is working on the driver for the KCT/T so that you
can alter it in the usual way under WIN95. It'll probably be a
month or so. Try setting it up on a computer under "old
Windows" then copy the appropriate "INI" file to your WIN95.
That should work fine for now.

-73's de WB4QKT
Stacey E. (Chuck) Mills
E-mail: sem2r@galen.med.virginia.edu

Date: Tue, 29 Aug 1995 13:30:46 GMT
From: sem2r@galen.med.Virginia.EDU (Stacey E. Mills)
Subject: Yaseu 5400B problem...

Sounds like a dirty azimuth potentiometer inside the rotator.
The analog meter circuit may have some averaging or damping
feature (capacitor) so that it doesn't pick up the spikes??

-73's de WB4QKT
Stacey E. (Chuck) Mills
E-mail: sem2r@galen.med.virginia.edu

End of Ham-Space Digest V95 #232
****

Date: 4 Sep 95 00:29:03 -0700
From: talleyt@msn.com (Thomas Talley)
Subject: Seeking M2 Eggbeater Antenna Experiences

What is the address and phone number for the
company who sales this antenna??

Tnx Tom Talley KA9QPG

Date: 3 Sep 1995 06:31:05 GMT
From: Ed Garnett <ejg@acslink.net.au>
Subject: What Pre-Amps?

Hi All,

My question is... does it matter?!

Certainly for 2mx it doesn't... I'd suggest saving your $ for the 70cm
preamp...
At my station I use a homebrew 'fet' (not gaAs fet) preamp 'at the rig' which
provides more than enough performance (this unit was tuned on air monitoring
the AO-13 beacon!!). The 2mx antenna is a 20 element X-yagi.

For 70cm however, the story changes significantly...
Here, I use a commercial Mirage 70cm gaAs fet preamp. (There are probably
better
quality units about but...) I use it mainly for 'low pass' digital spacecraft
passes, just to get that few extra minutes connect time! Again, its mounted in
the shack... yes I know, it would never do for 'moon bounce' but...

I guess, what I'm suggesting is, don't go to too much bother for 2mx satellite!
Just about anything will do, just to lift the signal above the noise floor.
Certainly don't bother putting it up the mast!! you won't be able to tell the
difference!!!

70cm is another story... it will depend what you will mainly be using it for.
Here, a mast mount preamp is most desirable and it may pay to invest in a
good quality unit. I don't have the test eqipment available to me now days, so
I opt for a commercial unit!

I think that is important to know when to 'build or buy'! Thats the difference
between success and wasting money!

happy hammin' Ted VK1BL.

End of Ham-Space Digest V95 #238
****

1896. Turnstile for 29 mhz.

Newsgroup: rec.radio.amateur.space
Date: 1995-09-05 00:00:00 UTC
From: Paul.Graziani@f7.n3821.z1.fidonet.org
Message-ID: <6c8_9509062321@woodybbs.com>
Source record: 24204

@ORIGIN :@Fido N
Hello,

I happen to be totally blind so diagrams don't do me much good
needless to say. :-) I would appreciate it if someone could e-mail
me
some basic information on the turnstile (sp?) antenna for 29 MHz RS
satellite downlink reception.

A brief general statement about the antenna as well as some basic
design info and how its physically constructed.

I don't mind tackling a construction project but I do need some
help on basic design and construction, phasing line dimensions, and
basically how the antenna might be constructed.

Any help on this would be deeply appreciated.

73,

Paul Graziani WD5BIV
pjgraziani@ualr.edu

--
|Fidonet: Paul Graziani 1:3821/7
|Internet: Paul.Graziani@f7.n3821.z1.fidonet.org
|
| Standard disclaimer: The views of this user are strictly his own.

1897. NORAD Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.810351943@dolphin>
Source record: 24205

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated daily) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1898. Re: MIR mission Time

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: Keith.Fritzinger@bbs.mhv.net
Message-ID: <42j28k$jlq@over.mhv.net>
Source record: 24206

Buster (lathrop@azstarnet.com) wrote:

: Anybody know what mission times are like for the nauts up
: in MIR. I'd like to be able do other things when they won't be on the
: radio. I'm hoping for a voice contact, but I don't want to stay up 'till
: 3am if they sleep then.

: BUSTER
Mir stays on Moscow time. I'm in the Eastern US and have found that early morning passes ~7:00 EST are best. If you stay up late after ~1:30 is also OK. "Prime time" 6:00PM-Midnight is right in the middle of their sleep period, so contacts are rare. Good Luck! & 73 de N2OWV

1899. Re: Will STS-69 be a SAREX mission? unfortunately no.

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <42j627$a87@paperboy.ids.net>
Source record: 24207

In article
<Pine.A32.3.91.950905150940.31688A-100000@storm.atms.purdue.edu> BRETSKI,
bap@storm.atms.purdue.edu writes:
>Will STS-69 be a SAREX mission and how do we find out which
>missions will be?

STS-69 pilot Ken Cockrell did get his ham license for his previous
shuttle flight (STS-56) and there was some preliminary discussion about
manifesting SAREX on STS-69, but the decision was made no to.

Unfortunately while many people would like to fly SAREX on every single
mission it can't be done. Most of the SAREX team members are volunteers,
and have full time jobs which take priority - especially those who are
responsible for the actual day-to-day shuttle operations!

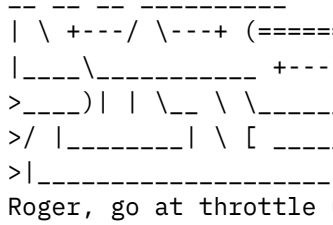
In addition it costs $$$$$ to make up the QSL cards for each mission.

At the present the SAREX team is supporting about 4 missions each year,
or about half of the shuttle flights.

For the remainder of this calendar year the only planned SAREX mission is
STS-74, the second Mir docking. It's planned for late October and will
include commander Ken Cameron KB5AWP and mission specialists Bill
McArthur KC5ACR, Jerry Ross N5SCW (I think - this is off the top of my
head), and non-licensed astronauts pilot Jim Halsell and mission
specialist Chris Hadfield. It's only a six day mission but it has
several enthusiastic hams on board so I'd expect a bunch of ham activity.

Several missions for next year (1996) have been discussed as potential
SAREX flights. The SAREX principal investigator Matt Bordelon KC5BTL
will be presenting a paper on SAREX's status at the AMSAT Symposium in
October and I'm certain he'll be talking about which missions and which
astronauts will be getting their licenses.

For more info on the Symposium check out the AMSAT WWW page.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1900. Re: GOES-8 Signal Strength ?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: John Edwards <jedwards>
Message-ID: <42k4r2$q1l@news.chattanooga.net>
Source record: 24208

Rolf Mathison <rolf_mathison@hpatc1.desk.hp.com> wrote:
>I've been noticing a severe drop in signal strength from GOES-8 starting about
>noon (local time) degrading to essentially useless until after sundown. Is
>this normal? I'm usually not home during the day and most of my monitoring
>is at night. I'm using twin 44-element yagis to a QFAX card. Any ideas?
>
Hmmm... I know that my father (WA4DYD) has been getting his GEOS-8 station
set up and he has not complained about anything... actually he was out testing
his receive converter at around 7-8pm Eastern time recently and was receiving
the signal with a single 44 -element loop yagi and no pre-amp.

What kind of grey scale resolution can you receive with the QFAX card?
256 level? Also, where can one purchase such a card? My father is in
the process of building one to go into his PC... I was thinking about
writing the software for Linux.

--

John W. Edwards (KB4BKV)
Accurate Automation Corporation
jedwards@accurate-automation.com
Office - (615) 894 - 4646

1901. Re: AO-27 SCHEDULE

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: mbv@ti.com
Message-ID: <42kp5d$mq4@superb.csc.ti.com>
Source record: 24209

In article <42iftq$l6u@superb.csc.ti.com>, mbv@ti.com (Ken Durham) says:
>

>Is this satellite functional during the week or is the schedule sporadic
>like it used to be?
>
>~~~~~~

.....never mind.....Bad coax.

Ken Durham K5MBV mbv@ti.com

1902. WWW pages

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: Geoff Brown <equinox@itl.net>
Message-ID: <42kt1c$h58@auntie.bbcnc.org.uk>
Source record: 24210

```
Readers may like to look at:
http://user.itl.net/~equinox
for great Sat news....checkout NOVA!
Geoff GJ4ICD
```

1903. DO-17 QSL Info Needed

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: kory@avatar.com
Message-ID: <42km6q$sms@avatar.avatar.com>
Source record: 24211

I just recently was able to catch DO-17's telem. downlink and wanted to know where to send it for a QSL card. Do I just send the print out of the raw telemetry as received by my TNC? Do I need to include a SASE?

Thanks,
Kory
KE6VWO

1904. 29 MHz. Turnstile help

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: pjgraziani@ualr.edu
Message-ID: <1995Sep6.191856@ualr.edu>
Source record: 24212

Hello,

I happen to be totally blind so diagrams don't do me much good needless to say. :-) I would appreciate it if someone could e-mail me some basic information on the turnstile (sp?) antenna for 29 MHz RS satellite downlink reception.

A brief general statement about the antenna as well as some basic design info and how its physically constructed.

I don't mind tackling a construction project but I do need some help on basic design and construction, phasing line dimensions, and basically how the antenna might be constructed.

Any help on this would be deeply appreciated.

73,

Paul Graziani WD5BIV
pjgraziani@ualr.edu

1905. Is AO-21 still alive?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-06 00:00:00 UTC
From: Douglas Braun <dbraun@hol.gr>
Message-ID: <42klp7$t9s@newsflash.hol.gr>
Source record: 24213

Is AO-11 (also known as RS-14) still alive?
I haven't heard anything in several days of trying on 145.987.

Also, does anyone know if the UO-11 S-band becaon works?
If you know the answer to that, perhaps you could also
tell me: What other satellites (besides AO-13, of course)
have S-band beacons?

Thanks a lot,

Doug Braun (SV/N1OWU)

1906. STS-69 Element_Set (95250.690)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-07 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95250.690@thomsoft.com>
Source record: 24115
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95250.69009030 .00007042 21141-9 68402-4 0 17
2 23667 28.4656 43.5965 0007032 256.1921 148.8734 15.65089913 21

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1907. Bird Dog vs Chara

Newsgroup: rec.radio.amateur.space
Date: 1995-09-07 00:00:00 UTC
From: wallnerw@crash.cts.com
Message-ID: <DEInCD.Jvo@crash.cts.com>
Source record: 24116

Hello all,

I have simply an optical interest in watching and knowing the identity of EOS passing over Southern California. I installed Bird Dog and have TLE669. However, I have been unable to confirm, visually, the overflight "win"dows it produces. I am *reasonably* confident I have correct "station" numbers.

When I compare the windows listed by Bird Dog, they are off by about 30 minutes when compared with the predictions I get from chara.gsu.edu. I do believe I confirmed (with only a 2 minute error) Mir last night (9/5) based on the chara prediction so, I tend to doubt Bird Dog.

I have a hand-held scanner tuned to 145.2, 145.55 and 145.8. Based on their work schedule as previously posted here, should I be able to pick up any voice?

TIA

---
* Bill Wallner "I tell you this - no eternal reward will *
* in San Diego forgive us now for wasting the dawn" *
* (California) James Douglas Morrison *

1908. Re: September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-07 00:00:00 UTC
From: headshrnkr@aol.com
Message-ID: <42o96k$3ka@newsbf02.news.aol.com>
Source record: 24117
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

May I ask why you needed to SPAM this ad across 4 boards? One posting would have really been fine, ok?

"We, the people are the rightful masters of both the congress and the courts - not to overthrow the constitition, but to overthrow men who pervert the constitution" - A. Lincoln

Bruce J. Howes
HeadShrnkr@aol.com

1909. Re: September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-07 00:00:00 UTC
From: lewis@phoenix.phoenix.net
Message-ID: <lewis-0709951943240001@dial126.phoenix.net>
Source record: 24118
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <NEWTNews.810501690.25979.amsoft@amsoft>, amsoft@epix.net wrote:

> PRESS RELEASE, AMATEUR RADIO DISTRIBUTION ONLY, SEPTEMBER 5, 1995:
>
> PUBLISHER: AmSoft
> AUTHOR: Pete deVolpi, KC3TL
> E-MAIL: amsoft@epix.net
> MAIL: AmSoft, PO Box 666, New Cumberland, PA 17070-0666
> TELEPHONE: 717-938-8249
> FACSIMILE: 717-938-6767
>
> AmSoft announces the September 1995 release of it's CD-ROM.
> More than 850,000 callsigns are found in seconds with this CD-ROM.
> Includes calls issued up to 7 August, 1995.

Damn, cut off is one day before my upgrade was posted by FCC ;-)

<<<<SNIP>>>>

Over 1350
> amateur radio modification files. Windows/Win95/OS2/DOS friendly.
> Retail Price $39.00 plus Shipping USA $3, Foreign $5 Via Air Mail
> FedEx to most of the USA Lower 48 States Overnight for only $11.00
>
> For more detailed information please E-Mail amsoft@epix.net

Are there any files or programs for the Macintosh, ie. is this a PC/Mac compatible cd-rom?

I use a Power-Mac and have Softwindows to run Dos and windows software, but I prefer native software for the speed and ease of use. Can I use your product with my system?

Lewis
~*-,._.,-*~'`^`'~*-,._.,-*~'`^`'~*-,._.,-*~'`^`'~*-,._.,-*~'`^`'~*-,._.,-*~

Lewis Stephens KC5PSX lewis@phoenix.phoenix.net Pasadena,Texas

~*-,._.,-*~'`^`'~*-,._.,-*~'`^`'~*-,._.,-*~'`^`'~*-,._.,-*~'`^`'~*-,._.,-*~

1910. chicago area: please retransmit shuttle on a repeater

Newsgroup: rec.radio.amateur.space
Date: 1995-09-07 00:00:00 UTC
From: U54293@uicvm.uic.edu
Message-ID: <95250.095015U54293@uicvm.uic.edu>
Source record: 24119
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.misc

Will someone in the chicago please transmit shuttle audio on a regular basis
on a chicago area repeater (preferably 2-meters, but anything would be great)!

Thanks much..

-boB

1911. Re: Bird Dog vs Chara

Newsgroup: rec.radio.amateur.space
Date: 1995-09-07 00:00:00 UTC
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Message-ID: <Pine.SOL.3.91.950907162818.16922A-100000@spacelink>
Source record: 24120

I've been chasing MIR regularly for several years. If the Cosmonauts are up and working, you may here something. It may be voice, but more likely it will be digital packet transmissions from earth stations to the satellite and return. I've been monitoring the space station for several weeks without hearing a peep out of them since the docking mission with "Atlantis". You should listen to 145.550 for downlink from both MIR and the shuttle fleet. It's hard to confirm the bird when you can't hear or see it.
-

On Thu, 7 Sep 1995, Bill Wallner wrote:

> Hello all,
>
> I have simply an optical interest in watching and knowing the identity of
> EOS passing over Southern California. I installed Bird Dog and have TLE669.
> However, I have been unable to confirm, visually, the overflight
> "win"dows it produces. I am *reasonably* confident I have correct "station"
> numbers.
>
> When I compare the windows listed by Bird Dog, they are off by about 30
> minutes when compared with the predictions I get from chara.gsu.edu. I do
> believe I confirmed (with only a 2 minute error) Mir last night (9/5) based
> on the chara prediction so, I tend to doubt Bird Dog.
>
> I have a hand-held scanner tuned to 145.2, 145.55 and 145.8. Based on their
> work schedule as previously posted here, should I be able to pick up any
> voice?
>
> TIA
>
> --
> * Bill Wallner "I tell you this - no eternal reward will *
> * in San Diego forgive us now for wasting the dawn" *
> * (California) James Douglas Morrison *
> --
>
>
>

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

1912. SAT TRACKING PROGRAM

Newsgroup: rec.radio.amateur.space
Date: 1995-09-07 00:00:00 UTC
From: waboo@cltr.uq.oz.au
Message-ID: <42np24$2o8@dingo.cc.uq.oz.au>
Source record: 24121

Anybody got a good satellite tracking program. I have ORBITS2 and QUICKTRAK. Are there any better? and can you send me it. I can ftp if required.
warren VK4ZBW

1913. September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-07 00:00:00 UTC
From: amsoft@epix.net
Message-ID: <NEWTNews.810501690.25979.amsoft@amsoft>
Source record: 24214
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

PRESS RELEASE, AMATEUR RADIO DISTRIBUTION ONLY, SEPTEMBER 5, 1995:

PUBLISHER: AmSoft
AUTHOR: Pete deVolpi, KC3TL
E-MAIL: amsoft@epix.net
MAIL: AmSoft, PO Box 666, New Cumberland, PA 17070-0666
TELEPHONE: 717-938-8249
FACSIMILE: 717-938-6767

AmSoft announces the September 1995 release of it's CD-ROM.
More than 850,000 callsigns are found in seconds with this CD-ROM.
Includes calls issued up to 7 August, 1995. Every issue comes with
the AmCall auto-logging station logbook which uses this CD-ROM.
Help locate lost & missing children with the 1400 image library from
the Heidi Search Center & Center for Missing or Exploited Persons.
A Complete user interface "CDVIEW" for the Ham Radio Software
library eliminates the need for you to use DOS commands and
hard drive space. The massive 23,599 file amateur radio software
compilation could easily fill 870 Megabytes of space. Over 1350
amateur radio modification files. Windows/Win95/OS2/DOS friendly.
Retail Price $39.00 plus Shipping USA $3, Foreign $5 Via Air Mail
FedEx to most of the USA Lower 48 States Overnight for only $11.00

For more detailed information please E-Mail amsoft@epix.net

1914. satellite catalogue

Newsgroup: rec.radio.amateur.space
Date: 1995-09-08 00:00:00 UTC
From: phjj@hippo.ru.ac.za
Message-ID: <42pfep$reg@hippo.ru.ac.za>
Source record: 24122
Cross-posted to: sci.geo.satellite-nav,rec.radio.amateur.space

I am looking for a program (free) or net resource that details currently active earth-orbit satellites. I am particularly interested in geostationary platforms with LS-band downlinks. I am a radio astronomer and need to find a quiet patch in the LS-band.

Please e-mail replies, I do not subscribe to all of the groups that I have posted this request to.

Thanks
Justin Jonas
Radio Astronomy Group, Dept. Physics & Electronics, Rhodes University
Grahamstown, South Africa

1915. STS-69 Element_Set (95251.702)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-08 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95251.702@thomsoft.com>
Source record: 24123
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95251.70216632 .00000347 00000-0 00000 0 0 72
2 23667 28.4655 36.3095 0006277 265.7528 94.2359 15.64893328 189

Satellite: STS-69
Catalog number: 23667
Epoch time: 95251.70216632 (08 SEP 95 16:51:07.17 UTC)
Element set: GSFC-007
Inclination: 28.4655 deg
RA of node: 36.3095 deg Space Shuttle Flight STS-69
Eccentricity: 0.0006277 Keplerian Elements
Arg of perigee: 265.7528 deg
Mean anomaly: 94.2359 deg
Mean motion: 15.64893328 rev/day Semi-major Axis: 6751.6777 Km
Decay rate: 0.35E-05 rev/day*2 Apogee Alt: 377.53 Km
Epoch rev: 18 Perigee Alt: 369.05 Km

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1916. Re: QSL card for DOVE?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-08 00:00:00 UTC
From: I121171@amsat.org
Message-ID: <42qfnu$53h@sgi.iunet.it>
Source record: 24124

> It took about 8 months to receive my card. I sent my report on 3/20/94.
>
Can you post a GIF somewhere to download please ?

1917. STS-69 Element_Set (95251.920)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-08 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95251.920@thomsoft.com>
Source record: 24125
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95251.92014586 .00005436 12598-9 53066-4 0 39
2 23667 28.4638 34.7444 0005782 272.2110 238.3938 15.64975443 217

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

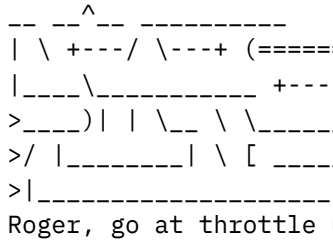
1918. Re: chicago area: please retransmit shuttle on a repeater

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <42r076$83k@paperboy.ids.net>
Source record: 24126
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.misc

In article <95250.095015U54293@uicvm.uic.edu> , U54293@uicvm.uic.edu
writes:
>Will someone in the chicago please transmit shuttle audio on a regular
basis
>on a chicago area repeater (preferably 2-meters, but anything would be
great)!
>
>Thanks much..

Suggestion - why don't you do it? It's an excellent service to the local
amateur radio community, and you'll earn the appreciation of the local
ham community, and space enthusiasts.

Or get together with a bunch of space enthusiasts and hams and get
together the resources.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1919. Re: Bird Dog vs Chara

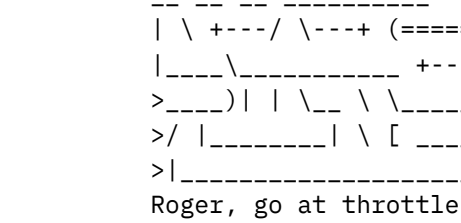
Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <42qvvn$83k@paperboy.ids.net>
Source record: 24127

In article <DEInCD.Jvo@crash.cts.com> Bill Wallner,
wallnerw@crash.cts.com writes:
>
>I have simply an optical interest in watching and knowing the identity of
>EOS passing over Southern California. I installed Bird Dog and have
TLE669.
>However, I have been unable to confirm, visually, the overflight
>"win"dows it produces. I am *reasonably* confident I have correct
"station"
>numbers.
>
>When I compare the windows listed by Bird Dog, they are off by about 30
>minutes when compared with the predictions I get from chara.gsu.edu. I
do
>believe I confirmed (with only a 2 minute error) Mir last night (9/5)
based
>on the chara prediction so, I tend to doubt Bird Dog.

Check your time zone. It may seem obvious, but in many many cases I've
discovered that I've inputted the wrong time zone (or daylight savings
time). There's no way any reasonable tracking program could be off by
half an hour.

>I have a hand-held scanner tuned to 145.2, 145.55 and 145.8. Based on
their
>work schedule as previously posted here, should I be able to pick up any
>voice?

A handheld scanner or two meter transciever with a rubber-duckie is
enough to hear Mir or the hsuttle quite clearly. Provided --- that they
are using their ham equipment. (for example you will *NOT* hear any ham
radio from the STS-69 or STS-73 shuttle missions because they don't have
ham radio equipment onboard). The Mir radio is off and on, depending on
the cosmonauts work schedule, and power budget. On occasion Mir's in a
bad attitude where the antenna is blocked, but that's the exception
rather than the rule.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1920. Re: September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: bob@ultranet.com
Message-ID: <42t1q7$kr7@caesar.ultra.net>
Source record: 24128
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <42o96k$3ka@newsbf02.news.aol.com>, headshrnkr@aol.com proclaims...
>
>May I ask why you needed to SPAM this ad across 4 boards? One posting
>would have really been fine, ok?
>
>--
>--------------------------------
>
>
>"We, the people are the rightful masters of both the congress and the
>courts - not to overthrow the constitition, but to overthrow men who
>pervert the constitution" - A. Lincoln
>
>Bruce J. Howes
>HeadShrnkr@aol.com

I dont consider this a spam at all. Actually they are all places
where people who might get benefit from this fine product can be
found and they might appreciate knowing where they can get this
CDROM.

--
****
*** bob@ultranet.com ***
*** 74504.1273@compuserve.com ***
*** Amateur Radio Station KD1GG ***
*** AARL Club Station KB1BRM ***
****

1921. NORAD Two-Line Orbital Element Sets (TLE672)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.810610373@dolphin>
Source record: 24129

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #672 -
Alouette 1
1 00424U 62049A 95249.90724332 -.00001521 00000-0 -18036-2 0 1331
2 00424 80.4643 204.2409 0024434 46.4023 313.9113 13.67846745643470
ATS 1
1 02608U 66110A 95235.01105310 .00000102 00000-0 10000-3 0 9420
2 02608 14.6443 355.9733 0010162 70.9499 289.2146 1.00349976 21861
ATS 3
1 03029U 67111A 95246.74774054 -.00000127 00000-0 10000-3 0 3960
2 03029 14.8496 2.8124 0008371 262.8947 240.4766 1.00273146101883
Cosmos 398
1 04966U 71016A 95250.91146710 .00363193 97697-5 30085-3 0 9920
2 04966 51.3871 197.7172 0457314 26.3014 336.0754 15.26270662837694
Starlette
1 07646U 75010A 95248.23696130 -.00000134 00000-0 81221-5 0 9127
2 07646 49.8297 197.1234 0205798 6.0793 354.2527 13.82189747 39412
LAGEOS
1 08820U 76039A 95247.19865787 .00000024 00000-0 10000-3 0 1331
2 08820 109.8519 287.6938 0044058 190.3723 169.6201 6.38664406195500
ETS-2
1 09852U 77014A 95244.32912431 -.00000291 00000-0 10000-3 0 372
2 09852 12.8475 36.2611 0004756 88.9250 271.1938 1.00007528 14746
GOES 2
1 10061U 77048A 95250.50926850 .00000048 00000-0 10000-3 0 5745
2 10061 11.9455 40.4055 0012628 125.8994 188.9109 1.00294544 11591
IUE
1 10637U 78012A 95244.30396100 -.00000226 00000-0 10000-3 0 1651
2 10637 35.3175 87.7757 1336332 49.0023 272.5364 1.00307567 17021
GPS BI-01
1 10684U 78020A 95247.52568319 -.00000021 00000-0 10000-3 0 3859
2 10684 64.8740 32.3528 0061094 162.8733 197.3531 1.98069502113737
```

```
GPS BI-02
1 10893U 78047A 95247.14100153 .00000058 00000-0 10000-3 0 1808
2 10893 63.2903 270.1952 0223766 14.2145 346.4829 2.01627531127020
GOES 3
1 10953U 78062A 95249.47055856 .00000089 00000-0 10000-3 0 5289
2 10953 10.9164 43.2139 0006668 123.2428 198.7641 1.00351074 16195
SeaSat 1
1 10967U 78064A 95248.67829380 -.00000053 00000-0 27068-4 0 4260
2 10967 108.0015 304.0442 0002984 241.6346 118.4485 14.38052116900401
GPS BI-03
1 11054U 78093A 95249.22856134 .00000050 00000-0 10000-3 0 3485
2 11054 62.9923 268.5623 0046110 180.5350 179.5145 1.93505368123143
Nimbus 7
1 11080U 78098A 95249.16321940 -.00000098 00000-0 -50839-4 0 5272
2 11080 98.9890 119.6365 0009585 17.7137 342.4349 13.83704804851752
GPS BI-04
1 11141U 78112A 95251.27530276 -.00000055 00000-0 10000-3 0 9996
2 11141 64.8882 34.2143 0048827 27.3698 332.8996 1.92894609 12424
GPS BI-05
1 11690U 80011A 95247.66393517 -.00000018 00000-0 10000-3 0 9347
2 11690 65.2295 33.9237 0149034 191.9935 167.6334 2.00566351128451
GPS BI-06
1 11783U 80032A 95249.28070516 .00000049 00000-0 10000-3 0 977
2 11783 62.4289 263.2236 0219050 29.2345 332.0274 2.03456894113039
GOES 5
1 12472U 81049A 95246.39256126 -.00000291 00000-0 10000-3 0 8770
2 12472 7.6701 53.1937 0007614 38.8162 321.3864 1.00246566 10214
Cosmos 1383
1 13301U 82066A 95247.26518951 .00000044 00000-0 34130-4 0 4318
2 13301 82.9320 344.1668 0026738 313.9556 45.9398 13.68067657658145
LandSat 4
1 13367U 82072A 95248.78672968 -.00000025 00000-0 43401-5 0 7689
2 13367 98.1211 302.6735 0006511 320.0235 40.0475 14.57155621698952
DMSP B5D2-1
1 13736U 82118A 95250.99039765 .00000042 00000-0 35979-4 0 8430
2 13736 98.6293 78.8922 0009155 129.3084 230.8903 14.25750630660710
IRAS
1 13777U 83004A 95250.55230351 -.00000223 00000-0 -12368-3 0 730
2 13777 98.9678 77.0784 0012278 157.4089 202.7615 13.99238778313705
Cosmos 1447
1 13916U 83021A 95249.84887919 .00000020 00000-0 48327-5 0 5297
2 13916 82.9411 41.3400 0036403 223.7608 136.0664 13.74329450624683
TDRS 1
1 13969U 83026B 95249.44959439 .00000066 00000-0 00000+0 0 4618
2 13969 8.5134 46.5044 0002564 131.0282 190.7895 1.00264761 18520
GOES 6
1 14050U 83041A 95250.47253457 -.00000161 00000-0 10000-3 0 4408
2 14050 6.4980 56.3963 0003529 28.6835 330.8728 1.00326948103347
OSCAR 10
1 14129U 83058B 95248.37251192 .00000162 00000-0 10000-3 0 3727
```

```
2 14129 26.4527 249.8576 5985675 307.3504 11.6914 2.05877424 63980
LandSat 5
1 14780U 84021A 95250.74488245 -.00000018 00000-0 58293-5 0 3455
2 14780 98.1025 304.9695 0004006 323.5717 36.5206 14.57163608612654
UoSat 2
1 14781U 84021B 95247.51977247 .00000083 00000-0 21856-4 0 8249
2 14781 97.7850 246.3440 0010728 291.6570 68.3489 14.69372523615552
GPS BI-09
1 15039U 84059A 95247.72352137 -.00000033 00000-0 10000-3 0 3626
2 15039 64.5504 28.6780 0082049 18.3221 341.9725 1.92302258 81928
Cosmos 1574
1 15055U 84062A 95249.59032950 .00000033 00000-0 18979-4 0 7305
2 15055 82.9567 95.8478 0029164 54.6800 305.7077 13.73625670561912
GPS BI-10
1 15271U 84097A 95248.32476028 .00000057 00000-0 10000-3 0 519
2 15271 62.1246 263.6574 0157051 354.1410 5.7321 2.00602636 79536
Cosmos 1602
1 15331U 84105A 95250.85914829 .00000233 00000-0 24551-4 0 4161
2 15331 82.5317 18.4497 0020220 159.0334 201.1716 14.84659745590932
NOAA 9
1 15427U 84123A 95251.11764608 .00000048 00000-0 49178-4 0 3902
2 15427 98.9881 310.3083 0015997 36.8281 323.3984 14.13729049553635
GPS BI-11
1 16129U 85093A 95249.66049843 -.00000046 00000-0 10000-3 0 6759
2 16129 65.2142 31.8753 0155504 86.4111 275.3599 1.89368073 16539
Mir
1 16609U 86017A 95251.24480452 .00003730 00000-0 56643-4 0 2270
2 16609 51.6442 101.8423 0003908 70.3548 289.7861 15.57377216545876
SPOT 1
1 16613U 86019A 95248.22368190 .00000090 00000-0 62356-4 0 8488
2 16613 98.6432 317.7665 0001564 47.5920 312.5389 14.20068361179727
Cosmos 1766
1 16881U 86055A 95248.03977649 .00000112 00000-0 10628-4 0 3316
2 16881 82.5180 78.9249 0018109 196.3373 163.7261 14.83651992491413
EGP
1 16908U 86061A 95249.22030942 -.00000083 00000-0 10000-3 0 263
2 16908 50.0081 153.1099 0011424 9.0696 351.0343 12.44413032 80922
NOAA 10
1 16969U 86073A 95251.01563535 .00000008 00000-0 21473-4 0 3022
2 16969 98.5141 251.4090 0014096 98.3389 261.9388 14.24953034466279
MOS-1
1 17527U 87018A 95248.55124131 .00000092 00000-0 10000-3 0 2433
2 17527 98.9810 311.6212 0001225 150.1414 209.9827 13.95257913435038
GOES 7
1 17561U 87022A 95250.58551009 .00000057 00000-0 10000-3 0 5322
2 17561 2.4966 71.5323 0002275 321.0071 29.0452 1.00267345 14454
Kvant-1
1 17845U 87030A 95250.79561853 -.00014876 00000-0 -19308-3 0 3703
2 17845 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699479940
DMSP B5D2-3
```

```
1 18123U 87053A 95250.98333235 .00000022 00000-0 33840-4 0 1296
2 18123 98.7761 80.8385 0014580 346.7987 13.2815 14.15416582424433
RS-10/11
1 18129U 87054A 95250.21961361 .00000179 00000-0 17919-3 0 1040
2 18129 82.9257 358.4265 0010195 221.4929 138.5466 13.72357072411224
Meteor 2-16
1 18312U 87068A 95250.86586924 .00000042 00000-0 24784-4 0 4230
2 18312 82.5511 216.7815 0011243 303.2073 56.8014 13.84061837406980
Meteor 2-17
1 18820U 88005A 95250.58147033 .00000029 00000-0 12456-4 0 7173
2 18820 82.5394 272.7037 0017524 9.3142 350.8338 13.84742930384273
DMSP B5D2-4
1 18822U 88006A 95250.57361816 -.00000009 00000-0 14450-4 0 631
2 18822 98.4000 90.9455 0006649 107.1753 253.0153 14.23163434394236
Glonass 34
1 19163U 88043A 95246.87010312 .00000036 00000-0 10000-3 0 153
2 19163 65.1567 95.5148 0008040 153.0004 207.1229 2.13102608 56118
Glonass 36
1 19165U 88043C 95250.68076674 .00000046 00000-0 10000-3 0 4203
2 19165 65.1591 95.3573 0000495 200.6053 159.5107 2.13102288 56812
METEOSAT 3
1 19215U 88051A 95250.26311798 -.00000298 00000-0 10000-3 0 1736
2 19215 2.6760 69.3619 0001031 58.0816 242.8295 1.00289003 14390
AO-13
1 19216U 88051B 95250.98352366 .00000029 00000-0 16119-4 0 875
2 19216 57.4548 165.8399 7324236 18.2338 357.9950 2.09720364 23902
OKEAN 1
1 19274U 88056A 95248.87388104 .00000268 00000-0 30468-4 0 315
2 19274 82.5142 178.6321 0020197 349.3464 10.7317 14.82379220387103
Meteor 3-2
1 19336U 88064A 95251.24511024 .00000051 00000-0 10000-3 0 4219
2 19336 82.5415 6.6340 0015746 221.4016 138.5905 13.16974471342235
Glonass 39
1 19503U 88085C 95250.24005226 -.00000062 00000-0 10000-3 0 3121
2 19503 65.6766 334.2845 0008508 160.1500 199.9116 2.13101890 54290
NOAA 11
1 19531U 88089A 95251.00713619 -.00000018 00000-0 15787-4 0 1984
2 19531 99.1981 256.5970 0011681 321.0435 38.9893 14.13062135358458
TDRS 2
1 19548U 88091B 95245.99760681 -.00000203 00000-0 00000+0 0 1441
2 19548 1.9096 73.9982 0006781 117.0317 234.4182 1.00263639 12630
Glonass 40
1 19749U 89001A 95250.74767427 .00000046 00000-0 10000-3 0 5252
2 19749 65.0904 94.9288 0004999 253.9528 106.0733 2.13101388 51813
Glonass 41
1 19750U 89001B 95248.92600470 .00000048 00000-0 10000-3 0 4357
2 19750 65.1220 95.0556 0007106 228.3371 131.6860 2.13101864 51793
GPS BII-01
1 19802U 89013A 95248.95773921 -.00000000 00000-0 10000-3 0 1001
2 19802 55.2368 121.9817 0028290 168.9032 191.2142 2.00553922 47997
```

```
Akebono
1 19822U 89016A 95251.11013972 .00010576 00000-0 51017-3 0 5646
2 19822 75.0978 287.4594 3775690 319.0000 18.0380 7.87403523144344
Meteor 2-18
1 19851U 89018A 95250.74960945 .00000065 00000-0 44766-4 0 4217
2 19851 82.5237 147.0869 0015893 52.7640 307.4957 13.84396102329611
MOP-1
1 19876U 89020B 95241.94209128 .00000058 00000-0 10000-3 0 1355
2 19876 1.3624 73.3585 0006355 38.9433 214.8279 1.00280027 3757
TDRS 3
1 19883U 89021B 95250.48390063 -.00000297 00000-0 00000+0 0 1173
2 19883 0.0274 77.8791 0004045 124.0148 277.3179 1.00266829196271
GPS BII-02
1 20061U 89044A 95249.29756702 -.00000022 00000-0 10000-3 0 1127
2 20061 54.3812 298.1342 0148960 215.8534 143.2060 2.00562761 45744
Nadezhda 1
1 20103U 89050A 95251.12706643 .00000043 00000-0 29215-4 0 5063
2 20103 82.9622 317.4297 0038756 120.4925 240.0068 13.73856836309813
GPS BII-03
1 20185U 89064A 95246.64229994 -.00000014 00000-0 10000-3 0 1312
2 20185 55.0244 122.6175 0014166 307.0150 52.9137 2.00569167 44265
GMS 4
1 20217U 89070A 95248.63907897 -.00000393 00000-0 10000-3 0 2367
2 20217 1.1964 75.4029 0001141 344.5447 274.7039 1.00274170 22558
INTERCOSMOS 24
1 20261U 89080A 95250.04892082 .00000055 00000-0 15034-4 0 4374
2 20261 82.5924 92.2250 1242240 327.7991 25.2723 12.47273183270486
GPS BII-04
1 20302U 89085A 95250.17000329 .00000002 00000-0 10000-3 0 1112
2 20302 53.3475 238.0891 0019688 185.5012 174.4849 2.00557845 43135
Meteor 3-3
1 20305U 89086A 95250.71381104 .00000044 00000-0 10000-3 0 3881
2 20305 82.5530 320.5688 0005405 290.9936 69.0586 13.04411093281246
COBE
1 20322U 89089A 95248.56841721 -.00000294 00000-0 -16000-3 0 1499
2 20322 98.9568 263.4048 0009768 108.8629 251.3593 14.03448328296863
Kvant-2
1 20335U 89093A 95250.79561853 -.00014876 00000-0 -19308-3 0 3724
2 20335 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699328952
GPS BII-05
1 20361U 89097A 95247.68923026 .00000005 00000-0 10000-3 0 9672
2 20361 55.8153 64.6273 0093476 118.1463 242.9073 2.00563156 32563
COSMOS 2054 (Altair-1)
1 20391U 89101A 95250.40429094 -.00000158 00000-0 10000-3 0 2179
2 20391 3.2935 65.3071 0004015 73.0857 337.2487 1.00274731 21159
SPOT 2
1 20436U 90005A 95251.24084325 .00000169 00000-0 10000-3 0 9719
2 20436 98.7279 324.2433 0002008 43.6512 316.4788 14.20028303291687
UO-14
1 20437U 90005B 95249.18390252 .00000024 00000-0 26169-4 0 1232
```

```
2 20437 98.5652 332.2424 0010884 325.4345 34.6128 14.29895917293328
UO-15
1 20438U 90005C 95250.73109221 -.00000008 00000-0 14088-4 0 9205
2 20438 98.5609 332.1591 0010407 326.5524 33.4996 14.29212982293434
PACSAT
1 20439U 90005D 95250.20219512 -.00000025 00000-0 72217-5 0 9223
2 20439 98.5713 335.0213 0011126 323.0978 36.9440 14.29949887293486
DO-17
1 20440U 90005E 95249.20307156 .00000037 00000-0 31047-4 0 9222
2 20440 98.5782 334.5379 0011574 325.7480 34.2949 14.30091590293368
WO-18
1 20441U 90005F 95247.78763568 .00000007 00000-0 19784-4 0 9262
2 20441 98.5756 333.1060 0012107 329.6278 30.4201 14.30062193293167
LO-19
1 20442U 90005G 95249.20395923 .00000021 00000-0 24817-4 0 9212
2 20442 98.5798 334.8908 0012140 324.4171 35.6200 14.30166012293380
GPS BII-06
1 20452U 90008A 95249.07927688 -.00000039 00000-0 10000-3 0 703
2 20452 54.0321 178.3713 0057796 82.5358 278.1074 2.00551449 41098
MOS-1B
1 20478U 90013A 95249.82460225 .00000090 00000-0 10000-3 0 8332
2 20478 99.1413 317.4794 0000383 277.8856 82.2263 13.94864213204912
DEBUT
1 20479U 90013B 95247.68991162 -.00000028 00000-0 37291-5 0 9217
2 20479 99.0698 321.6584 0541353 52.8989 312.0333 12.83333932261153
FO-20
1 20480U 90013C 95248.17041256 -.00000002 00000-0 63277-4 0 8183
2 20480 99.0702 321.8906 0541133 52.3084 312.5830 12.83231510261200
MOS-1B R/B
1 20491U 90013D 95249.42006932 .00000511 00000-0 10355-2 0 1685
2 20491 99.0556 19.2247 0468908 241.2234 114.1018 13.02990761264770
LACE
1 20496U 90015A 95248.49296001 .00001016 00000-0 37863-4 0 5721
2 20496 43.1038 33.2591 0010111 358.1491 1.9328 15.34784758309917
Nadezhda 2
1 20508U 90017A 95251.11282033 .00000039 00000-0 24836-4 0 5056
2 20508 82.9499 92.0056 0046086 73.9575 286.6650 13.73497566277033
OKEAN 2
1 20510U 90018A 95250.68775868 .00000114 00000-0 12409-4 0 4409
2 20510 82.5257 129.2071 0018644 159.7098 200.4840 14.78519696297780
GPS BII-07
1 20533U 90025A 95250.98565985 -.00000029 00000-0 10000-3 0 958
2 20533 54.8150 298.7109 0045649 79.9246 280.6487 2.00569044 39905
PegSat
1 20546U 90028A 95250.85442009 .00007978 00000-0 16048-3 0 8384
2 20546 94.1176 191.1120 0066140 21.0397 339.3556 15.44260387301234
HST
1 20580U 90037B 95248.42597729 .00000381 00000-0 22540-4 0 7084
2 20580 28.4704 255.2569 0006891 61.0477 299.0807 14.90923453 95891
MACSAT 2
```

```
1 20608U 90043B 95247.24648772 .00000199 00000-0 31638-4 0 1221
2 20608 89.9313 175.8199 0106191 340.6809 19.0401 14.64858268284280
Glonass 44
1 20619U 90045A 95250.17753693 -.00000062 00000-0 10000-3 0 2253
2 20619 65.2653 333.6678 0025217 209.2331 150.6776 2.13102465 41258
Glonass 45
1 20620U 90045B 95244.19587537 -.00000049 00000-0 10000-3 0 2279
2 20620 65.2946 333.8644 0006615 44.2594 315.8535 2.13102549 41160
Glonass 46
1 20621U 90045C 95245.20117031 -.00000055 00000-0 10000-3 0 8195
2 20621 65.2841 333.8892 0011593 189.5490 170.4775 2.13101663 41188
Kristall
1 20635U 90048A 95250.79561853 -.00014876 00000-0 -19308-3 0 1648
2 20635 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699299783
ROSAT
1 20638U 90049A 95247.80033819 -.00000145 00000-0 94028-5 0 4893
2 20638 52.9901 148.6190 0011375 346.5207 13.5443 15.07235377289122
Meteor 2-19
1 20670U 90057A 95248.00777503 -.00000069 00000-0 -75144-4 0 9209
2 20670 82.5432 215.1526 0016110 345.1576 14.9104 13.84160587262151
CRRES
1 20712U 90065A 95249.63725381 .00000647 00000-0 76541-3 0 1496
2 20712 18.1231 6.1070 7194895 164.6238 242.0146 2.35515360 36409
GPS BII-08
1 20724U 90068A 95249.81108297 .00000006 00000-0 10000-3 0 9364
2 20724 54.8587 120.0802 0120099 175.0896 185.1115 2.00565963 35741
Feng Yun1-2
1 20788U 90081A 95250.21713230 -.00000027 00000-0 10000-4 0 5107
2 20788 98.8131 260.4813 0014651 207.7501 152.2885 14.01375734256324
Meteor 2-20
1 20826U 90086A 95250.80058133 .00000077 00000-0 56079-4 0 9322
2 20826 82.5288 149.8341 0011693 232.7115 127.2976 13.83614679249652
GPS BII-09
1 20830U 90088A 95250.35614335 -.00000013 00000-0 10000-3 0 9471
2 20830 55.7713 62.5009 0067778 99.9400 260.8661 2.00556421 36396
GPS BIIA-10
1 20959U 90103A 95247.77263247 -.00000009 00000-0 10000-3 0 9122
2 20959 55.0481 122.1652 0099427 230.2230 128.9644 2.00571322 34937
DMSP B5D2-5
1 20978U 90105A 95251.09779232 .00000079 00000-0 44367-4 0 3248
2 20978 98.6310 319.0229 0078398 285.8218 73.4327 14.32575009249186
Glonass 47
1 21006U 90110A 95249.44979950 .00000049 00000-0 10000-3 0 7946
2 21006 65.0802 94.3115 0058990 188.1097 171.8804 2.13102800 36948
Glonass 48
1 21007U 90110B 95248.70041052 .00000047 00000-0 10000-3 0 9184
2 21007 65.1158 94.4206 0036206 180.2030 179.9234 2.13101180 36915
Glonass 49
1 21008U 90110C 95250.93833181 .00000044 00000-0 10000-3 0 1207
2 21008 65.0747 94.2950 0008078 269.5246 90.4676 2.13098928 36955
```

```
AO-21
1 21087U 91006A 95249.24900859 .00000093 00000-0 82657-4 0 6294
2 21087 82.9408 172.5877 0034711 283.2149 76.5136 13.74558708230868
RS-12/13
1 21089U 91007A 95250.85244590 .00000039 00000-0 25465-4 0 8284
2 21089 82.9192 39.4623 0028265 304.9489 54.9011 13.74060023230124
MOP-2
1 21140U 91015B 95249.52286748 -.00000037 00000-0 10000-3 0 979
2 21140 0.0971 306.6178 0001620 229.1525 357.6163 1.00266631 18750
Nadezhda 3
1 21152U 91019A 95251.08137328 .00000033 00000-0 18541-4 0 1963
2 21152 82.9250 355.4746 0043474 50.9087 309.5928 13.73522381224889
Glonass 50
1 21216U 91025A 95249.93781175 -.00000062 00000-0 10000-3 0 4379
2 21216 65.0184 333.3172 0007205 198.4417 161.5861 2.13102809 34469
Glonass 51
1 21217U 91025B 95248.12997737 -.00000064 00000-0 10000-3 0 8436
2 21217 65.0259 333.4023 0007286 236.3461 123.5868 2.13101664 34417
Glonass 52
1 21218U 91025C 95250.11858976 -.00000062 00000-0 10000-3 0 3152
2 21218 65.0099 333.2883 0013496 59.4766 300.7047 2.13102940 34465
GRO
1 21225U 91027B 95247.44760588 .00002017 00000-0 38627-4 0 2926
2 21225 28.4594 23.1370 0002898 197.0528 162.9980 15.42947988125584
Meteor 3-4
1 21232U 91030A 95250.89207850 .00000051 00000-0 10000-3 0 8318
2 21232 82.5397 213.0597 0013379 142.1925 218.0112 13.16468865210264
NOAA 12
1 21263U 91032A 95251.04404132 .00000086 00000-0 57768-4 0 6245
2 21263 98.5841 272.9696 0013801 20.9896 339.1849 14.22555780224205
OKEAN 3
1 21397U 91039A 95248.86155264 .00000210 00000-0 26931-4 0 1304
2 21397 82.5217 44.2259 0020700 247.0510 112.8522 14.76398057229265
GPS BIIA-11
1 21552U 91047A 95250.03449523 -.00000013 00000-0 10000-6 0 8897
2 21552 56.0552 60.2200 0065318 242.3718 116.9996 2.00561006 30576
ERS-1
1 21574U 91050A 95251.18473486 .00000226 00000-0 10000-3 0 1959
2 21574 98.5518 324.3162 0001097 103.1697 256.9052 14.32246728216931
UO-22
1 21575U 91050B 95248.22234082 .00000027 00000-0 23517-4 0 6286
2 21575 98.3888 317.5395 0008785 41.7946 318.3904 14.36988605216993
ORBCOMM-X
1 21576U 91050C 95249.17890833 .00000014 00000-0 19271-4 0 7238
2 21576 98.3868 316.7920 0004943 47.9150 312.2456 14.36397656217035
TUBSAT-A
1 21577U 91050D 95249.16955696 .00000014 00000-0 19209-4 0 6226
2 21577 98.3867 317.3254 0007591 42.6864 317.4903 14.36492693217062
SARA
1 21578U 91050E 95248.20795425 .00000182 00000-0 73018-4 0 8229
```

```
2 21578 98.4086 322.3254 0005845 46.9236 313.2440 14.39052027217205
TDRS 4
1 21639U 91054B 95250.58227097 .00000052 00000-0 00000+0 0 9368
2 21639 0.0585 286.1715 0003007 224.5377 230.7470 1.00270382109052
Meteor 3-5
1 21655U 91056A 95250.80522181 .00000051 00000-0 10000-3 0 8290
2 21655 82.5537 160.6109 0013468 152.1292 208.0555 13.16840369195379
UARS
1 21701U 91063B 95248.90464712 -.00000052 00000-0 16535-4 0 6990
2 21701 56.9837 173.1879 0005952 105.1328 255.0359 14.96421023217650
DMSP B5D2-6
1 21798U 91082A 95251.04942747 .00000063 00000-0 57125-4 0 9764
2 21798 98.9611 262.9840 0012675 315.2669 44.7480 14.13915322194919
Glonass 53
1 21853U 92005A 95248.45347698 .00000046 00000-0 10000-3 0 376
2 21853 65.0257 94.0423 0006761 192.8716 167.1962 2.13102321 28032
Glonass 54
1 21854U 92005B 95248.74273603 .00000047 00000-0 10000-3 0 1847
2 21854 65.0291 94.0241 0016111 21.1187 339.0353 2.13103748 28022
Glonass 55
1 21855U 92005C 95250.68437531 .00000046 00000-0 00000+0 0 1749
2 21855 65.0388 93.9616 0007380 193.4608 166.6021 2.13101804 28053
JERS-1
1 21867U 92007A 95249.16714510 .00001213 00000-0 10597-3 0 6568
2 21867 97.7142 325.1008 0002582 106.2855 253.8652 14.98646270195170
GPS BIIA-12
1 21890U 92009A 95247.50564163 .00000040 00000-0 10000-3 0 6958
2 21890 53.8947 238.4559 0058123 185.7527 174.1696 2.00570446 25894
GPS BIIA-13
1 21930U 92019A 95251.20131476 -.00000099 00000-0 10000-3 0 6756
2 21930 55.7182 359.9371 0038548 170.5446 189.5560 2.00567167 24898
EUVE
1 21987U 92031A 95247.22336438 .00000779 00000-0 26356-4 0 4804
2 21987 28.4330 311.8929 0010356 151.6780 208.4381 15.19399997179987
SAMPEX
1 22012U 92038A 95248.48935170 .00000070 00000-0 37528-5 0 6572
2 22012 81.6694 60.9295 0119447 25.8975 334.8149 14.91430660172642
GPS BIIA-14
1 22014U 92039A 95246.25658244 -.00000008 00000-0 10000-3 0 5825
2 22014 54.8523 180.0665 0090047 316.3744 42.9087 2.00568856 16638
Glonass 56
1 22056U 92047A 95248.23737916 -.00000064 00000-0 00000+0 0 859
2 22056 64.8536 333.4778 0005254 259.7018 100.2841 2.13103280 24093
Glonass 57
1 22057U 92047B 95250.40988520 -.00000061 00000-0 00000+0 0 803
2 22057 64.8673 333.4206 0007012 312.1580 47.8350 2.13102442 24117
Glonass 58
1 22058U 92047C 95250.34994251 -.00000062 00000-0 10000-3 0 430
2 22058 64.8561 333.4308 0007065 280.7968 79.2021 2.13103048 24167
TOPEX
```

```
1 22076U 92052A 95249.55564713 -.00000038 00000-0 10000-3 0 9042
2 22076 66.0362 83.8609 0007924 264.7348 95.2762 12.80930843143661
KO-23
1 22077U 92052B 95249.84043843 -.00000037 00000-0 10000-3 0 5192
2 22077 66.0820 64.8094 0002641 170.5328 189.5741 12.86291942144235
S80/T
1 22078U 92052C 95248.89500697 -.00000037 00000-0 10000-3 0 5169
2 22078 66.0767 65.5935 0002880 139.8436 220.2793 12.86576121144191
GPS BIIA-15
1 22108U 92058A 95250.20425923 .00000004 00000-0 10000-3 0 6169
2 22108 54.1384 239.1335 0115496 153.0010 207.5942 2.00570935 21892
FREJA
1 22161U 92064A 95247.45447889 .00000042 00000-0 59762-4 0 5433
2 22161 62.9914 247.9342 0816305 353.6389 5.4734 13.21845615140527
LAGEOS II
1 22195U 92070B 95248.75314157 -.00000009 00000-0 10000-3 0 4290
2 22195 52.6449 172.0643 0137953 311.9308 46.9566 6.47294135 67793
GPS BIIA-16
1 22231U 92079A 95249.89078528 -.00000038 00000-0 10000-3 0 5939
2 22231 54.6768 181.0778 0035261 284.7442 74.8525 2.00562706 20469
GPS BIIA-17
1 22275U 92089A 95251.03183174 -.00000033 00000-0 10000-3 0 6106
2 22275 54.7270 178.4588 0306717 230.8841 126.4188 2.00566694 19891
TDRS 5
1 22314U 93003B 95246.53400652 -.00000302 00000-0 10000-3 0 5534
2 22314 2.0370 71.4476 0003016 138.1214 278.6678 1.00261781 9701
GPS BIIA-18
1 22446U 93007A 95249.11417355 -.00000023 00000-0 10000-3 0 6013
2 22446 54.3821 298.9876 0082102 358.6124 1.4315 2.00574843 18842
Glonass 59
1 22512U 93010A 95250.80131620 .00000045 00000-0 10000-3 0 7280
2 22512 65.0469 93.8197 0007957 183.1775 176.9015 2.13102092 19651
Glonass 60
1 22513U 93010B 95250.27113097 .00000047 00000-0 00000+0 0 8053
2 22513 65.0400 93.8454 0007275 184.7889 175.2928 2.13102644 19837
Glonass 61
1 22514U 93010C 95249.15683432 .00000048 00000-0 00000+0 0 7986
2 22514 65.0598 93.8677 0010987 181.4665 178.6161 2.13102270 19812
ASTRO-D
1 22521U 93011A 95247.91841306 .00000968 00000-0 62228-4 0 4335
2 22521 31.1045 89.7496 0056854 209.6274 150.1111 15.02413161139376
UFO F1
1 22563U 93015A 95245.79732429 .00000033 00000-0 00000+0 0 4499
2 22563 25.8587 293.1457 0008377 244.7938 167.6568 0.99247929 13237
GPS BIIA-19
1 22581U 93017A 95247.76001458 -.00000088 00000-0 10000-3 0 4598
2 22581 55.2140 359.6083 0057707 37.4237 322.9835 2.00571672 17878
ARSENE
1 22654U 93031B 95247.86169831 -.00000132 00000-0 10000-3 0 3281
2 22654 2.7174 81.7079 2888847 218.8092 116.8417 1.42202974 7522
```

```
GPS BIIA-20
1 22657U 93032A 95250.38667217 -.00000099 00000-0 10000-3 0 5135
2 22657 55.2348 359.3325 0067665 203.9498 155.7574 2.00562056 13257
RADCAL
1 22698U 93041A 95248.62548775 .00000051 00000-0 16779-4 0 4283
2 22698 89.5401 286.3346 0090009 175.0666 185.1431 14.21352022113861
GPS BIIA-21
1 22700U 93042A 95246.36429753 .00000053 00000-0 10000-3 0 4519
2 22700 54.3029 240.1009 0040557 344.0155 15.8691 2.00566802 15976
NOAA 13
1 22739U 93050A 95250.83207802 .00000094 00000-0 77568-4 0 8833
2 22739 99.0000 199.7965 0009549 306.1395 53.8894 14.10941977107090
GPS BIIA-22
1 22779U 93054A 95249.44146312 -.00000024 00000-0 10000-3 0 5090
2 22779 54.5292 298.9903 0020425 248.2197 111.6413 2.00549097 14796
Meteor 2-21
1 22782U 93055A 95250.90019369 .00000050 00000-0 31581-4 0 4274
2 22782 82.5473 211.6311 0024144 53.6407 306.6984 13.83037648101974
UFO F2
1 22787U 93056A 95251.12141782 -.00000099 00000-0 10000-3 0 5187
2 22787 4.4139 325.4715 0003628 204.7894 292.2910 1.00277782 5991
SPOT 3
1 22823U 93061A 95247.75861937 -.00000044 00000-0 00000+0 0 4699
2 22823 98.7335 320.8531 0001124 99.0439 261.0865 14.20022689100584
STELLA
1 22824U 93061B 95251.20627194 -.00000058 00000-0 -60938-5 0 4148
2 22824 98.6112 326.0542 0006570 348.0992 12.0021 14.27102117101578
AO-27
1 22825U 93061C 95248.69695740 .00000001 00000-0 18077-4 0 4164
2 22825 98.6107 323.9587 0009143 352.2001 7.9033 14.27671102101251
IO-26
1 22826U 93061D 95249.20543015 -.00000022 00000-0 86285-5 0 4150
2 22826 98.6129 324.5702 0009679 351.6518 8.4491 14.27778979101335
HEATHSAT
1 22827U 93061E 95248.72873923 .00000029 00000-0 29205-4 0 4762
2 22827 98.6104 324.0297 0009605 340.6476 19.4336 14.27904513101271
ITAMSAT
1 22828U 93061F 95248.20231774 .00000014 00000-0 23222-4 0 3933
2 22828 98.6089 323.6217 0010464 339.5065 20.5687 14.28110619 69291
PO-28
1 22829U 93061G 95247.23420026 .00000031 00000-0 29951-4 0 4076
2 22829 98.6084 322.7064 0010354 343.1823 16.9010 14.28090552101073
KO-25
1 22830U 93061H 95248.20536673 -.00000019 00000-0 95006-5 0 4265
2 22830 98.5087 315.9527 0011232 315.8520 44.1763 14.28095724101211
GPS BIIA-23
1 22877U 93068A 95249.49480951 -.00000010 00000-0 10000-3 0 3092
2 22877 55.5306 60.5358 0037627 294.3994 65.2354 2.00574065 13686
METEOSAT 6
1 22912U 93073B 95250.17463567 -.00000118 00000-0 10000-3 0 3627
```

```
2 22912 0.6522 278.0861 0001191 292.5937 187.5821 1.00272743 5018
HST Array
1 22920U 90037C 95251.17392720 .00004853 00000-0 35103-3 0 3648
2 22920 28.4654 189.3525 0002753 339.4448 20.6055 15.01784437 96790
Meteor 3-6
1 22969U 94003A 95249.57912777 .00000051 00000-0 10000-3 0 1945
2 22969 82.5575 101.3187 0014002 229.3996 130.5889 13.16731139 77597
TUBSAT-B
1 22970U 94003B 95247.10391820 .00000051 00000-0 10000-3 0 1854
2 22970 82.5587 102.9959 0014925 231.7089 128.2694 13.16825909 77272
GPS BIIA-24
1 23027U 94016A 95248.07974563 -.00000089 00000-0 10000-3 0 2538
2 23027 55.0833 1.4515 0064935 198.4511 161.3258 2.00560939 10968
Glonass 62
1 23043U 94021A 95251.11195920 -.00000061 00000-0 00000+0 0 2538
2 23043 64.7451 333.7672 0007147 189.4715 170.5675 2.13102274 10976
Glonass 63
1 23044U 94021B 95249.58682163 -.00000064 00000-0 00000+0 0 2259
2 23044 64.7360 333.8306 0030580 203.5996 156.3065 2.13102970 10942
Glonass 64
1 23045U 94021C 95250.23245329 -.00000063 00000-0 00000+0 0 2320
2 23045 64.7216 333.8139 0010089 36.1654 323.9506 2.13102706 10950
GOES 8
1 23051U 94022A 95249.11690330 -.00000283 00000-0 10000-3 0 3745
2 23051 0.1876 84.3014 0003472 94.0687 133.4903 1.00283379 12509
MSTI 2
1 23101U 94028A 95251.03462933 .00005180 00000-0 90267-4 0 2302
2 23101 97.0933 83.1065 0010730 295.2754 64.7414 15.51121045 75360
STRV-1A
1 23125U 94034B 95249.46726124 .00007168 00000-0 16539-2 0 1938
2 23125 7.5144 357.7256 7268444 186.1882 152.4736 2.30326469 9529
STRV-1B
1 23126U 94034C 95248.04000883 .00004378 00000-0 95890-3 0 1724
2 23126 7.5180 358.5368 7272645 184.6199 160.3046 2.29954955 9533
Nadezhda 4
1 23179U 94041A 95249.07459508 .00000038 00000-0 23087-4 0 1286
2 23179 82.9438 87.9212 0035203 198.3962 161.5924 13.75671151 57599
Glonass 65
1 23203U 94050A 95250.37003089 -.00000002 00000-0 00000+0 0 1881
2 23203 64.7916 213.6500 0006585 159.1106 200.8903 2.13101943 8351
Glonass 66
1 23204U 94050B 95250.13477001 .00000000 00000-0 00000+0 0 1961
2 23204 64.7762 213.6895 0015440 340.7513 19.1631 2.13102014 8346
Glonass 67
1 23205U 94050C 95249.07911592 .00000013 00000-0 00000+0 0 1820
2 23205 64.7904 213.7055 0002987 287.0614 72.8833 2.13102193 8327
DMSP B5D2-7
1 23233U 94057A 95251.12579789 .00000098 00000-0 76565-4 0 4746
2 23233 98.8725 308.4330 0011595 265.5249 94.4624 14.12634465 52865
OKEAN 1-7
```

```
1 23317U 94066A 95249.19155081 .00000177 00000-0 23561-4 0 920
2 23317 82.5444 321.1904 0024431 289.8747 69.9837 14.73956627 48558
ELEKTRO
1 23327U 94069A 95245.81553545 -.00000120 00000-0 10000-3 0 883
2 23327 0.6247 261.1834 0005596 198.8131 251.0815 1.00273492 3103
RESURS 1-3
1 23342U 94074A 95249.65291859 .00000011 00000-0 10000-4 0 3049
2 23342 98.0084 307.8278 0001431 99.6902 260.4474 14.69763557 45014
Glonass 68
1 23396U 94076A 95249.86116857 .00000048 00000-0 00000+0 0 1421
2 23396 64.9734 93.9304 0030051 188.2008 171.8359 2.13102540 6189
Glonass 69
1 23397U 94076B 95248.62891927 .00000047 00000-0 00000+0 0 1477
2 23397 64.9620 93.9805 0011626 324.0492 35.9572 2.13102089 6156
Glonass 70
1 23398U 94076C 95248.04313357 .00000044 00000-0 00000+0 0 1556
2 23398 64.9559 93.9836 0002034 286.6439 73.4171 2.13102092 6155
LUCH (Altair-2)
1 23426U 94082A 95250.52954863 -.00000303 00000-0 00000+0 0 1698
2 23426 2.0393 272.3279 0000442 325.2401 34.0982 1.00264120 2650
RS-15
1 23439U 94085A 95251.07624810 -.00000039 00000-0 10000-3 0 760
2 23439 64.8186 120.9363 0166806 248.1405 110.1704 11.27524860 28865
NOAA 14
1 23455U 94089A 95251.10774740 .00000052 00000-0 52998-4 0 3089
2 23455 98.9071 192.9877 0009491 327.8944 32.1664 14.11531220 35514
ODERACS II A
1 23471U 95004C 95250.90265838 .00039484 00000-0 14851-3 0 1843
2 23471 51.6443 63.8908 0011694 58.1757 302.0393 15.87295169 34291
ODERACS II B
1 23472U 95004D 95251.19596198 .00291738 51798-4 33439-3 0 2268
2 23472 51.6366 49.7415 0002906 57.8778 302.2449 16.08487097 34502
Glonass 71
1 23511U 95009A 95250.34968574 -.00000063 00000-0 00000+0 0 925
2 23511 64.7580 334.0674 0007541 214.5095 145.4901 2.13102894 3922
Glonass 72
1 23512U 95009B 95248.59013722 -.00000065 00000-0 00000+0 0 1019
2 23512 64.7485 334.1429 0005151 308.8035 51.1940 2.13102157 3885
Glonass 73
1 23513U 95009C 95250.29125571 -.00000063 00000-0 00000+0 0 1036
2 23513 64.7517 334.0927 0014348 201.0178 158.9719 2.13102589 3928
Soyuz TM-21
1 23519U 95010A 95250.79561853 -.00014876 00000-0 -19308-3 0 1837
2 23519 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699 27708
SFU
1 23521U 95011A 95247.42631842 .00002010 00000-0 61543-4 0 959
2 23521 28.4615 254.4117 0019653 22.7724 337.3739 15.28771479 26074
GMS 5
1 23522U 95011B 95250.62819087 -.00000316 00000-0 10000-3 0 527
2 23522 0.7543 299.8909 0001279 229.1735 183.3551 1.00264712 1605
```

```
DMSP B5D2-8
1 23533U 95015A 95250.99538358 -.00000016 00000-0 15050-4 0 2049
2 23533 98.8359 252.2357 0007445 130.5172 229.6652 14.12699666 23642
Microlab 1
1 23547U 95017C 95248.08714595 .00000175 00000-0 66636-4 0 478
2 23547 69.9783 113.9405 0014753 228.3423 131.6447 14.45404415 22329
OFEQ 3
1 23549U 95018A 95250.86715310 .00006533 00000-0 16845-3 0 1039
2 23549 143.3667 309.4012 0252032 284.2029 73.0941 15.08541720 23456
GFZ-1
1 23558U 86017JE 95251.00240028 .00003349 00000-0 46300-4 0 563
2 23558 51.6496 100.2211 0006245 229.7632 130.2790 15.60352209545763
ERS-2
1 23560U 95021A 95251.20672762 .00000034 00000-0 28835-4 0 1154
2 23560 98.5453 324.3479 0001276 82.1735 277.9590 14.32253455 20067
Spektr
1 23579U 95024A 95250.79561853 -.00014876 00000-0 -19308-3 0 1232
2 23579 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699 17264
GOES 9
1 23581U 95025A 95249.47242326 -.00000214 00000-0 10000-3 0 510
2 23581 0.3984 269.8029 0001715 279.9485 235.6470 1.00272093 1078
Helios 1A
1 23605U 95033A 95249.92815699 .00000087 00000-0 25550-4 0 834
2 23605 98.0904 185.1437 0001614 73.3528 286.7852 14.63861657 8965
UPM SAT 1
1 23606U 95033B 95249.32911710 -.00000039 00000-0 16229-5 0 450
2 23606 98.0745 184.7411 0006775 16.3592 343.7801 14.66888370 8958
CERISE
1 23607U 95033C 95250.27375752 .00000182 00000-0 40890-4 0 242
2 23607 98.0739 185.6952 0009759 12.7390 347.4036 14.67141395 9102
TDRS 6
1 23613U 95035B 95249.47199039 .00000100 00000-0 00000+0 0 438
2 23613 0.0862 89.2086 0001249 135.5623 140.0133 1.00278553 538
Progress M-28
1 23617U 95036A 95247.84389206 -.00013481 00000-0 -17436-3 0 500
2 23617 51.6463 118.8723 0003479 67.7599 292.4521 15.57345555 7290
Glonass 74
1 23620U 95037A 95250.07575571 .00000001 00000-0 00000+0 0 446
2 23620 64.8417 213.5014 0018172 172.1101 187.8920 2.13102732 953
Glonass 75
1 23621U 95037B 95250.25202296 -.00000001 00000-0 00000+0 0 494
2 23621 64.8572 213.4848 0017942 182.9829 176.9795 2.13102085 950
Glonass 76
1 23622U 95037C 95250.77992313 -.00000005 00000-0 00000+0 0 447
2 23622 64.8463 213.4759 0036740 167.0014 193.0646 2.13102232 968
Prognoz-M2
1 23632U 95039A 95252.49547350 -.00001202 00000-0 00000+0 0 101
2 23632 63.0580 259.8600 9226312 314.4720 313.7000 0.26340101 96
1995042A
1 23642U 95042A 95249.19037069 .00000186 00000-0 -42822-3 0 348
```

```
2 23642 62.8590 297.6735 7430723 280.4501 10.8545 2.00571812 564
1995042B
1 23643U 95042B 95248.36594378 .10201657 86982-5 20244-3 0 885
2 23643 62.8157 194.3910 0019186 165.1908 195.4508 16.45261306 4382
1995042C
1 23644U 95042C 95237.29999104 .12766218 87352-5 17905-3 0 616
2 23644 62.8087 238.3590 0024525 127.5349 234.0840 16.46614548 2605
1995042D
1 23645U 95042D 95250.24539699 .00001049 00000-0 10000-4 0 202
2 23645 62.8378 297.6774 7444580 280.4555 10.7457 1.95891777 579
1995044A
1 23651U 95044A 95250.76431706 -.00000360 00000-0 00000+0 0 185
2 23651 0.0671 253.1674 0004360 304.6422 195.3479 1.00303328 81
1995044B
1 23652U 95044B 95250.55511484 .00140435 -72060-6 59620-3 0 113
2 23652 6.7544 251.0554 7375580 185.1689 156.7916 2.21975870 209
1995045A
1 23653U 95045A 95249.75684890 -.00000117 00000-0 00000+0 0 77
2 23653 1.5214 280.5400 0018482 262.6840 156.9954 0.99928298 76
1995045B
1 23654U 95045B 95246.28682870 .15820329 12759-4 92745-4 0 192
2 23654 51.6410 261.6737 0003545 231.8539 128.2479 16.54149064 574
1995045C
1 23655U 95045C 95243.54236111 .17934734 12422-4 11810-2 0 100
2 23655 51.6305 277.1380 0001561 87.2215 277.1570 16.40807312 123
SICH-1
1 23657U 95046A 95248.29958702 .00000078 00000-0 86683-5 0 124
2 23657 82.5320 103.6990 0026495 258.3301 101.4935 14.73409297 730
1995046C
1 23659U 95046C 95248.70592247 -.00000222 00000-0 -37166-4 0 89
2 23659 82.5313 103.3240 0026116 259.1852 100.6386 14.73718044 799
1995045E
1 23660U 95045E 95248.59466561 .00001127 00000-0 51436-3 0 62
2 23660 47.4734 279.3632 7278138 1.4407 0.0037 2.27006820 122
1995045F
1 23661U 95045F 95248.16300830 .00000016 00000-0 10000-4 0 49
2 23661 47.5222 279.5051 7258157 1.3073 0.0161 2.26606721 112
1995045G
1 23663U 95045G 95248.26871373 -.00003538 11187-4 00000+0 0 35
2 23663 51.6021 252.4759 0183118 104.7299 291.3188 15.88741033 669
1995045H
1 23664U 95045H 95245.30021991 .00005473 10708-4 10000-4 0 45
2 23664 51.6830 269.1703 0261886 93.8534 276.1056 15.66747594 222
Soyuz TM-22
1 23665U 95047A 95250.79561853 -.00014876 00000-0 -19308-3 0 153
2 23665 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699 701
1995047B
1 23666U 95047B 95249.18156250 .20145336 12715-4 11758-3 0 164
2 23666 51.6206 111.2938 0007333 232.1815 128.1265 16.53993193 462
STS 69
```

1 23667U 95048A 95251.22959491 .00000349 00000-0 00000+0 0 56
2 23667 28.4680 39.7120 0006736 267.0749 304.4016 15.65290993 99
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1922. NORAD Two-Line Orbital Element Set: Space Shuttle (95251.22959491)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.810610499@dolphin>
Source record: 24130

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 69
1 23667U 95048A 95251.22959491 .00000349 00000-0 00000+0 0 56
2 23667 28.4680 39.7120 0006736 267.0749 304.4016 15.65290993 99

--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1923. Re: SAT TRACKING PROGRAM

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: millerj@dnaco.net
Message-ID: <42sfki$59r@sisko.dnaco.net>
Source record: 24131

waboo@cltr.uq.oz.au (Warren Bates) wrote:

>Anybody got a good satellite tracking program. I have ORBITS2 and
>QUICKTRAK. Are there any better? and can you send me it. I can ftp if
>required.
>warren VK4ZBW
Warren
The best program I have found so far is STS-Plus. I think the latest
ver is 9517. This is the best in book and very accurate. You cna get
it from ftp.amsat.org. I dont know which ver. they have.
73 de n8rtw
millerj@dnaco.net

1924. Re: SAT TRACKING PROGRAM

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: millerj@dnaco.net
Message-ID: <42sfmu$59r@sisko.dnaco.net>
Source record: 24132

waboo@cltr.uq.oz.au (Warren Bates) wrote:

>Anybody got a good satellite tracking program. I have ORBITS2 and
>QUICKTRAK. Are there any better? and can you send me it. I can ftp if
>required.
>warren VK4ZBW
I also forgot to tell you this program is FREE !!!.
millerj@dnaco.net

1925. ARLK046 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk046.1995@ampr.org>
Source record: 24133
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK046
ARLK046 Keplerian data

ZCZC SK71
QST de W1AW
Keplerian Bulletin 46 ARLK046
From ARRL Headquarters
Newington, CT September 9, 1995
To all radio amateurs

SB KEP ARL ARLK046
ARLK046 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-69
1 23667U 95048A 95251.22959491 .00000349 00000-0 00000+0 0 56
2 23667 28.4680 39.7120 0006736 267.0749 304.4016 15.65290993 99
Mir
1 16609U 86017A 95251.24480452 .00003730 00000-0 56643-4 0 2270
2 16609 51.6442 101.8423 0003908 70.3548 289.7861 15.57377216545876
AO-10
1 14129U 83058B 95248.37251192 .00000162 00000-0 10000-3 0 3727
2 14129 26.4527 249.8576 5985675 307.3504 11.6914 2.05877424 63980
RS-10/11
1 18129U 87054A 95251.24033133 -.00000018 00000-0 -36633-4 0 01129
2 18129 82.9259 357.6723 0010258 218.0010 142.0388 13.72356046411367
UO-11
1 14781U 84021B 95250.99274018 .00000099 00000-0 24646-4 0 08518
2 14781 97.7852 249.6557 0010656 279.5268 80.4738 14.69373512616066
RS-12/13
1 21089U 91007A 95250.92526379 .00000036 00000-0 22092-4 0 08291
2 21089 82.9192 39.4083 0028267 304.7350 55.1141 13.74059997230137
AO-13
1 19216U 88051B 95250.98352366 .00000029 00000-0 16119-4 0 875
2 19216 57.4548 165.8399 7324236 18.2338 357.9950 2.09720364 23902
UO-14
1 20437U 90005B 95251.21317978 -.00000011 00000-0 12730-4 0 01330
2 20437 98.5653 334.2385 0010823 319.3358 40.7015 14.29895781293610
```

```
RS-15
1 23439U 94085A 95251.07624810 -.00000039 00000-0 10000-3 0 760
2 23439 64.8186 120.9363 0166806 248.1405 110.1704 11.27524860 28865
AO-16
1 20439U 90005D 95250.20219512 -.00000025 00000-0 72217-5 0 9223
2 20439 98.5713 335.0213 0011126 323.0978 36.9440 14.29949887293486
DO-17
1 20440U 90005E 95251.16210501 .00000017 00000-0 23479-4 0 09315
2 20440 98.5777 336.4667 0011466 320.1002 39.9334 14.30091748293648
WO-18
1 20441U 90005F 95251.14604728 .00000026 00000-0 26954-4 0 09414
2 20441 98.5759 336.4150 0012061 319.7832 40.2499 14.30062644293643
LO-19
1 20442U 90005G 95251.16289097 -.00000004 00000-0 15471-4 0 09302
2 20442 98.5798 336.8219 0012025 318.5037 41.5231 14.30165946293660
FO-20
1 20480U 90013C 95251.13303651 -.00000084 00000-0 -12147-3 0 08318
2 20480 99.0702 324.3012 0541117 45.6110 318.8005 12.83230622261580
AO-21
1 21087U 91006A 95251.14159098 .00000093 00000-0 82657-4 0 06422
2 21087 82.9410 171.1879 0034657 278.0783 81.6428 13.74558771231124
UO-22
1 21575U 91050B 95251.14680684 .00000038 00000-0 27114-4 0 06407
2 21575 98.3885 320.3889 0008936 33.1404 327.0330 14.36989123217416
KO-23
1 22077U 92052B 95250.92894736 -.00000037 00000-0 10000-3 0 05299
2 22077 66.0819 62.5304 0002594 169.8814 190.2258 12.86291999144379
KO-25
1 22828U 93061F 95251.14493897 .00000030 00000-0 29823-4 0 04118
2 22828 98.6087 326.5221 0010408 331.3792 28.6816 14.28111025069713
IO-26
1 22826U 93061D 95251.16763131 .00000037 00000-0 32795-4 0 04253
2 22826 98.6126 326.5037 0009721 345.9391 14.1510 14.27779744101616
AO-27
1 22825U 93061C 95251.14989635 -.00000015 00000-0 11749-4 0 04320
2 22825 98.6104 326.3751 0009028 345.3806 14.7112 14.27671155101607
PO-28
1 22829U 93061G 95251.15774999 .00000011 00000-0 22093-4 0 04341
2 22829 98.6078 326.5733 0010274 331.5997 28.4622 14.28090896101635

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
September 12, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1926. MIR Keplerian Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: rafaels@zimmer.CSUFresno.EDU
Message-ID: <DEM7HL.F6y@CSUFresno.EDU>
Source record: 24134

Can someone post the latest MIR Keps?

Thanks

Rafael (KE6JSR)

1927. Radio Meteor Obs Bulletin Aug 1995: the mighty Perseids

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: steyaert@vvs.innet.be
Message-ID: <steyaert.11.0015B259@vvs.innet.be>
Source record: 24135

Radio Meteor Observation Bulletin No. 25 Sep 1995

1. FORWARD SCATTER METEOR OBSERVATIONS

Observer: Thomas Ashcraft
Location: Santa Fe, New Mexico, USA (35 42' N, 105 57' W)
Frequencies: 98.1 MHz (primary) 87.65 MHz (secondary)
Transmitters: Multiple transmitters received. Still identifying them.
KHAK-FM Cedar Rapids, Iowa 100 kW 1300 km distance
Receivers: Sangean ATS-803A (primary) Technics SA-160 (secondary)
Antenna: Six element directional FM yagi (Radio Shack part # 15-1636)
Azimuth: 70 degrees east of magnetic north Ant. Elevation: 45 degrees
Observing method: Listening and counting in real time or during audio tape
playback. I make a second by second count and also note
duration of each reflection and any significant qualities.
WWV universal time is also recorded on the audio tapes.

August 1995
PERSEIDS

| Aug
UT | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

0h | xx
1h | xx
2h | xx
3h | 28 23
4h | 41 50
5h | 66 60
6h | xx 97
7h | xx 106
8h | xx 78
9h | xx
10h | xx
11h | xx
12h | xx
13h | xx xx
14h | xx xx 84 xx
15h | xx xx 111 55
16h | xx xx 114 60
17h | xx xx 101 56
18h | xx xx 120 65 21 xx 13 29 32 26 42 28
19h | xx 31 56 xx xx
20h | xx xx xx xx xx
21h | xx xx xx xx xx

22h | xx xx xx
23h | xx xx xx

UT | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
| Aug

Notes:

. Please note that the numbers above do not show the amount of long duration Perseid reflections received. During the first peak hours of the Perseid shower (August 12 1700h UT-1900h UT) there were numerous long duration receptions bringing in multiple simultaneous transmitters.

. xx means I have an audio tape for this hour but it is uncounted. I have not have time to tally all the collected tapes but will keep them as a record for processing if ever needed.

. Also, I am expanding my radio meteor observatory by adding more radios and antennas and am now working simultaneously at different frequencies with various antenna array configurations. Early results are interesting in that I am noting many individual meteor reflections occuring on all frequencies a split second apart, up or down in MHz. I am experimenting with different configurations and plan to pursue this activity further. I think I can say now that I have also manifested a "radio fireball observatory." I have invested in a VHS recorder for audio taping purposes and plan to record forward scatter frequencies full time. I hope to be able to confirm visual sightings that occur over North America.

If anyone in the western half of North America is interested in engaging in some joint radio meteor observing projects, please feel free to contact me.

Last note. The Radio Shack 15-1636 FM antenna has been discontinued but still can be purchased for $7.98 if you can find one. It is a functional antenna and can fold up to be portable. Radio Shacks have their stock listed on computer so you can telephone any store to find out area availability.

Thomas Ashcraft

Observer: Maurice De Meyere
Location: Deurle, Belgium (3 37' E, 51 00' N)
Frequency: 66.60 MHz, 66.3 MHz from August 14
Transmitter locations:
Gdansk, PR3, Poland, 66.29 MHz, 89 kW, distance 1100 km
Birlad, PR1 Romania, 66.36 MHz, 46 kW
Sibu, PR1 Romania, 66.44 MHz, 40 kW
Bucuresti Romania
Antenna: crossed Yagi, 4 elements, astronomical azimuth 270 o (= East), elevation 30 o
Antenna amplifier: 25 dB max level 90 dBmuV
Receiver: commercial, Progresson 447A, TESLA, Bratislava

Sensitivity: 8 muV for S/N = 26 dB (300 Ohm)
Observing method: automated setup, 150 samples/second, 8 bit resolution.
[Time and details of all individual meteor reflections are stored
on file in the University of Ghent format (Prometeos), and are
available for further analysis. Reduction software for DOS and
Windows available].

Raw counts of reflections with a duration of at least 0.027 s
during one hour interval starting at UT:

Aug	UT										
1995	20h	21	22	23	00	01	02	03	04	05	06
1- 2	-	10	13	11	18	16	39	36	54	26	34
2- 3	11	9	14	15	14	31	11	13	16	17	8
3- 4	15	19	8	8	13	10	13	13	20	11	14
4- 5	27	29	20	23	10	18	22	47	19	13	30
5- 6	46	22	20	19	13	13	19	31	14	15	5
6- 7	39	32	31	31	26	21	56	36	25	17	22
7- 8	*	55	28	21	28	16	33	19	25	*	33
8- 9	53	62	56	27	31	25	39	*	46	*	53
9-10	40	36	28	28	19	18	36	34	22	22	4
10-11	37	22	22	13	58	9	10	10	14	26	5
11-12	7	8	4	4	2	10	5	9	18	1	7
12-13	36	22	28	48	58	23	40	11	22	9	10
13-14	15	29	10	28	16	2	25	10	15	9	12
14-15	-	-	-	-	-	-	-	-	-	-	-
15-16	*	114	125	122	128	127	155	117	78	120?	87
16-17	-	-	-	-	-	-	-	-	-	-	-
17-18	-	-	-	-	-	-	-	-	-	-	-
18-19	-	-	-	-	-	-	-	-	-	-	-
19-20	6	84	105	87	131	97	123	110	79	109?	80
20-21	*	*	*	50	41	51	41	45	84	36	42
21-22	-	-	-	-	-	-	-	-	-	-	-
22-23	-	-	-	-	-	-	-	-	-	-	-
23-24	-	-	-	-	-	-	-	-	-	-	-
24-25	-	-	-	-	-	-	-	-	-	-	-
25-26	36	56	80	72	97	84	103	116	131	87	83
26-27	-	-	-	-	-	-	-	-	-	-	-
27-28	-	-	-	-	-	-	-	-	-	-	-
28-29	24	25	38	90	74	68	90	126	177?	144?	124?
29-30	-	-	-	-	-	-	-	-	-	-	-
30-31	22	44	58	74	90	110	138?	136?	142?	119	82
31-01	-	-	-	-	-	-	-	-	-	-	-
1995	20h	21	22	23	00	01	02	03	04	05	06
Aug	UT										

Aug	UT											
1995	7h	8	9	10	11	12	13	14	15	16	17	18	19

```
------------------------------------------------------------------------
12 | 16% 7 19 25 11 43 40 40 19 28 20 96 11&
------|-----------------------------------------------------------------
```

% last half hour
& first half hour

Notes:

. Some transmitters are not broadcasting between 2h-5h local time
(Sat-Sun 3h-6h local time) or sometimes longer. (When summer hour is
in use: local time = UT + 2h).

. * sporadic-E
? possibly sporadic-E, to be checked

. very high activity on Aug 12 between 18 and 19h UT, most probably
due to the Perseids secondary peak.

Maurice De Meyere / Chris Steyaert

Observer: Elmano Doria
Location: near Lisboa, Portugal (9 11' W, 38 42' N)
Frequency: 88.950 MHz
Antenna: wire antenna
Receiver: digital ICF-2001 Sony, coaxial to the radio has about 6 meters
of RG-58/U.
Observing method: the signal is taken from the signal meter indicator before
the led indicator. The signal (max.=1.5V) is than fed to a small
contraption with a 741opamp & optical LED.LDR transducer which
connects to the X or Y pins of the game port.
2 seconds integration time.

Counts for one 1 hour periods starting at UT:

12 Aug 12 1995

UT Count Perseid radiant elev
11h51 1 34.7
12h51 6 27.4
13h51 5 20.9
14h52 5 15.4
15h52 8 11.1
16h53 18 8.2
17h53 6 6.8
18h54 5 7.1
19h54 7 8.9

Elmano Doria

Observer: Werfried Kuneth, OE8FNK
Location: Villach, Austria (46 37' N, 13 53' E)

Frequency: 59.250 MHz, SSB mode
Supposed Transmitter locations:
TV video carrier from Bucharest, distance about 900 km, east. Several TV audio carriers (AM?) from Italian Locations in Sicily, Bari and Arezzo, distance 400 to 900 km (all south) and possibly other transmitters.
Antenna: dipole with reflector, direction east.
Receiver: AOR AR-8000. No modifications, no preamplifier.
Observing method:
The audio signal is fed into a real time FFT display (FFTDSP program from AF9Y) on the PC where a bandwidth of 2.4 khz is displayed in 2Hz steps (in different colors) and stored every 20 minutes.
All observed carrier frequencies act together like beacons, every meteor reflection produces a distinct whistle, which is recorded easily by the real time FFT program. Usually there are several different transmitters producing visible marks (= meteor reflections) on the display, I count only two of them.
All the .GIF files are stored on a hard disk for later verification (CD-ROM will be available on request).

Counts in one hour intervals starting at UT:

|Jul Aug
UT | 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
---
03 | 10 10 2 9 - 7 9 11 6 3 11 - 8 11 7 19 9 11
04 | 7 11 5 11 4 8 8 8 13 8 20 - 13 14 20 22 21 19
05 | 10 4 2 6 14 11 9 12 12 8 13 13 12 18 20 27 16 26
06 | 11 14 4 7 18 15 12 9 15 6 10 14 18 17 24 27 14 17
07 | 8 6 3 9 16 11 11 13 15 - 14 17 10 14 21 28 16 20
08 | 6 - 2 10 18 6 15 13 13 - 9 11 12 15 23 22 16 16
09 | 4 - 4 11 12 5 7 11 6 - 4 13 10 18 23 22 12 9
10 | 7 - 4 7 9 3 5 15 8 7 14 4 11 6 20 26 11 8
11 | 5 - 5 11 4 4 13 13 8 9 9 5 4 8 21 22 13 11
12 | 5 - 4 4 6 3 9 10 11 7 9 8 8 8 21 18 11 10
13 | 6 - 7 4 11 8 9 10 10 9 6 6 14 11 14 19 10 -
14 | 9 - 6 - - 7 8 12 8 5 - 5 8 11 20 16 - -
15 | 9 - 1 - - 8 8 9 5 3 - 5 8 5 13 7 - -
16 | 3 - - - - 5 - 6 6 3 - 4 4 7 7 13 - -
17 | 5 - - - - 11 - 9 10 - - 17 6 - 22 14 - -
18 | - - - - - 9 - 10 8 - - 12 5 - 24 13 - -
19 | - - - - - - - - 11 - - - - - 17 15 - -
20 | - - - - - 8 5 3 10 4 12 5 11 10 21 - - -
21 | 3 6 - - 5 8 7 9 12 - 8 7 7 16 18 8 - -

UT | 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
|Jul Aug

This is the count for the reflections lasting longer than 15 seconds:

| August
UT | 11 12 13

```
-----------------
3h | 7 6 11
4h | 11 14 13
5h | 12 15 17
6h | 6 16 19
7h | 8 14 19
8h | 10 17 13
9h | 8 12 18
10h | 5 12 14
11h | 3 13 16
12h | 3 16 3
13h | 7 8 11
14h | 1 16 6
15h | 3 13 3
16h | 3 7 5
17h | - 8 10
18h | - 14 5
19h | - 8 3
20h | 5 11 -
21h | 7 14 -
------------------
UT | 11 12 13
August
```

The broad Perseid peak is much clearer with these figures.
During the peak from August 12 to August 13, 11h UT the majority
(more than 50%) of the reflections was in the 15+ seconds range.

Werfried Kuneth

Observer: E.P. Bus
Location: Groningen, The Netherlands (6 degr 33' E, 53 degr 13' N)
Frequency: 66.89 MHz
Transmitter location: Krakow, Poland, 120 kW, distance 1010 km
Antenna: Yagi, 3 elements, azimuth 106 degrees (ESE), elevation 12 degrees
Receiver: Bearcat UBC 177XLT Scanning Radio, sensitivity 0.3 microvolt
Observing method: listening

Hourly means of sporadic radio meteors during 15 July - 6 August 1995.
Between brackets the one sigma error.

12h 13h 14h 15h 16h 17h 18h 19h 20h
112(14) 97(9) 73(8) 78(9) 84(12) 103(11) 85(8) 114(15) 101(11)

Perseids 1995

Raw counts of reflections during one hour intervals starting at UT:

1995 | 12h 13h 14h 15h 16h 17h 18h 19h 20h
---
11 Aug | 133 122 95 96 100
12 Aug | 206 - 182 157 163 191 184 209 175

13 Aug | 160 138 108 104 - 130 112 143 142

Peter Bus / via Ton Schoenmaker

Observer: Ilkka Yrjola
Location: Finland (26 35' E, 60 54' N)
Frequency: 87.360 MHz
Receiver: narrow band FM, detected signal level >-122dBm.
Antenna: 2 element Yagi with 4dBd gain to SW.
Antenna Azimuth: 45 o
Computer: T-1000SE
Data sampling system: threshold crossing detection is fed in binary
form (1 bit) from the receiver to the computer.
Computer logs total hourly elapsed reflection time, number of
threshold crossings for the hour, the longest time the signal was
continuously above detection level for the hour.

Data stored in the Compact MS-Soft format. Software for viewing available
from FTP.FUNET.FI pub/ham/vhf-work/mssoft42.zip

Perseids 1995

Number of threshold crossings for the hour starting at:

UT | 11 Aug 12 Aug 13 Aug 14 Aug
---
0 | 436 502 826 1172A
1 | 535 493 848 677A
2 | 438 678 1244 607A
3 | 429 701 1143 647A
4 | 422 527 850 463A
5 | 405 470 703 439
6 | 467 633 859 514
7 | 447 596 822 480
8 | 359 689 819 565A
9 | 466 587 762 669A
10 | 399 530 885 413
11 | 284 563 826 385
12 | 262 482 426 464A
13 | 224 554 588 384
14 | 249 332 490 252
15 | 236 317 419 213
16 | 183 408 252 172
17 | 173 378 245 143
18 | 175 539* 313 208
19 | 389 403 419A 176
20 | 250 419 345A 239
21 | 261 417 414A 278
22 | 290 589 554A 263
23 | 449 737 518A 344

UT | 11 Aug 12 Aug 13 Aug 14 Aug

Notes:

A = Aurora on Aug 14

* = location of the secondary Perseid maximum

Ilkka Yrjola / via M. De Meyere

2. ABOUT THE RMOB

The RMOB is an independent initiative of some workers in the field of radio meteor scatter observations and data reduction. It started in August 1993 in order to spread rapidly the Perseid results via E-mail. Since then, it has appeared monthly, and has gradually been expanded.

Typically it contains: summaries of recent observations, first results of stream activity by radio methods, relations between radio and optical meteors, references to other publications in the field of meteor astronomy and radio scatter techniques, announcements of meetings, short questions and answers, non-commercial (second hand) sale of radio equipment, available software.

Contributors are mentioned, and interested persons are asked to contact them directly.

RMOB can be copied freely in unabridged and unmodified form. Extracts should indicate the source (Radio Meteor Obs Bulletin, month and year).

If you want to subscribe (or unsubscribe) to the E-mail distribution list, please send a message to C. Steyaert.
Those not having access to E-mail can obtain a printed copy free of charge from J. Van Wassenhove (current or back-issues).

3. CONTRIBUTORS / USEFUL ADDRESSES

Thomas Ashcraft
Santa Fe, New Mexico
E-mail: 72632.1427@compuserve.com

E.P. Bus
Groningen, The Netherlands
E-mail: via tonsch@ksw.rug.nl

Maurice De Meyere
Hullekensstraat 24, B 9831 Deurle, Belgium
tel: +32 (9) 282 35 26
Call: ON4NU, packet: ON4NU@ON4AWP
E-mail: via Chris Steyaert

Elmano Doria
Lisboa, Portugal
E-mail: 100331.2035@compuserve.com

Werfried Kuneth
Villach, Austria
Call: OE8FNK
E-mail: 100021.514@compuserve.com

Chris Steyaert, VVS
Kruisven 66, B 2400 Mol, Belgium
tel: +32 (14) 31 51 04
fax: +32 (14) 22 13 73
E-mail: steyaert@vvs.innet.be
Compuserve: 72650,3513

Jeroen Van Wassenhove, VVS
's Gravenstraat 66, B 9810 Nazareth, Belgium
tel: +32 (9) 385 61 09
E-mail: 100101.734@compuserve.com

Paul Vauterin, University of Ghent, Astronomical Observatory
E-mail: paul@izar.rug.ac.be

Ilkka Yrjola
Jukolantie 16
SF 45700 Kuusankoski, Finland
tel: +358 (951)402 2797
Call: OH51Y
E-mail: ILKKA.YRJOLA@915000.KY.KYMMENE.MEMONET.mailnet.fi

--
Christian Steyaert (RMOB9508) 9 Sep 1995
--

1928. STS-69 Element_Set (95252.700)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95252.700@thomsoft.com>
Source record: 24136
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95252.70015697 .00005557 13165-9 53332-4 0 42
2 23667 28.4652 29.1263 0006991 299.9894 294.7489 15.65391983 330
```

This data is also available on the Shuttle Elements Mailing List. For information about the list, send the command "info elements" to "listserv@thomsoft.com" or read about the list with your web browser at <URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)

1929. Is AO-21 still alive?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-09 00:00:00 UTC
From: douglasbraun@prometheus.hol.gr
Message-ID: <42qp4b$55n@newsflash.hol.gr>
Source record: 24137

Is AO-11 (also known as RS-14) still alive?
I haven't heard anything in several days of trying on 145.987.

Also, does anyone know if the UO-11 S-band becaon works?
If you know the answer to that, perhaps you could also
tell me: What other satellites (besides AO-13, of course)
have S-band beacons?

Thanks a lot,

Doug Braun (SV/N1OWU)

1930. Re: September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: k2ph@dxis.monroe.pa.us
Message-ID: <DEoy4v.BCK@dxis.monroe.pa.us>
Source record: 24138
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

From article <42t1q7$kr7@caesar.ultra.net>, by bob@ultranet.com (Bob Levine):
> In article <42o96k$3ka@newsbf02.news.aol.com>, headshrnkr@aol.com proclaims...
>>
>>May I ask why you needed to SPAM this ad across 4 boards? One posting
>>would have really been fine, ok?
>
> I dont consider this a spam at all. Actually they are all places
> where people who might get benefit from this fine product can be
> found and they might appreciate knowing where they can get this
> CDROM.

For sale posts belong in rec.radio.swap only. That is the charter of
the newsgroup. Buying, selling, and trading posts do NOT belong in any
other newsgroup in the rec.radio.amateur hierarchy.

This is all explained very nicely in the "Guide to the Personal Radio
Newsgroups," that Jay Maynard posts on the 15th of every month. One
begins to think maybe it should be posted daily. 8^{)

73,
Bob K2PH

--
+------------------ \-\-\-\ -----------------------------+
Bob Schreibmaier K2PH	INTERNET: k2ph@dxis.monroe.pa.us
(a.k.a. "The QRPer")	ICBM: 40o55'N 75o30'W
Kresgeville, PA	Euthanize the Limbaugh Loonies.
+---+

1931. tr9500 mods wanted

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: Graham Shirville <100114.137@CompuServe.COM>
Message-ID: <42udj4$56j$1@mhadf.production.compuserve.com>
Source record: 24139

Hi All,

A friend, G3BGM has a TR9500 which he wants to use for 9600 baud
packet on 144mhz with Mir.

He has not got any details for the mods required and where to
extract the audio from and where to insert the TX audio

I ahve checked the amsat site which has some mods infor but not
for the TR9500 so any help would be much appreciated.

Thanks 73's

Graham G3VZV KO-23/KO-25 and via amsat.org

1932. URGENT HELP : a transceiver for packet and sat ?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: cmaion@cipcinsa.insa-lyon.fr
Message-ID: <cmaion.9.30533CD9@cipcinsa.insa-lyon.fr>
Source record: 24140

I am looking for a model of tranceiver that could allow me :

- to use in a first time terrestrial packet network (AFSK)
- to be a start point for a later satellite station

WHAT TYPE OF TRANSCEIVER DO YOU ADVISE ME ?

I am about to buy a second hand IC 245E, have you info about it ? (I only know that it is an old all-mode 2m TX, with 10W power). Would it be a good choice ?

(As a student and new OM, I am looking for a not too expensive solution.)

PLEASE HELP !!!

TNX ...

--
Cedric MAION
cmaion@cipcinsa.insa-lyon.fr

1933. STS-69 Element_Set (95253.806)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95253.806@thomsoft.com>
Source record: 24141
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95253.80621721 .00032669 00000-0 44138-3 0 9068
2 23667 28.4644 21.1622 0004493 262.1630 97.8625 15.55620612 514

Satellite: STS-69
Catalog number: 23667
Epoch time: 95253.80621721 = yrday.fracday
Element set: 906
Inclination: 28.4644 deg
RA of node: 21.1622 deg
Eccentricity: .0004493
Arg of perigee: 262.1630 deg
Mean anomaly: 97.8625 deg
Mean motion: 15.55620612 rev/day
Decay rate: 3.26695E-04 rev/day^2
Epoch rev: 51

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1934. Re: QSL card for DOVE?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: i121171@intac.com
Message-ID: <8B0D03D.002B0003C6.uuout@intac.com>
Source record: 24142

From: I121171@amsat.org
Subject: Re: QSL card for DOVE?
Date: Fri, 08 Sep 95 22:22:40 ind
Message-ID: <42qfnu$53h@sgi.iunet.it>
> It took about 8 months to receive my card. I sent my report on 3/20/94.
>
Can you post a GIF somewhere to download please ?

--- QScan/PCB v1.15b / 01-0228
* Origin: _T_H_E__R_O_Y__H_O_B_B_S__B_B_S_ Moonachie NJ (1:2604/122)

+---+
The Roy Hobbs BBS (201)-641-7307 Moonachie NJ.USENET
Internet:Fidonet:N2UTO'S BBS List:Telnet198.6.114.80
cono@hobbs.com // Running PCBoard 15.22
+---+

1935. STS-69 Element_Set (95251

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: shuttle.elements@intac.com
Message-ID: <8B0D03D.002B0003C7.uuout@intac.com>
Source record: 24143

```
com.com!netcomsv!uucp3.netcom.com!telesoft!garym
From: elements-request@thomsoft.com (Shuttle Elements)
Subject: STS-69 Element_Set (95251.920)
Message-ID: <STS-69.95251.920@thomsoft.com>
thomsoft.com>
Date: Fri, 8 Sep 1995 23:16:22 GMT
69.Keplerian.Elements>
STS-69
1 23667U 95048A 95251.92014586 .00005436 12598-9 53066-4 0 39
2 23667 28.4638 34.7444 0005782 272.2110 238.3938 15.64975443 217

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)

--- QScan/PCB v1.15b / 01-0228
* Origin: _T_H_E__R_O_Y__H_O_B_B_S__B_B_S_ Moonachie NJ (1:2604/122)

+-------------------------------------------------------------------------+
The Roy Hobbs BBS (201)-641-7307 Moonachie NJ.USENET
Internet:Fidonet:N2UTO'S BBS List:Telnet198.6.114.80
cono@hobbs.com // Running PCBoard 15.22
+-------------------------------------------------------------------------+
```

1936. NORAD Two-Line Orbital 1

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: ts.kelso@intac.com
Message-ID: <8B0D03D.002B0003C8.uuout@intac.com>
Source record: 24144

```
t.com!zombie.ncsc.mil!blackbird.afit.af.mil!dolphin!tkelso
From: tkelso@afit.af.mil (TS Kelso)
Subject: NORAD Two-Line Orbital Element Sets (TLE672)
Date: 9 Sep 95 01:32:53 GMT
Message-ID: <tkelso.810610373@dolphin>
The most current orbital elements from the NORAD two-line element sets are
carried on the Celestial BBS, (334) 409-9280, and are updated daily (when
possible). Documentation and tracking software are also available on this
system. The Celestial BBS may be accessed 24 hours/day at speeds up to
28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are
available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the
directory pub/space.

As a service to the satellite user community, the most current of these
elements are uploaded weekly to sci.space.news and rec.radio.amateur.space.
This week's elements are provided below.

- Current Two-Line Element Sets #672 -
Alouette 1
1 00424U 62049A 95249.90724332 -.00001521 00000-0 -18036-2 0 1331
2 00424 80.4643 204.2409 0024434 46.4023 313.9113 13.67846745643470
ATS 1
1 02608U 66110A 95235.01105310 .00000102 00000-0 10000-3 0 9420
2 02608 14.6443 355.9733 0010162 70.9499 289.2146 1.00349976 21861
ATS 3
1 03029U 67111A 95246.74774054 -.00000127 00000-0 10000-3 0 3960
2 03029 14.8496 2.8124 0008371 262.8947 240.4766 1.00273146101883
Cosmos 398
1 04966U 71016A 95250.91146710 .00363193 97697-5 30085-3 0 9920
2 04966 51.3871 197.7172 0457314 26.3014 336.0754 15.26270662837694
Starlette
1 07646U 75010A 95248.23696130 -.00000134 00000-0 81221-5 0 9127
2 07646 49.8297 197.1234 0205798 6.0793 354.2527 13.82189747 39412
LAGEOS
1 08820U 76039A 95247.19865787 .00000024 00000-0 10000-3 0 1331
2 08820 109.8519 287.6938 0044058 190.3723 169.6201 6.38664406195500
ETS-2
1 09852U 77014A 95244.32912431 -.00000291 00000-0 10000-3 0 372
2 09852 12.8475 36.2611 0004756 88.9250 271.1938 1.00007528 14746
GOES 2
1 10061U 77048A 95250.50926850 .00000048 00000-0 10000-3 0 5745
2 10061 11.9455 40.4055 0012628 125.8994 188.9109 1.00294544 11591
IUE
```

```
1 10637U 78012A 95244.30396100 -.00000226 00000-0 10000-3 0 1651
2 10637 35.3175 87.7757 1336332 49.0023 272.5364 1.00307567 17021
GPS BI-01
1 10684U 78020A 95247.52568319 -.00000021 00000-0 10000-3 0 3859
2 10684 64.8740 32.3528 0061094 162.8733 197.3531 1.98069502113737
GPS BI-02
1 10893U 78047A 95247.14100153 .00000058 00000-0 10000-3 0 1808
2 10893 63.2903 270.1952 0223766 14.2145 346.4829 2.01627531127020
GOES 3
1 10953U 78062A 95249.47055856 .00000089 00000-0 10000-3 0 5289
2 10953 10.9164 43.2139 0006668 123.2428 198.7641 1.00351074 16195
SeaSat 1
1 10967U 78064A 95248.67829380 -.00000053 00000-0 27068-4 0 4260
2 10967 108.0015 304.0442 0002984 241.6346 118.4485 14.38052116900401
GPS BI-03
1 11054U 78093A 95249.22856134 .00000050 00000-0 10000-3 0 3485
2 11054 62.9923 268.5623 0046110 180.5350 179.5145 1.93505368123143
Nimbus 7
1 11080U 78098A 95249.16321940 -.00000098 00000-0 -50839-4 0 5272
2 11080 98.9890 119.6365 0009585 17.7137 342.4349 13.83704804851752
GPS BI-04
1 11141U 78112A 95251.27530276 -.00000055 00000-0 10000-3 0 9996
2 11141 64.8882 34.2143 0048827 27.3698 332.8996 1.92894609 12424
GPS BI-05
1 11690U 80011A 95247.66393517 -.00000018 00000-0 10000-3 0 9347
2 11690 65.2295 33.9237 0149034 191.9935 167.6334 2.00566351128451
GPS BI-06
1 11783U 80032A 95249.28070516 .00000049 00000-0 10000-3 0 977
2 11783 62.4289 263.2236 0219050 29.2345 332.0274 2.03456894113039
GOES 5
1 12472U 81049A 95246.39256126 -.00000291 00000-0 10000-3 0 8770
2 12472 7.6701 53.1937 0007614 38.8162 321.3864 1.00246566 10214
Cosmos 1383
1 13301U 82066A 95247.26518951 .00000044 00000-0 34130-4 0 4318
2 13301 82.9320 344.1668 0026738 313.9556 45.9398 13.68067657658145
LandSat 4
1 13367U 82072A 95248.78672968 -.00000025 00000-0 43401-5 0 7689
2 13367 98.1211 302.6735 0006511 320.0235 40.0475 14.57155621698952
DMSP B5D2-1
1 13736U 82118A 95250.99039765 .00000042 00000-0 35979-4 0 8430
2 13736 98.6293 78.8922 0009155 129.3084 230.8903 14.25750630660710
IRAS
1 13777U 83004A 95250.55230351 -.00000223 00000-0 -12368-3 0 730
2 13777 98.9678 77.0784 0012278 157.4089 202.7615 13.99238778313705
Cosmos 1447
1 13916U 83021A 95249.84887919 .00000020 00000-0 48327-5 0 5297
2 13916 82.9411 41.3400 0036403 223.7608 136.0664 13.74329450624683
TDRS 1
1 13969U 83026B 95249.44959439 .00000066 00000-0 00000+0 0 4618
2 13969 8.5134 46.5044 0002564 131.0282 190.7895 1.00264761 18520
```

```
GOES 6
1 14050U 83041A 95250.47253457 -.00000161 00000-0 10000-3 0 4408
2 14050 6.4980 56.3963 0003529 28.6835 330.8728 1.00326948103347
OSCAR 10
1 14129U 83058B 95248.37251192 .00000162 00000-0 10000-3 0 3727
2 14129 26.4527 249.8576 5985675 307.3504 11.6914 2.05877424 63980
LandSat 5
1 14780U 84021A 95250.74488245 -.00000018 00000-0 58293-5 0 3455
2 14780 98.1025 304.9695 0004006 323.5717 36.5206 14.57163608612654
UoSat 2
1 14781U 84021B 95247.51977247 .00000083 00000-0 21856-4 0 8249
2 14781 97.7850 246.3440 0010728 291.6570 68.3489 14.69372523615552
GPS BI-09
1 15039U 84059A 95247.72352137 -.00000033 00000-0 10000-3 0 3626
2 15039 64.5504 28.6780 0082049 18.3221 341.9725 1.92302258 81928
Cosmos 1574
1 15055U 84062A 95249.59032950 .00000033 00000-0 18979-4 0 7305
2 15055 82.9567 95.8478 0029164 54.6800 305.7077 13.73625670561912
GPS BI-10
1 15271U 84097A 95248.32476028 .00000057 00000-0 10000-3 0 519
2 15271 62.1246 263.6574 0157051 354.1410 5.7321 2.00602636 79536
Cosmos 1602
1 15331U 84105A 95250.85914829 .00000233 00000-0 24551-4 0 4161
2 15331 82.5317 18.4497 0020220 159.0334 201.1716 14.84659745590932
NOAA 9
1 15427U 84123A 95251.11764608 .00000048 00000-0 49178-4 0 3902
2 15427 98.9881 310.3083 0015997 36.8281 323.3984 14.13729049553635
GPS BI-11
1 16129U 85093A 95249.66049843 -.00000046 00000-0 10000-3 0 6759
2 16129 65.2142 31.8753 0155504 86.4111 275.3599 1.89368073 16539
Mir
1 16609U 86017A 95251.24480452 .00003730 00000-0 56643-4 0 2270
2 16609 51.6442 101.8423 0003908 70.3548 289.7861 15.57377216545876
SPOT 1
1 16613U 86019A 95248.22368190 .00000090 00000-0 62356-4 0 8488
2 16613 98.6432 317.7665 0001564 47.5920 312.5389 14.20068361179727
Cosmos 1766
1 16881U 86055A 95248.03977649 .00000112 00000-0 10628-4 0 3316
2 16881 82.5180 78.9249 0018109 196.3373 163.7261 14.83651992491413
EGP
1 16908U 86061A 95249.22030942 -.00000083 00000-0 10000-3 0 263
2 16908 50.0081 153.1099 0011424 9.0696 351.0343 12.44413032 80922
NOAA 10
1 16969U 86073A 95251.01563535 .00000008 00000-0 21473-4 0 3022
2 16969 98.5141 251.4090 0014096 98.3389 261.9388 14.24953034466279
MOS-1
1 17527U 87018A 95248.55124131 .00000092 00000-0 10000-3 0 2433
2 17527 98.9810 311.6212 0001225 150.1414 209.9827 13.95257913435038
GOES 7
1 17561U 87022A 95250.58551009 .00000057 00000-0 10000-3 0 5322
```

```
2 17561 2.4966 71.5323 0002275 321.0071 29.0452 1.00267345 14454
Kvant-1
1 17845U 87030A 95250.79561853 -.00014876 00000-0 -19308-3 0 3703
2 17845 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699479940
DMSP B5D2-3
1 18123U 87053A 95250.98333235 .00000022 00000-0 33840-4 0 1296
2 18123 98.7761 80.8385 0014580 346.7987 13.2815 14.15416582424433
RS-10/11
1 18129U 87054A 95250.21961361 .00000179 00000-0 17919-3 0 1040
2 18129 82.9257 358.4265 0010195 221.4929 138.5466 13.72357072411224
Meteor 2-16
1 18312U 87068A 95250.86586924 .00000042 00000-0 24784-4 0 4230
2 18312 82.5511 216.7815 0011243 303.2073 56.8014 13.84061837406980
Meteor 2-17
1 18820U 88005A 95250.58147033 .00000029 00000-0 12456-4 0 7173
2 18820 82.5394 272.7037 0017524 9.3142 350.8338 13.84742930384273
DMSP B5D2-4
1 18822U 88006A 95250.57361816 -.00000009 00000-0 14450-4 0 631
2 18822 98.4000 90.9455 0006649 107.1753 253.0153 14.23163434394236
Glonass 34
1 19163U 88043A 95246.87010312 .00000036 00000-0 10000-3 0 153
2 19163 65.1567 95.5148 0008040 153.0004 207.1229 2.13102608 56118
Glonass 36
1 19165U 88043C 95250.68076674 .00000046 00000-0 10000-3 0 4203
2 19165 65.1591 95.3573 0000495 200.6053 159.5107 2.13102288 56812
METEOSAT 3
1 19215U 88051A 95250.26311798 -.00000298 00000-0 10000-3 0 1736
2 19215 2.6760 69.3619 0001031 58.0816 242.8295 1.00289003 14390
AO-13
1 19216U 88051B 95250.98352366 .00000029 00000-0 16119-4 0 875
2 19216 57.4548 165.8399 7324236 18.2338 357.9950 2.09720364 23902
OKEAN 1
1 19274U 88056A 95248.87388104 .00000268 00000-0 30468-4 0 315
2 19274 82.5142 178.6321 0020197 349.3464 10.7317 14.82379220387103
Meteor 3-2
1 19336U 88064A 95251.24511024 .00000051 00000-0 10000-3 0 4219
2 19336 82.5415 6.6340 0015746 221.4016 138.5905 13.16974471342235
Glonass 39
1 19503U 88085C 95250.24005226 -.00000062 00000-0 10000-3 0 3121
2 19503 65.6766 334.2845 0008508 160.1500 199.9116 2.13101890 54290
NOAA 11
1 19531U 88089A 95251.00713619 -.00000018 00000-0 15787-4 0 1984
2 19531 99.1981 256.5970 0011681 321.0435 38.9893 14.13062135358458
TDRS 2
1 19548U 88091B 95245.99760681 -.00000203 00000-0 00000+0 0 1441
2 19548 1.9096 73.9982 0006781 117.0317 234.4182 1.00263639 12630
Glonass 40
1 19749U 89001A 95250.74767427 .00000046 00000-0 10000-3 0 5252
2 19749 65.0904 94.9288 0004999 253.9528 106.0733 2.13101388 51813
Glonass 41
```

```
1 19750U 89001B 95248.92600470 .00000048 00000-0 10000-3 0 4357
2 19750 65.1220 95.0556 0007106 228.3371 131.6860 2.13101864 51793
GPS BII-01
1 19802U 89013A 95248.95773921 -.00000000 00000-0 10000-3 0 1001
2 19802 55.2368 121.9817 0028290 168.9032 191.2142 2.00553922 47997
Akebono
1 19822U 89016A 95251.11013972 .00010576 00000-0 51017-3 0 5646
2 19822 75.0978 287.4594 3775690 319.0000 18.0380 7.87403523144344
Meteor 2-18
1 19851U 89018A 95250.74960945 .00000065 00000-0 44766-4 0 4217
2 19851 82.5237 147.0869 0015893 52.7640 307.4957 13.84396102329611
MOP-1
1 19876U 89020B 95241.94209128 .00000058 00000-0 10000-3 0 1355
2 19876 1.3624 73.3585 0006355 38.9433 214.8279 1.00280027 3757
TDRS 3
1 19883U 89021B 95250.48390063 -.00000297 00000-0 00000+0 0 1173
2 19883 0.0274 77.8791 0004045 124.0148 277.3179 1.00266829196271
GPS BII-02
1 20061U 89044A 95249.29756702 -.00000022 00000-0 10000-3 0 1127
2 20061 54.3812 298.1342 0148960 215.8534 143.2060 2.00562761 45744
Nadezhda 1
1 20103U 89050A 95251.12706643 .00000043 00000-0 29215-4 0 5063
2 20103 82.9622 317.4297 0038756 120.4925 240.0068 13.73856836309813
GPS BII-03
1 20185U 89064A 95246.64229994 -.00000014 00000-0 10000-3 0 1312
2 20185 55.0244 122.6175 0014166 307.0150 52.9137 2.00569167 44265
GMS 4
1 20217U 89070A 95248.63907897 -.00000393 00000-0 10000-3 0 2367
2 20217 1.1964 75.4029 0001141 344.5447 274.7039 1.00274170 22558
INTERCOSMOS 24
1 20261U 89080A 95250.04892082 .00000055 00000-0 15034-4 0 4374
2 20261 82.5924 92.2250 1242240 327.7991 25.2723 12.47273183270486
GPS BII-04
1 20302U 89085A 95250.17000329 .00000002 00000-0 10000-3 0 1112
2 20302 53.3475 238.0891 0019688 185.5012 174.4849 2.00557845 43135
Meteor 3-3
1 20305U 89086A 95250.71381104 .00000044 00000-0 10000-3 0 3881
2 20305 82.5530 320.5688 0005405 290.9936 69.0586 13.04411093281246
COBE
1 20322U 89089A 95248.56841721 -.00000294 00000-0 -16000-3 0 1499
2 20322 98.9568 263.4048 0009768 108.8629 251.3593 14.03448328296863
Kvant-2
1 20335U 89093A 95250.79561853 -.00014876 00000-0 -19308-3 0 3724
2 20335 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699328952
GPS BII-05
1 20361U 89097A 95247.68923026 .00000005 00000-0 10000-3 0 9672
2 20361 55.8153 64.6273 0093476 118.1463 242.9073 2.00563156 32563
COSMOS 2054 (Altair-1)
1 20391U 89101A 95250.40429094 -.00000158 00000-0 10000-3 0 2179
2 20391 3.2935 65.3071 0004015 73.0857 337.2487 1.00274731 21159
```

```
SPOT 2
1 20436U 90005A 95251.24084325 .00000169 00000-0 10000-3 0 9719
2 20436 98.7279 324.2433 0002008 43.6512 316.4788 14.20028303291687
UO-14
1 20437U 90005B 95249.18390252 .00000024 00000-0 26169-4 0 1232
2 20437 98.5652 332.2424 0010884 325.4345 34.6128 14.29895917293328
UO-15
1 20438U 90005C 95250.73109221 -.00000008 00000-0 14088-4 0 9205
2 20438 98.5609 332.1591 0010407 326.5524 33.4996 14.29212982293434
PACSAT
1 20439U 90005D 95250.20219512 -.00000025 00000-0 72217-5 0 9223
2 20439 98.5713 335.0213 0011126 323.0978 36.9440 14.29949887293486
DO-17
1 20440U 90005E 95249.20307156 .00000037 00000-0 31047-4 0 9222
2 20440 98.5782 334.5379 0011574 325.7480 34.2949 14.30091590293368
WO-18
1 20441U 90005F 95247.78763568 .00000007 00000-0 19784-4 0 9262
2 20441 98.5756 333.1060 0012107 329.6278 30.4201 14.30062193293167
LO-19
1 20442U 90005G 95249.20395923 .00000021 00000-0 24817-4 0 9212
2 20442 98.5798 334.8908 0012140 324.4171 35.6200 14.30166012293380
GPS BII-06
1 20452U 90008A 95249.07927688 -.00000039 00000-0 10000-3 0 703
2 20452 54.0321 178.3713 0057796 82.5358 278.1074 2.00551449 41098
MOS-1B
1 20478U 90013A 95249.82460225 .00000090 00000-0 10000-3 0 8332
2 20478 99.1413 317.4794 0000383 277.8856 82.2263 13.94864213204912
DEBUT
1 20479U 90013B 95247.68991162 -.00000028 00000-0 37291-5 0 9217
2 20479 99.0698 321.6584 0541353 52.8989 312.0333 12.83333932261153
FO-20
1 20480U 90013C 95248.17041256 -.00000002 00000-0 63277-4 0 8183
2 20480 99.0702 321.8906 0541133 52.3084 312.5830 12.83231510261200
MOS-1B R/B
1 20491U 90013D 95249.42006932 .00000511 00000-0 10355-2 0 1685
2 20491 99.0556 19.2247 0468908 241.2234 114.1018 13.02990761264770
LACE
1 20496U 90015A 95248.49296001 .00001016 00000-0 37863-4 0 5721
2 20496 43.1038 33.2591 0010111 358.1491 1.9328 15.34784758309917
Nadezhda 2
1 20508U 90017A 95251.11282033 .00000039 00000-0 24836-4 0 5056
2 20508 82.9499 92.0056 0046086 73.9575 286.6650 13.73497566277033
OKEAN 2
1 20510U 90018A 95250.68775868 .00000114 00000-0 12409-4 0 4409
2 20510 82.5257 129.2071 0018644 159.7098 200.4840 14.78519696297780
GPS BII-07
1 20533U 90025A 95250.98565985 -.00000029 00000-0 10000-3 0 958
2 20533 54.8150 298.7109 0045649 79.9246 280.6487 2.00569044 39905
PegSat
1 20546U 90028A 95250.85442009 .00007978 00000-0 16048-3 0 8384
```

```
2 20546 94.1176 191.1120 0066140 21.0397 339.3556 15.44260387301234
HST
1 20580U 90037B 95248.42597729 .00000381 00000-0 22540-4 0 7084
2 20580 28.4704 255.2569 0006891 61.0477 299.0807 14.90923453 95891
MACSAT 2
1 20608U 90043B 95247.24648772 .00000199 00000-0 31638-4 0 1221
2 20608 89.9313 175.8199 0106191 340.6809 19.0401 14.64858268284280
Glonass 44
1 20619U 90045A 95250.17753693 -.00000062 00000-0 10000-3 0 2253
2 20619 65.2653 333.6678 0025217 209.2331 150.6776 2.13102465 41258
Glonass 45
1 20620U 90045B 95244.19587537 -.00000049 00000-0 10000-3 0 2279
2 20620 65.2946 333.8644 0006615 44.2594 315.8535 2.13102549 41160
Glonass 46
1 20621U 90045C 95245.20117031 -.00000055 00000-0 10000-3 0 8195
2 20621 65.2841 333.8892 0011593 189.5490 170.4775 2.13101663 41188
Kristall
1 20635U 90048A 95250.79561853 -.00014876 00000-0 -19308-3 0 1648
2 20635 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699299783
ROSAT
1 20638U 90049A 95247.80033819 -.00000145 00000-0 94028-5 0 4893
2 20638 52.9901 148.6190 0011375 346.5207 13.5443 15.07235377289122
Meteor 2-19
1 20670U 90057A 95248.00777503 -.00000069 00000-0 -75144-4 0 9209
2 20670 82.5432 215.1526 0016110 345.1576 14.9104 13.84160587262151
CRRES
1 20712U 90065A 95249.63725381 .00000647 00000-0 76541-3 0 1496
2 20712 18.1231 6.1070 7194895 164.6238 242.0146 2.35515360 36409
GPS BII-08
1 20724U 90068A 95249.81108297 .00000006 00000-0 10000-3 0 9364
2 20724 54.8587 120.0802 0120099 175.0896 185.1115 2.00565963 35741
Feng Yun1-2
1 20788U 90081A 95250.21713230 -.00000027 00000-0 10000-4 0 5107
2 20788 98.8131 260.4813 0014651 207.7501 152.2885 14.01375734256324
Meteor 2-20
1 20826U 90086A 95250.80058133 .00000077 00000-0 56079-4 0 9322
2 20826 82.5288 149.8341 0011693 232.7115 127.2976 13.83614679249652
GPS BII-09
1 20830U 90088A 95250.35614335 -.00000013 00000-0 10000-3 0 9471
2 20830 55.7713 62.5009 0067778 99.9400 260.8661 2.00556421 36396
GPS BIIA-10
1 20959U 90103A 95247.77263247 -.00000009 00000-0 10000-3 0 9122
2 20959 55.0481 122.1652 0099427 230.2230 128.9644 2.00571322 34937
DMSP B5D2-5
1 20978U 90105A 95251.09779232 .00000079 00000-0 44367-4 0 3248
2 20978 98.6310 319.0229 0078398 285.8218 73.4327 14.32575009249186
Glonass 47
1 21006U 90110A 95249.44979950 .00000049 00000-0 10000-3 0 7946
2 21006 65.0802 94.3115 0058990 188.1097 171.8804 2.13102800 36948
Glonass 48
```

```
1 21007U 90110B 95248.70041052 .00000047 00000-0 10000-3 0 9184
2 21007 65.1158 94.4206 0036206 180.2030 179.9234 2.13101180 36915
Glonass 49
1 21008U 90110C 95250.93833181 .00000044 00000-0 10000-3 0 1207
2 21008 65.0747 94.2950 0008078 269.5246 90.4676 2.13098928 36955
AO-21
1 21087U 91006A 95249.24900859 .00000093 00000-0 82657-4 0 6294
2 21087 82.9408 172.5877 0034711 283.2149 76.5136 13.74558708230868
RS-12/13
1 21089U 91007A 95250.85244590 .00000039 00000-0 25465-4 0 8284
2 21089 82.9192 39.4623 0028265 304.9489 54.9011 13.74060023230124
MOP-2
1 21140U 91015B 95249.52286748 -.00000037 00000-0 10000-3 0 979
2 21140 0.0971 306.6178 0001620 229.1525 357.6163 1.00266631 18750
Nadezhda 3
1 21152U 91019A 95251.08137328 .00000033 00000-0 18541-4 0 1963
2 21152 82.9250 355.4746 0043474 50.9087 309.5928 13.73522381224889
Glonass 50
1 21216U 91025A 95249.93781175 -.00000062 00000-0 10000-3 0 4379
2 21216 65.0184 333.3172 0007205 198.4417 161.5861 2.13102809 34469
Glonass 51
1 21217U 91025B 95248.12997737 -.00000064 00000-0 10000-3 0 8436
2 21217 65.0259 333.4023 0007286 236.3461 123.5868 2.13101664 34417
Glonass 52
1 21218U 91025C 95250.11858976 -.00000062 00000-0 10000-3 0 3152
2 21218 65.0099 333.2883 0013496 59.4766 300.7047 2.13102940 34465
GRO
1 21225U 91027B 95247.44760588 .00002017 00000-0 38627-4 0 2926
2 21225 28.4594 23.1370 0002898 197.0528 162.9980 15.42947988125584
Meteor 3-4
1 21232U 91030A 95250.89207850 .00000051 00000-0 10000-3 0 8318
2 21232 82.5397 213.0597 0013379 142.1925 218.0112 13.16468865210264
NOAA 12
1 21263U 91032A 95251.04404132 .00000086 00000-0 57768-4 0 6245
2 21263 98.5841 272.9696 0013801 20.9896 339.1849 14.22555780224205
OKEAN 3
1 21397U 91039A 95248.86155264 .00000210 00000-0 26931-4 0 1304
2 21397 82.5217 44.2259 0020700 247.0510 112.8522 14.76398057229265
GPS BIIA-11
1 21552U 91047A 95250.03449523 -.00000013 00000-0 10000-6 0 8897
2 21552 56.0552 60.2200 0065318 242.3718 116.9996 2.00561006 30576
ERS-1
1 21574U 91050A 95251.18473486 .00000226 00000-0 10000-3 0 1959
2 21574 98.5518 324.3162 0001097 103.1697 256.9052 14.32246728216931
UO-22
1 21575U 91050B 95248.22234082 .00000027 00000-0 23517-4 0 6286
2 21575 98.3888 317.5395 0008785 41.7946 318.3904 14.36988605216993
ORBCOMM-X
1 21576U 91050C 95249.17890833 .00000014 00000-0 19271-4 0 7238
2 21576 98.3868 316.7920 0004943 47.9150 312.2456 14.36397656217035
```

```
TUBSAT-A
1 21577U 91050D 95249.16955696 .00000014 00000-0 19209-4 0 6226
2 21577 98.3867 317.3254 0007591 42.6864 317.4903 14.36492693217062
SARA
1 21578U 91050E 95248.20795425 .00000182 00000-0 73018-4 0 8229
2 21578 98.4086 322.3254 0005845 46.9236 313.2440 14.39052027217205
TDRS 4
1 21639U 91054B 95250.58227097 .00000052 00000-0 00000+0 0 9368
2 21639 0.0585 286.1715 0003007 224.5377 230.7470 1.00270382109052
Meteor 3-5
1 21655U 91056A 95250.80522181 .00000051 00000-0 10000-3 0 8290
2 21655 82.5537 160.6109 0013468 152.1292 208.0555 13.16840369195379
UARS
1 21701U 91063B 95248.90464712 -.00000052 00000-0 16535-4 0 6990
2 21701 56.9837 173.1879 0005952 105.1328 255.0359 14.96421023217650
DMSP B5D2-6
1 21798U 91082A 95251.04942747 .00000063 00000-0 57125-4 0 9764
2 21798 98.9611 262.9840 0012675 315.2669 44.7480 14.13915322194919
Glonass 53
1 21853U 92005A 95248.45347698 .00000046 00000-0 10000-3 0 376
2 21853 65.0257 94.0423 0006761 192.8716 167.1962 2.13102321 28032
Glonass 54
1 21854U 92005B 95248.74273603 .00000047 00000-0 10000-3 0 1847
2 21854 65.0291 94.0241 0016111 21.1187 339.0353 2.13103748 28022
Glonass 55
1 21855U 92005C 95250.68437531 .00000046 00000-0 00000+0 0 1749
2 21855 65.0388 93.9616 0007380 193.4608 166.6021 2.13101804 28053
JERS-1
1 21867U 92007A 95249.16714510 .00001213 00000-0 10597-3 0 6568
2 21867 97.7142 325.1008 0002582 106.2855 253.8652 14.98646270195170
GPS BIIA-12
1 21890U 92009A 95247.50564163 .00000040 00000-0 10000-3 0 6958
2 21890 53.8947 238.4559 0058123 185.7527 174.1696 2.00570446 25894
GPS BIIA-13
1 21930U 92019A 95251.20131476 -.00000099 00000-0 10000-3 0 6756
2 21930 55.7182 359.9371 0038548 170.5446 189.5560 2.00567167 24898
EUVE
1 21987U 92031A 95247.22336438 .00000779 00000-0 26356-4 0 4804
2 21987 28.4330 311.8929 0010356 151.6780 208.4381 15.19399997179987
SAMPEX
1 22012U 92038A 95248.48935170 .00000070 00000-0 37528-5 0 6572
2 22012 81.6694 60.9295 0119447 25.8975 334.8149 14.91430660172642
GPS BIIA-14
1 22014U 92039A 95246.25658244 -.00000008 00000-0 10000-3 0 5825
2 22014 54.8523 180.0665 0090047 316.3744 42.9087 2.00568856 16638
Glonass 56
1 22056U 92047A 95248.23737916 -.00000064 00000-0 00000+0 0 859
2 22056 64.8536 333.4778 0005254 259.7018 100.2841 2.13103280 24093
Glonass 57
1 22057U 92047B 95250.40988520 -.00000061 00000-0 00000+0 0 803
```

```
2 22057 64.8673 333.4206 0007012 312.1580 47.8350 2.13102442 24117
Glonass 58
1 22058U 92047C 95250.34994251 -.00000062 00000-0 10000-3 0 430
2 22058 64.8561 333.4308 0007065 280.7968 79.2021 2.13103048 24167
TOPEX
1 22076U 92052A 95249.55564713 -.00000038 00000-0 10000-3 0 9042
2 22076 66.0362 83.8609 0007924 264.7348 95.2762 12.80930843143661
KO-23
1 22077U 92052B 95249.84043843 -.00000037 00000-0 10000-3 0 5192
2 22077 66.0820 64.8094 0002641 170.5328 189.5741 12.86291942144235
S80/T
1 22078U 92052C 95248.89500697 -.00000037 00000-0 10000-3 0 5169
2 22078 66.0767 65.5935 0002880 139.8436 220.2793 12.86576121144191
GPS BIIA-15
1 22108U 92058A 95250.20425923 .00000004 00000-0 10000-3 0 6169
2 22108 54.1384 239.1335 0115496 153.0010 207.5942 2.00570935 21892
FREJA
1 22161U 92064A 95247.45447889 .00000042 00000-0 59762-4 0 5433

--- QScan/PCB v1.15b / 01-0228
* Origin: _T_H_E__R_O_Y__H_O_B_B_S__B_B_S_ Moonachie NJ (1:2604/122)

+-----------------------------------------------------------------------------+
The Roy Hobbs BBS (201)-641-7307 Moonachie NJ.USENET
Internet:Fidonet:N2UTO'S BBS List:Telnet198.6.114.80
cono@hobbs.com // Running PCBoard 15.22
+-----------------------------------------------------------------------------+
```

1937. NORAD Two-Line Orbital 2

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: ts.kelso@intac.com
Message-ID: <8B0D03D.002B0003C9.uuout@intac.com>
Source record: 24145

```
2 22161 62.9914 247.9342 0816305 353.6389 5.4734 13.21845615140527
LAGEOS II
1 22195U 92070B 95248.75314157 -.00000009 00000-0 10000-3 0 4290
2 22195 52.6449 172.0643 0137953 311.9308 46.9566 6.47294135 67793
GPS BIIA-16
1 22231U 92079A 95249.89078528 -.00000038 00000-0 10000-3 0 5939
2 22231 54.6768 181.0778 0035261 284.7442 74.8525 2.00562706 20469
GPS BIIA-17
1 22275U 92089A 95251.03183174 -.00000033 00000-0 10000-3 0 6106
2 22275 54.7270 178.4588 0306717 230.8841 126.4188 2.00566694 19891
TDRS 5
1 22314U 93003B 95246.53400652 -.00000302 00000-0 10000-3 0 5534
2 22314 2.0370 71.4476 0003016 138.1214 278.6678 1.00261781 9701
GPS BIIA-18
1 22446U 93007A 95249.11417355 -.00000023 00000-0 10000-3 0 6013
2 22446 54.3821 298.9876 0082102 358.6124 1.4315 2.00574843 18842
Glonass 59
1 22512U 93010A 95250.80131620 .00000045 00000-0 10000-3 0 7280
2 22512 65.0469 93.8197 0007957 183.1775 176.9015 2.13102092 19651
Glonass 60
1 22513U 93010B 95250.27113097 .00000047 00000-0 00000+0 0 8053
2 22513 65.0400 93.8454 0007275 184.7889 175.2928 2.13102644 19837
Glonass 61
1 22514U 93010C 95249.15683432 .00000048 00000-0 00000+0 0 7986
2 22514 65.0598 93.8677 0010987 181.4665 178.6161 2.13102270 19812
ASTRO-D
1 22521U 93011A 95247.91841306 .00000968 00000-0 62228-4 0 4335
2 22521 31.1045 89.7496 0056854 209.6274 150.1111 15.02413161139376
UFO F1
1 22563U 93015A 95245.79732429 .00000033 00000-0 00000+0 0 4499
2 22563 25.8587 293.1457 0008377 244.7938 167.6568 0.99247929 13237
GPS BIIA-19
1 22581U 93017A 95247.76001458 -.00000088 00000-0 10000-3 0 4598
2 22581 55.2140 359.6083 0057707 37.4237 322.9835 2.00571672 17878
ARSENE
1 22654U 93031B 95247.86169831 -.00000132 00000-0 10000-3 0 3281
2 22654 2.7174 81.7079 2888847 218.8092 116.8417 1.42202974 7522
GPS BIIA-20
1 22657U 93032A 95250.38667217 -.00000099 00000-0 10000-3 0 5135
2 22657 55.2348 359.3325 0067665 203.9498 155.7574 2.00562056 13257
RADCAL
1 22698U 93041A 95248.62548775 .00000051 00000-0 16779-4 0 4283
2 22698 89.5401 286.3346 0090009 175.0666 185.1431 14.21352022113861
GPS BIIA-21
```

```
1 22700U 93042A 95246.36429753 .00000053 00000-0 10000-3 0 4519
2 22700 54.3029 240.1009 0040557 344.0155 15.8691 2.00566802 15976
NOAA 13
1 22739U 93050A 95250.83207802 .00000094 00000-0 77568-4 0 8833
2 22739 99.0000 199.7965 0009549 306.1395 53.8894 14.10941977107090
GPS BIIA-22
1 22779U 93054A 95249.44146312 -.00000024 00000-0 10000-3 0 5090
2 22779 54.5292 298.9903 0020425 248.2197 111.6413 2.00549097 14796
Meteor 2-21
1 22782U 93055A 95250.90019369 .00000050 00000-0 31581-4 0 4274
2 22782 82.5473 211.6311 0024144 53.6407 306.6984 13.83037648101974
UFO F2
1 22787U 93056A 95251.12141782 -.00000099 00000-0 10000-3 0 5187
2 22787 4.4139 325.4715 0003628 204.7894 292.2910 1.00277782 5991
SPOT 3
1 22823U 93061A 95247.75861937 -.00000044 00000-0 00000+0 0 4699
2 22823 98.7335 320.8531 0001124 99.0439 261.0865 14.20022689100584
STELLA
1 22824U 93061B 95251.20627194 -.00000058 00000-0 -60938-5 0 4148
2 22824 98.6112 326.0542 0006570 348.0992 12.0021 14.27102117101578
AO-27
1 22825U 93061C 95248.69695740 .00000001 00000-0 18077-4 0 4164
2 22825 98.6107 323.9587 0009143 352.2001 7.9033 14.27671102101251
IO-26
1 22826U 93061D 95249.20543015 -.00000022 00000-0 86285-5 0 4150
2 22826 98.6129 324.5702 0009679 351.6518 8.4491 14.27778979101335
HEATHSAT
1 22827U 93061E 95248.72873923 .00000029 00000-0 29205-4 0 4762
2 22827 98.6104 324.0297 0009605 340.6476 19.4336 14.27904513101271
ITAMSAT
1 22828U 93061F 95248.20231774 .00000014 00000-0 23222-4 0 3933
2 22828 98.6089 323.6217 0010464 339.5065 20.5687 14.28110619 69291
PO-28
1 22829U 93061G 95247.23420026 .00000031 00000-0 29951-4 0 4076
2 22829 98.6084 322.7064 0010354 343.1823 16.9010 14.28090552101073
KO-25
1 22830U 93061H 95248.20536673 -.00000019 00000-0 95006-5 0 4265
2 22830 98.5087 315.9527 0011232 315.8520 44.1763 14.28095724101211
GPS BIIA-23
1 22877U 93068A 95249.49480951 -.00000010 00000-0 10000-3 0 3092
2 22877 55.5306 60.5358 0037627 294.3994 65.2354 2.00574065 13686
METEOSAT 6
1 22912U 93073B 95250.17463567 -.00000118 00000-0 10000-3 0 3627
2 22912 0.6522 278.0861 0001191 292.5937 187.5821 1.00272743 5018
HST Array
1 22920U 90037C 95251.17392720 .00004853 00000-0 35103-3 0 3648
2 22920 28.4654 189.3525 0002753 339.4448 20.6055 15.01784437 96790
Meteor 3-6
1 22969U 94003A 95249.57912777 .00000051 00000-0 10000-3 0 1945
2 22969 82.5575 101.3187 0014002 229.3996 130.5889 13.16731139 77597
```

```
TUBSAT-B
1 22970U 94003B 95247.10391820 .00000051 00000-0 10000-3 0 1854
2 22970 82.5587 102.9959 0014925 231.7089 128.2694 13.16825909 77272
GPS BIIA-24
1 23027U 94016A 95248.07974563 -.00000089 00000-0 10000-3 0 2538
2 23027 55.0833 1.4515 0064935 198.4511 161.3258 2.00560939 10968
Glonass 62
1 23043U 94021A 95251.11195920 -.00000061 00000-0 00000+0 0 2538
2 23043 64.7451 333.7672 0007147 189.4715 170.5675 2.13102274 10976
Glonass 63
1 23044U 94021B 95249.58682163 -.00000064 00000-0 00000+0 0 2259
2 23044 64.7360 333.8306 0030580 203.5996 156.3065 2.13102970 10942
Glonass 64
1 23045U 94021C 95250.23245329 -.00000063 00000-0 00000+0 0 2320
2 23045 64.7216 333.8139 0010089 36.1654 323.9506 2.13102706 10950
GOES 8
1 23051U 94022A 95249.11690330 -.00000283 00000-0 10000-3 0 3745
2 23051 0.1876 84.3014 0003472 94.0687 133.4903 1.00283379 12509
MSTI 2
1 23101U 94028A 95251.03462933 .00005180 00000-0 90267-4 0 2302
2 23101 97.0933 83.1065 0010730 295.2754 64.7414 15.51121045 75360
STRV-1A
1 23125U 94034B 95249.46726124 .00007168 00000-0 16539-2 0 1938
2 23125 7.5144 357.7256 7268444 186.1882 152.4736 2.30326469 9529
STRV-1B
1 23126U 94034C 95248.04000883 .00004378 00000-0 95890-3 0 1724
2 23126 7.5180 358.5368 7272645 184.6199 160.3046 2.29954955 9533
Nadezhda 4
1 23179U 94041A 95249.07459508 .00000038 00000-0 23087-4 0 1286
2 23179 82.9438 87.9212 0035203 198.3962 161.5924 13.75671151 57599
Glonass 65
1 23203U 94050A 95250.37003089 -.00000002 00000-0 00000+0 0 1881
2 23203 64.7916 213.6500 0006585 159.1106 200.8903 2.13101943 8351
Glonass 66
1 23204U 94050B 95250.13477001 .00000000 00000-0 00000+0 0 1961
2 23204 64.7762 213.6895 0015440 340.7513 19.1631 2.13102014 8346
Glonass 67
1 23205U 94050C 95249.07911592 .00000013 00000-0 00000+0 0 1820
2 23205 64.7904 213.7055 0002987 287.0614 72.8833 2.13102193 8327
DMSP B5D2-7
1 23233U 94057A 95251.12579789 .00000098 00000-0 76565-4 0 4746
2 23233 98.8725 308.4330 0011595 265.5249 94.4624 14.12634465 52865
OKEAN 1-7
1 23317U 94066A 95249.19155081 .00000177 00000-0 23561-4 0 920
2 23317 82.5444 321.1904 0024431 289.8747 69.9837 14.73956627 48558
ELEKTRO
1 23327U 94069A 95245.81553545 -.00000120 00000-0 10000-3 0 883
2 23327 0.6247 261.1834 0005596 198.8131 251.0815 1.00273492 3103
RESURS 1-3
1 23342U 94074A 95249.65291859 .00000011 00000-0 10000-4 0 3049
```

```
2 23342 98.0084 307.8278 0001431 99.6902 260.4474 14.69763557 45014
Glonass 68
1 23396U 94076A 95249.86116857 .00000048 00000-0 00000+0 0 1421
2 23396 64.9734 93.9304 0030051 188.2008 171.8359 2.13102540 6189
Glonass 69
1 23397U 94076B 95248.62891927 .00000047 00000-0 00000+0 0 1477
2 23397 64.9620 93.9805 0011626 324.0492 35.9572 2.13102089 6156
Glonass 70
1 23398U 94076C 95248.04313357 .00000044 00000-0 00000+0 0 1556
2 23398 64.9559 93.9836 0002034 286.6439 73.4171 2.13102092 6155
LUCH (Altair-2)
1 23426U 94082A 95250.52954863 -.00000303 00000-0 00000+0 0 1698
2 23426 2.0393 272.3279 0000442 325.2401 34.0982 1.00264120 2650
RS-15
1 23439U 94085A 95251.07624810 -.00000039 00000-0 10000-3 0 760
2 23439 64.8186 120.9363 0166806 248.1405 110.1704 11.27524860 28865
NOAA 14
1 23455U 94089A 95251.10774740 .00000052 00000-0 52998-4 0 3089
2 23455 98.9071 192.9877 0009491 327.8944 32.1664 14.11531220 35514
ODERACS II A
1 23471U 95004C 95250.90265838 .00039484 00000-0 14851-3 0 1843
2 23471 51.6443 63.8908 0011694 58.1757 302.0393 15.87295169 34291
ODERACS II B
1 23472U 95004D 95251.19596198 .00291738 51798-4 33439-3 0 2268
2 23472 51.6366 49.7415 0002906 57.8778 302.2449 16.08487097 34502
Glonass 71
1 23511U 95009A 95250.34968574 -.00000063 00000-0 00000+0 0 925
2 23511 64.7580 334.0674 0007541 214.5095 145.4901 2.13102894 3922
Glonass 72
1 23512U 95009B 95248.59013722 -.00000065 00000-0 00000+0 0 1019
2 23512 64.7485 334.1429 0005151 308.8035 51.1940 2.13102157 3885
Glonass 73
1 23513U 95009C 95250.29125571 -.00000063 00000-0 00000+0 0 1036
2 23513 64.7517 334.0927 0014348 201.0178 158.9719 2.13102589 3928
Soyuz TM-21
1 23519U 95010A 95250.79561853 -.00014876 00000-0 -19308-3 0 1837
2 23519 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699 27708
SFU
1 23521U 95011A 95247.42631842 .00002010 00000-0 61543-4 0 959
2 23521 28.4615 254.4117 0019653 22.7724 337.3739 15.28771479 26074
GMS 5
1 23522U 95011B 95250.62819087 -.00000316 00000-0 10000-3 0 527
2 23522 0.7543 299.8909 0001279 229.1735 183.3551 1.00264712 1605
DMSP B5D2-8
1 23533U 95015A 95250.99538358 -.00000016 00000-0 15050-4 0 2049
2 23533 98.8359 252.2357 0007445 130.5172 229.6652 14.12699666 23642
Microlab 1
1 23547U 95017C 95248.08714595 .00000175 00000-0 66636-4 0 478
2 23547 69.9783 113.9405 0014753 228.3423 131.6447 14.45404415 22329
OFEQ 3
```

```
1 23549U 95018A 95250.86715310 .00006533 00000-0 16845-3 0 1039
2 23549 143.3667 309.4012 0252032 284.2029 73.0941 15.08541720 23456
GFZ-1
1 23558U 86017JE 95251.00240028 .00003349 00000-0 46300-4 0 563
2 23558 51.6496 100.2211 0006245 229.7632 130.2790 15.60352209545763
ERS-2
1 23560U 95021A 95251.20672762 .00000034 00000-0 28835-4 0 1154
2 23560 98.5453 324.3479 0001276 82.1735 277.9590 14.32253455 20067
Spektr
1 23579U 95024A 95250.79561853 -.00014876 00000-0 -19308-3 0 1232
2 23579 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699 17264
GOES 9
1 23581U 95025A 95249.47242326 -.00000214 00000-0 10000-3 0 510
2 23581 0.3984 269.8029 0001715 279.9485 235.6470 1.00272093 1078
Helios 1A
1 23605U 95033A 95249.92815699 .00000087 00000-0 25550-4 0 834
2 23605 98.0904 185.1437 0001614 73.3528 286.7852 14.63861657 8965
UPM SAT 1
1 23606U 95033B 95249.32911710 -.00000039 00000-0 16229-5 0 450
2 23606 98.0745 184.7411 0006775 16.3592 343.7801 14.66888370 8958
CERISE
1 23607U 95033C 95250.27375752 .00000182 00000-0 40890-4 0 242
2 23607 98.0739 185.6952 0009759 12.7390 347.4036 14.67141395 9102
TDRS 6
1 23613U 95035B 95249.47199039 .00000100 00000-0 00000+0 0 438
2 23613 0.0862 89.2086 0001249 135.5623 140.0133 1.00278553 538
Progress M-28
1 23617U 95036A 95247.84389206 -.00013481 00000-0 -17436-3 0 500
2 23617 51.6463 118.8723 0003479 67.7599 292.4521 15.57345555 7290
Glonass 74
1 23620U 95037A 95250.07575571 .00000001 00000-0 00000+0 0 446
2 23620 64.8417 213.5014 0018172 172.1101 187.8920 2.13102732 953
Glonass 75
1 23621U 95037B 95250.25202296 -.00000001 00000-0 00000+0 0 494
2 23621 64.8572 213.4848 0017942 182.9829 176.9795 2.13102085 950
Glonass 76
1 23622U 95037C 95250.77992313 -.00000005 00000-0 00000+0 0 447
2 23622 64.8463 213.4759 0036740 167.0014 193.0646 2.13102232 968
Prognoz-M2
1 23632U 95039A 95252.49547350 -.00001202 00000-0 00000+0 0 101
2 23632 63.0580 259.8600 9226312 314.4720 313.7000 0.26340101 96
1995042A
1 23642U 95042A 95249.19037069 .00000186 00000-0 -42822-3 0 348
2 23642 62.8590 297.6735 7430723 280.4501 10.8545 2.00571812 564
1995042B
1 23643U 95042B 95248.36594378 .10201657 86982-5 20244-3 0 885
2 23643 62.8157 194.3910 0019186 165.1908 195.4508 16.45261306 4382
1995042C
1 23644U 95042C 95237.29999104 .12766218 87352-5 17905-3 0 616
2 23644 62.8087 238.3590 0024525 127.5349 234.0840 16.46614548 2605
```

```
1995042D
1 23645U 95042D 95250.24539699 .00001049 00000-0 10000-4 0 202
2 23645 62.8378 297.6774 7444580 280.4555 10.7457 1.95891777 579
1995044A
1 23651U 95044A 95250.76431706 -.00000360 00000-0 00000+0 0 185
2 23651 0.0671 253.1674 0004360 304.6422 195.3479 1.00303328 81
1995044B
1 23652U 95044B 95250.55511484 .00140435 -72060-6 59620-3 0 113
2 23652 6.7544 251.0554 7375580 185.1689 156.7916 2.21975870 209
1995045A
1 23653U 95045A 95249.75684890 -.00000117 00000-0 00000+0 0 77
2 23653 1.5214 280.5400 0018482 262.6840 156.9954 0.99928298 76
1995045B
1 23654U 95045B 95246.28682870 .15820329 12759-4 92745-4 0 192
2 23654 51.6410 261.6737 0003545 231.8539 128.2479 16.54149064 574
1995045C
1 23655U 95045C 95243.54236111 .17934734 12422-4 11810-2 0 100
2 23655 51.6305 277.1380 0001561 87.2215 277.1570 16.40807312 123
SICH-1
1 23657U 95046A 95248.29958702 .00000078 00000-0 86683-5 0 124
2 23657 82.5320 103.6990 0026495 258.3301 101.4935 14.73409297 730
1995046C
1 23659U 95046C 95248.70592247 -.00000222 00000-0 -37166-4 0 89
2 23659 82.5313 103.3240 0026116 259.1852 100.6386 14.73718044 799
1995045E
1 23660U 95045E 95248.59466561 .00001127 00000-0 51436-3 0 62
2 23660 47.4734 279.3632 7278138 1.4407 0.0037 2.27006820 122
1995045F
1 23661U 95045F 95248.16300830 .00000016 00000-0 10000-4 0 49
2 23661 47.5222 279.5051 7258157 1.3073 0.0161 2.26606721 112
1995045G
1 23663U 95045G 95248.26871373 -.00003538 11187-4 00000+0 0 35
2 23663 51.6021 252.4759 0183118 104.7299 291.3188 15.88741033 669
1995045H
1 23664U 95045H 95245.30021991 .00005473 10708-4 10000-4 0 45
2 23664 51.6830 269.1703 0261886 93.8534 276.1056 15.66747594 222
Soyuz TM-22
1 23665U 95047A 95250.79561853 -.00014876 00000-0 -19308-3 0 153
2 23665 51.6453 104.0915 0003437 71.8141 288.2635 15.57353699 701
1995047B
1 23666U 95047B 95249.18156250 .20145336 12715-4 11758-3 0 164
2 23666 51.6206 111.2938 0007333 232.1815 128.1265 16.53993193 462
STS 69
1 23667U 95048A 95251.22959491 .00000349 00000-0 00000+0 0 56
2 23667 28.4680 39.7120 0006736 267.0749 304.4016 15.65290993 99
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

--- QScan/PCB v1.15b / 01-0228
* Origin: _T_H_E__R_O_Y__H_O_B_B_S__B_B_S_ Moonachie NJ (1:2604/122)

+---+
The Roy Hobbs BBS (201)-641-7307 Moonachie NJ.USENET
Internet:Fidonet:N2UTO'S BBS List:Telnet198.6.114.80
cono@hobbs.com // Running PCBoard 15.22
+---+

1938. NORAD Two-Line Orbital El

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: ts.kelso@intac.com
Message-ID: <8B0D03D.002B0003CA.uuout@intac.com>
Source record: 24146

From: tkelso@afit.af.mil (TS Kelso)
Subject: NORAD Two-Line Orbital Element Set: Space Shuttle (95251.22959491)
Date: 9 Sep 95 01:34:59 GMT
Message-ID: <tkelso.810610499@dolphin>
The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 69
1 23667U 95048A 95251.22959491 .00000349 00000-0 00000+0 0 56
2 23667 28.4680 39.7120 0006736 267.0749 304.4016 15.65290993 99

--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

--- QScan/PCB v1.15b / 01-0228
* Origin: _T_H_E__R_O_Y__H_O_B_B_S__B_B_S_ Moonachie NJ (1:2604/122)

+---+
The Roy Hobbs BBS (201)-641-7307 Moonachie NJ.USENET
Internet:Fidonet:N2UTO'S BBS List:Telnet198.6.114.80
cono@hobbs.com // Running PCBoard 15.22
+---+

1939. MIR Keplerian Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: rafael.solis@intac.com
Message-ID: <8B0D03D.002B0003CB.uuout@intac.com>
Source record: 24147

From: rafaels@zimmer.CSUFresno.EDU (Rafael Solis)
Subject: MIR Keplerian Elements
Message-ID: <DEM7HL.F6y@CSUFresno.EDU>
Date: Sat, 9 Sep 1995 01:44:09 GMT
Can someone post the latest MIR Keps?

Thanks

Rafael (KE6JSR)

--- QScan/PCB v1.15b / 01-0228
* Origin: _T_H_E__R_O_Y__H_O_B_B_S__B_B_S_ Moonachie NJ (1:2604/122)

+---+
The Roy Hobbs BBS (201)-641-7307 Moonachie NJ.USENET
Internet:Fidonet:N2UTO'S BBS List:Telnet198.6.114.80
cono@hobbs.com // Running PCBoard 15.22
+---+

1940. Re: Bird Dog vs Chara

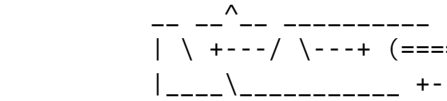
Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: philip.chien@intac.com
Message-ID: <8B0D03D.002B0003CC.uuout@intac.com>
Source record: 24148

From: Philip Chien <Pchien@ids.net>
Subject: Re: Bird Dog vs Chara
Date: 9 Sep 1995 03:00:07 GMT
Message-ID: <42qvvn$83k@paperboy.ids.net>
In article <DEInCD.Jvo@crash.cts.com> Bill Wallner,
wallnerw@crash.cts.com writes:
>
>I have simply an optical interest in watching and knowing the identity of
>EOS passing over Southern California. I installed Bird Dog and have
TLE669.
>However, I have been unable to confirm, visually, the overflight
>"win"dows it produces. I am *reasonably* confident I have correct
"station"
>numbers.
>
>When I compare the windows listed by Bird Dog, they are off by about 30
>minutes when compared with the predictions I get from chara.gsu.edu. I
do
>believe I confirmed (with only a 2 minute error) Mir last night (9/5)
based
>on the chara prediction so, I tend to doubt Bird Dog.

Check your time zone. It may seem obvious, but in many many cases I've
discovered that I've inputted the wrong time zone (or daylight savings
time). There's no way any reasonable tracking program could be off by
half an hour.

>I have a hand-held scanner tuned to 145.2, 145.55 and 145.8. Based on
their
>work schedule as previously posted here, should I be able to pick up any
>voice?

A handheld scanner or two meter transciever with a rubber-duckie is
enough to hear Mir or the hsuttle quite clearly. Provided --- that they
are using their ham equipment. (for example you will *NOT* hear any ham
radio from the STS-69 or STS-73 shuttle missions because they don't have
ham radio equipment onboard). The Mir radio is off and on, depending on
the cosmonauts work schedule, and power budget. On occasion Mir's in a
bad attitude where the antenna is blocked, but that's the exception
rather than the rule.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET


```
>____)| | \__ \ \______//___
>/ |________| \ [ _____\
>|____________________\ \_______/
Roger, go at throttle up CHR$(32) the final frontier

--- QScan/PCB v1.15b / 01-0228
* Origin: _T_H_E__R_O_Y__H_O_B_B_S__B_B_S_ Moonachie NJ (1:2604/122)

+-----------------------------------------------------------------------------+
The Roy Hobbs BBS (201)-641-7307 Moonachie NJ.USENET
Internet:Fidonet:N2UTO'S BBS List:Telnet198.6.114.80
cono@hobbs.com // Running PCBoard 15.22
+-----------------------------------------------------------------------------+
```

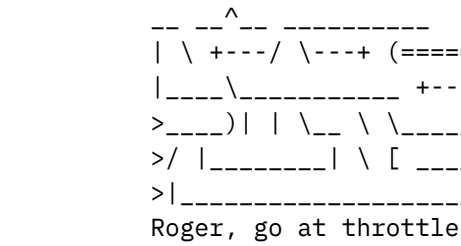
1941. Re: chicago area: please

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: philip.chien@intac.com
Message-ID: <8B0D03D.002B0003CD.uuout@intac.com>
Source record: 24149

From: Philip Chien <Pchien@ids.net>
Subject: Re: chicago area: please retransmit shuttle on a repeater
Date: 9 Sep 1995 03:04:06 GMT
Message-ID: <42r076$83k@paperboy.ids.net>
In article <95250.095015U54293@uicvm.uic.edu> , U54293@uicvm.uic.edu
writes:
>Will someone in the chicago please transmit shuttle audio on a regular
basis
>on a chicago area repeater (preferably 2-meters, but anything would be
great)!
>
>Thanks much..

Suggestion - why don't you do it? It's an excellent service to the local
amateur radio community, and you'll earn the appreciation of the local
ham community, and space enthusiasts.

Or get together with a bunch of space enthusiasts and hams and get
together the resources.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

--- QScan/PCB v1.15b / 01-0228
* Origin: _T_H_E__R_O_Y__H_O_B_B_S__B_B_S_ Moonachie NJ (1:2604/122)

+---+
The Roy Hobbs BBS (201)-641-7307 Moonachie NJ.USENET
Internet:Fidonet:N2UTO'S BBS List:Telnet198.6.114.80
cono@hobbs.com // Running PCBoard 15.22
+---+

1942. Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-10 00:00:00 UTC
From: bstaranto@csupomona.edu
Message-ID: <1995Sep10.210219@clstac>
Source record: 24150
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

I'm looking for a communications expert to gather data, document and then testify in court. I need someone to identify the frequency (bandwidth) my thoughts are broadcasted on. The transmission must be traced back to the repeaters and ultimatly the source.

Testamony of the transmission and what was personally heard must be included and fees for your services will be paid at time of settlement in dirrect proportion to the settlement. I suspect if you do your job correctly the settlement (and your fees) will be substantial enough to travel from other states to perform your task.

Contact Brad at bstaranto@csupomona.edu or call (909) 595-4010.

1943. Re: September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: bob@texas.net
Message-ID: <430ejo$cdc@empire.texas.net>
Source record: 24151
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

In article <NEWTNews.810501690.25979.amsoft@amsoft>, amsoft@epix.net says:
>
>
>PRESS RELEASE, AMATEUR RADIO DISTRIBUTION ONLY, SEPTEMBER 5, 1995:
>
>PUBLISHER: AmSoft
>AUTHOR: Pete deVolpi, KC3TL

[spam emetic removed for sake of viewers]

I see Pete's right back to his spam-grams. What ever happened to
that message he posted a few months back announcing he'd only
post these ads I mean announcements to rec.radio.swap??

Remember, guys, Buckmaster doesn't spam the 'net.

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

1944. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: mfraser@vanbc.wimsey.com
Message-ID: <430e57$dah@wolfe.wimsey.com>
Source record: 24152
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

Don't you want to contact the Skeptical Inquirer?
/mark

bstaranto@csupomona.edu wrote:

: I'm looking for a communications expert to gather data, document and then
: testify in court. I need someone to identify the frequency (bandwidth) my
: thoughts are broadcasted on. The transmission must be traced back to the
: repeaters and ultimatly the source.

: Testamony of the transmission and what was personally heard must be included
: and fees for your services will be paid at time of settlement in dirrect
: proportion to the settlement. I suspect if you do your job correctly the
: settlement (and your fees) will be substantial enough to travel from other
: states to perform your task.

: Contact Brad at bstaranto@csupomona.edu or call (909) 595-4010.

1945. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: Samuel_Beale@brown.edu
Message-ID: <Samuel_Beale-1109950756560001@cis-ts1-slip6.cis.brown.edu>
Source record: 24153
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

In article <1995Sep10.210219@clstac>, bstaranto@csupomona.edu wrote:

> I'm looking for a communications expert to gather data, document and then
> testify in court. I need someone to identify the frequency (bandwidth) my
> thoughts are broadcasted on. The transmission must be traced back to the
> repeaters and ultimatly the source.

I think it would be better if you shipped your transmitter (head) here so
that I could put it on the test bench :-).

1946. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: Bob Scott <bob@texas.net>
Message-ID: <431jk0$k5d@empire.texas.net>
Source record: 24154
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

>
> I'm looking for a communications expert to gather data, document and then
> testify in court. I need someone to identify the frequency (bandwidth) my
> thoughts are broadcasted on. The transmission must be traced back to the
> repeaters and ultimatly the source.

I think I have found your thought broadcast on Galaxy V transponder
27 (the Home Shopping Network). Now where do I collect?? :-)

I *knew* this amazing space modulator would come in handy some day!!

Bob

1947. Re: September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: "Anthony R. Gold" <tgold@microvst.demon.co.uk>
Message-ID: <810826891snz@microvst.demon.co.uk>
Source record: 24155
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

In article <430ejo$cdc@empire.texas.net> bob@texas.net "Bob Scott" writes:

> I see Pete's right back to his spam-grams. What ever happened to
> that message he posted a few months back announcing he'd only
> post these ads I mean announcements to rec.radio.swap??

I though it was Fred Lloyd, AA7BQ, who promised that for his QRZ CDROM.

(BTW I like Pete's compilation very much, although I find that RT Systems' SAM to be a far better callsign program, if that's all one needs. The browse modes for name and callsign searching in SAM are very good.)

--
Tony - G3SKR / AA2PM email: tgold@panix.com
tgold@microvst.demon.co.uk
packet: g3skr@n0ary.#nocal.ca.usa.na

1948. Re: chicago area: please retransmit shuttle on a repeater

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: Gary Watts <gwatts@empire.interstate.net>
Message-ID: <Pine.SUN.3.91.950911101819.7734F-100000@empire.interstate.net>
Source record: 24156
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.misc

Philip,

After providing this service for more than a year and several missions
I had to pull it off the air.
Most of the people listening to it did not know morse code
So how did they know who I was... :->
Running 170 watts on 2 meters (under Vox and audio delay) into a diamond
x500 on a 56' tower this setup covered 50+ miles and could still be
heard on a ht very easily

Reason to terminate

Too many complaints
tooo many know it alls
toooo much hassle to provide dedicated equipment for the LONG duration
flights

I applaud The HF ops who do it wa3nan and the others at least they have the
support of clubs in their adventure

Gary Watts de N0OXV Kansas City Mo
81 GL1100I

On 9 Sep 1995, Philip Chien wrote:

> In article <95250.095015U54293@uicvm.uic.edu> , U54293@uicvm.uic.edu
> writes:
> >Will someone in the chicago please transmit shuttle audio on a regular
> basis
> >on a chicago area repeater (preferably 2-meters, but anything would be
> great)!
> >
> >Thanks much..
>
> Suggestion - why don't you do it? It's an excellent service to the local
> amateur radio community, and you'll earn the appreciation of the local
> ham community, and space enthusiasts.
>
> Or get together with a bunch of space enthusiasts and hams and get
> together the resources.
>
> Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET
> __ __^__ __________
> | \ +---/ \---+ (=========
> |______________ +---_____/---+ //

```
> >____)| | \__ \ \______//___
> >/ |________| \ [ _____\
> >|_____________________\ \_______/
> Roger, go at throttle up CHR$(32) the final frontier
>
>
```

1949. NORAD Two-Line Orbital Element Set: Space Shuttle (95254.33376157)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.810859424@dolphin>
Source record: 24157

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 69
1 23667U 95048A 95254.33376157 .00000306 00000-0 00000+0 0 168
2 23667 28.4666 17.4152 0005712 276.3208 165.0127 15.55614741 585
1995048B
1 23668U 95048B 95252.59511764 .00018746 00000-0 17712-3 0 35
2 23668 28.4645 29.8766 0006148 288.1379 74.3024 15.65338999 212

--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1950. Some PB, PG, and WISP Information

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: tgliang@eskimo.com
Message-ID: <DErLpC.24G@eskimo.com>
Source record: 24158

I struggled many hours to get my AEA DSP-1232, Yaesu FT-736R, Gateway 4DX2-66V computer, PB, PG, and WISP working together to communicate with KO-23, KO-25, and UO-22. I'd like to share some knowhow to satellite enthusiasts so as to spare some agony. As those with similar equipment know, this combination doesn't work right away. Some of the recommendations on manuals do not work for us; they work only for some "standard" set.

First, the transceiver does not communicate with the TNC with our equipment, at least not normally. If you do not have a copy, download PROCOMM from oak.oakland.edu. Then from its main directory, go to "pub", then "pcblue", and download vol200.zip. Execute PROCOMM with the TNC connected. Hit Enter. If there is no response from the TNC requesting a "*" to start autobaud, manually restart the TNC with the restart button and the on/off power switch at the back. One should see the autobaud message on the PROCOMM screen after one or two tries, and one should follow it by a "*" and Enter. After this there should be a "cmd:" prompt. Then, assuming activity is on TNC port one, enter "alt x", and exit. One can then start PB, PG, or WISP.

There is possibly one more critical step in making PB, PG, and WISP work. In pg.cfg, pb.cfg, and WISP, set the baud rate to 1200, even for the 9600 baud satellites. It sounds ridiculous, but this was one key to success! Windows baud can stay above 1200. In fact, mine is set at 19200.

One should have 9600 baud capability working. My FT-736R was under warranty, and the factory did the modification for free. I should mention that the 9600 FKS baud modification doesn't work for 1200 PSK. I have to use the former VHF 1200 FSK setup. I think the 9600 baud filter is affecting the TNC reception

I hope this provides a jump start!

1951. Re: Is AO-21 still alive?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <4328ua$n5q@maureen.teleport.com>
Source record: 24159

In article <42klp7$t9s@newsflash.hol.gr>, dbraun@hol.gr said...
>
>Is AO-11 (also known as RS-14) still alive?
>I haven't heard anything in several days of trying on 145.987.

I assume you mean AO-21. It is dead, with not much outlook for being turned back on. The host satellite, a Russian Cosmos, was turned off by the Russian Command Center due to budget cuts.

>Also, does anyone know if the UO-11 S-band becaon works?

I last checked it about a year ago, and it was on then. It does not have any modulation, just a carrier.

>If you know the answer to that, perhaps you could also
>tell me: What other satellites (besides AO-13, of course)
>have S-band beacons?

DO-17 has one from time to time. I believe that it is off at this time. There are reports here occasionally.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1952. Re: Help with DO-17

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: Carl Gregory <cgregory@uiuc.edu>
Message-ID: <432as7$cfa@vixen.cso.uiuc.edu>
Source record: 24160

If DO-17 isn't full quieting, you may not copy many packets per pass.
Try setting PASSALL ON, or WHYNOT ON. The first will print something
even on incomplete packets. The second will tell you why nothing
printed. Also, you may need to adjust the "threshold" control on the
PK232 a bit.

1953. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-11 00:00:00 UTC
From: peteemt@aol.com
Message-ID: <432ooi$elh@newsbf02.news.aol.com>
Source record: 24161

In article <432ki5$r9t@maureen.teleport.com>, n7ryw@teleport.com (William Roth) writes:

>>> I'm looking for a communications expert to gather data, document and then
>>> testify in court. I need someone to identify the frequency (bandwidth) my
>>> thoughts are broadcasted on. The transmission must be traced back to the
>>> repeaters and ultimatly the source.

Hmm, I'd bet the source is the mother ship trying to call you home! Why don't you try the Pyschic friends hotline?

1954. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: Mark Oppenheim <Mark@Tetherless.com>
Message-ID: <434pr8$9r2@gorgor.pa.tetherless.com>
Source record: 24065
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

bstaranto@csupomona.edu wrote:
>
>I'm looking for a communications expert to gather data, document and then
>testify in court. I need someone to identify the frequency (bandwidth) my
>thoughts are broadcasted on. The transmission must be traced back to the
>repeaters and ultimatly the source.
>

Work like this requires the use of a Bi-Phase Multicomplicator. Most BPM's these days that can track the relatively low frequencies (8-10 Hertz) that brainwaves emit are hard to come by, due to the aging of the Iridium crystals. These crystals become unstable with age, and provide inaccurate results - in once case that I was told of, the BPM actually measured someone else's brainwaves in an adjacent room!

The other problem is locating the repeaters and the path of transmission. This requires some
very high-level Fast-Fourier Transform math, so 80286 processors are definitely out. The propagation path is another problem, since frequencies at this level require some very large,
but movable arrays. The Sterba Curtain is the optimum antenna for this task, but due to it's size, it's not very portable. Certainly won't fit on a Taurus Station Wagon without some sort of outrigging... and there is the ever-present problem with trees.

However, luck is with you, since most universities usually have (or have access to) this type of equipment in their electrical engineering department. Ask around, and don't be discouraged by being sent from department-to-department. Most university professors (especially the most senior ones, since they are the only ones likely to have the necessary Bi-Phase Multicomplicator experience necessary for this task) are usually only too happy to help out in this endevour.

Good Luck- Mark

1955. Re: chicago area: please

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: U54293@uicvm.uic.edu
Message-ID: <95255.073216U54293@uicvm.uic.edu>
Source record: 24066

In article <8B0D03D.002B0003CD.uuout@intac.com>, philip.chien@intac.com (PHILIP CHIEN) says:
>
>Suggestion - why don't you do it? It's an excellent service to the local
>amateur radio community, and you'll earn the appreciation of the local
>ham community, and space enthusiasts.
>
>Or get together with a bunch of space enthusiasts and hams and get
>together the resources.
>

I don't have the ability to do it (no way to receive shuttle audio except for via shortwave).

Realistically, if I could do it I would, but if I could do it, I probably wouldn't be asking someone else to..

-boB

1956. ARLS013 German ham arrives at Mir

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls013.1995@ampr.org>
Source record: 24067
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS013
ARLS013 German ham arrives at Mir

ZCZC AS92
QST de W1AW
Space Bulletin 013 ARLS013
From ARRL Headquarters
Newington, CT September 12, 1995
To all radio amateurs

SB SPACE ARL ARLS013
ARLS013 German ham arrives at Mir

German cosmonaut Thomas Reiter, DF4TR, has arrived at the Russian space station Mir. He will stay there for 135 days and operate DP0MIR, as time permits. Presently there are two crews aboard Mir, both very busy with scientific experiments.

One of the crews will return to earth in a few days, and Reiter is expected to have more time for Amateur Radio thereafter.

Listen for DP0MIR on 145.800 MHz for instructions for where to transmit.

Reiter expects to install 70 cm equipment capable of FM voice and 9600 baud packet modes sometime during his stay.

Thomas Kieselbach, DL2MDE, and Joerg Hahn, DL3LUM, of the Ham Radio Group of DLR (which is the German Mission Control for EUROMIR 95) said that there also will be picture transmission from Mir by means of a new SSTV mode. This new mode will transmit pictures, taken by a still video camera aboard MIR, in AX.25 packets. The protocol of this mode does not generate ''line by line'' pictures, but uses ''random'' sampling, making it possible to have an idea of the picture received after a short time, with the resolution improving as the transmission continues.

This information came from Norbert Norrhoff, DF5DP, the Deutscher Amateur Radio Club satellite and space projects coordinator.
NNNN
/EX

1957. Preamps - help needed

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: Rod Adkins <rod@border.com>
Message-ID: <DEt919.1yn@janus.border.com>
Source record: 24068

Am having trouble posting - please excuse if re-post.

I would appreciate info on designs/kits for GaAsFET preamps
for 10m to 70cm.
Primary use reception of ham satellites.

Please email responses as my NEWS server erases quickly !!

Thanks, Rod Adkins, VE3INE

1958. Russian Space Program

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: temp506@ips.ca
Message-ID: <4355pf$ia8@donatello.leonardo.net>
Source record: 24069

I hope this is the right group to ask this question. I recently
listened to an article about two Italian amateur radio buffs who
easedropped on Russian space communications during the sixties.
A part of this article contained a tape of a female cosmonaut
apparently stranded in space and another part contained the heartbeat
of another cosmonaut slowly dropping off to nothing.
I would like to find out more about these recordings.If I'm in the
wrong group....sorry. If not please post or E-mail any help.
Most appreciated.

1959. Re: AZ-EL alternatives?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: Mark Oppenheim <Mark@Tetherless.com>
Message-ID: <434ril$9r2@gorgor.pa.tetherless.com>
Source record: 24070

jlbarber@wolfenet.com (Jim Barber) wrote:
>Hi Folks..
>
>Curious. Has anyone come up with a viable alternative for the
>Yaesu az-el rotors ? I took a look at the specs, and was not
>particularly impressed with +- 4% resolution back from the pots.

What kind of antanna array do you intend to use? Most beams for OSCAR work have beamwidths >20 degrees, so it shouldn't be a great problem.

If you need something special, contact M2 Engineering in Fresno, Ca... in addition to antennas, they make some industrial strength Az-El mounts.

Mark

1960. Re: Is AO-21 still alive?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: tgliang@eskimo.com
Message-ID: <DEtF3L.Bny@eskimo.com>
Source record: 24071

In article <4328ua$n5q@maureen.teleport.com>, n7ryw@teleport.com says...
>
>In article <42klp7$t9s@newsflash.hol.gr>, dbraun@hol.gr said...
>>
>>Is AO-11 (also known as RS-14) still alive?
>>I haven't heard anything in several days of trying on 145.987.
>
>I assume you mean AO-21. It is dead, with not much outlook for being
turned
>back on. The host satellite, a Russian Cosmos, was turned off by the
Russian
>Command Center due to budget cuts.
>
>>Also, does anyone know if the UO-11 S-band becaon works?
>
>I last checked it about a year ago, and it was on then. It does not have
any
>modulation, just a carrier.
>
>>If you know the answer to that, perhaps you could also
>>tell me: What other satellites (besides AO-13, of course)
>>have S-band beacons?
>
>DO-17 has one from time to time. I believe that it is off at this time.
There
>are reports here occasionally.
>
>--
>From Bill, n7ryw@teleport.com
>Amsat NA Life Member #2109
>
Yep! As of 16:00, 9/12/95, it was still dead.

1961. Re: Russian Space Program

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Message-ID: <Pine.SOL.3.91.950912201233.14760A-100000@spacelink>
Source record: 24072

The story is oft repeated, but completley fabricated.
Several very excellent books have been published recently which document the Cosmonaut program with intensity. All the Cosmonauts who made the grade, so to speak, are accounted for, and their fates fairly well documented. Several female Cosmonaut candidates were chosen for early flights, but with the exception of Valentina Tereshkova, none flew until the mid-80's, all having trained, but having been dismissed from the corps.
You might care to redirect this question to the group sci.space shuttle, which fields these kinds of questions regularly.
May I also suggest that you pick up two books: "Uncovering Soviet Disasters", by James Oberg, and "A History of Cosmonautics". THe latter book is advertised in several of the space magazines that are out on the news stands.

On Tue, 12 Sep 1995, Dave Densley wrote:

> I hope this is the right group to ask this question. I recently
> listened to an article about two Italian amateur radio buffs who
> easedropped on Russian space communications during the sixties.
> A part of this article contained a tape of a female cosmonaut
> apparently stranded in space and another part contained the heartbeat
> of another cosmonaut slowly dropping off to nothing.
> I would like to find out more about these recordings.If I'm in the
> wrong group....sorry. If not please post or E-mail any help.
> Most appreciated.
>
>
>

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

1962. AZ-EL alternatives?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: jlbarber@wolfenet.com
Message-ID: <433784$h7e@news1.wolfe.net>
Source record: 24073

Hi Folks..

Curious. Has anyone come up with a viable alternative for the
Yaesu az-el rotors ? I took a look at the specs, and was not
particularly impressed with +- 4% resolution back from the pots.

I wouldn't be a big problem to use a (TVRO-type) linear actuator
for elevation, but I have to admit the azimuth control has me
stumped for the moment.

Regards,
Jim Barber, N7CXI

1963. Re: Is AO-21 still alive?

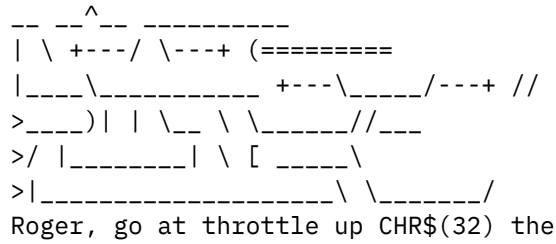
Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <4354ua$64a@paperboy.ids.net>
Source record: 24074

In article <42klp7$t9s@newsflash.hol.gr> Douglas Braun, dbraun@hol.gr
writes:
>Is AO-21 (also known as RS-14) still alive?
>I haven't heard anything in several days of trying on 145.987.

Regretably no. The amateur payload was working perfectly, but the parent satellite, a Russian engineering spacecraft ended its lifetime and the Russians chose to shut it off instead of providing additional funding.

The disadvantage of piggybacking an amateur payload with another spacecraft is we're restricted by the parent's operation. If it's shut off - too bad for us.

Are you an AMSAT member? There was an excellent article in the Journal a bit back, along with up-to-date info on all of the operational OSCARs.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1964. Re: AZ-EL alternatives?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <434atj$lbo@maureen.teleport.com>
Source record: 24075

In article <433784$h7e@news1.wolfe.net>, jlbarber@wolfenet.com said...

>Curious. Has anyone come up with a viable alternative for the
>Yaesu az-el rotors ? I took a look at the specs, and was not
>particularly impressed with +- 4% resolution back from the pots.

Unless you are using a pretty large dish, the resolution will not have any readable effect. The beamwidth of even the large KLMs is far greater than the reslotion.

>I wouldn't be a big problem to use a (TVRO-type) linear actuator
>for elevation,

I am using just this for a 6 foot dish at present, but due to the geometry the position readout does not match the dish. The linear actuator is in a straight line, while the edge of the dish turns in an arc so there would need to be a pot just like the Yaesu.

>but I have to admit the azimuth control has me
>stumped for the moment.

I have used a G-1000SDX with very good success. The dial is far better to look at, and the rotor is of much heavier duty construction. The pot reads to better than the 2 degrees I need for good pointing on 2400 mHz, but just barely.

This rotor can also be interfaced to a computer controller, such as a Sat Track IV or Kansas City Tracker, although Yaesu doesn't specifically say so. See my web page for a description of how to do it...

http://www.teleport.com/~n7ryw/asatpage.html

Lots of other good stuff there too.
--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1965. Preamps

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: rod@border.com
Message-ID: <DEt8GE.t7@janus.border.com>
Source record: 24076

Help wanted - info on supply of designs/kits/parts for GaAsFET preamps.

Frequency range, 10m - 70cm.

Primary usage, amateur satellite reception (currently struggling
with 10m downlink - S3 best sigs to date on a hor. loop at 15 feet).

From what I have read, I ought to be able to build these
with relatively little degradation in noise factor from the
commercial jobs - but a lot less $$ (??)

Email response preferred - my NEWS server erases postings
very quickly.

Thanks, Rod Adkins, VE3INE

1966. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <432ki5$r9t@maureen.teleport.com>
Source record: 24162
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

In article <Samuel_Beale-1109950756560001@cis-ts1-slip6.cis.brown.edu>,
Samuel_Beale@brown.edu said...
>
>In article <1995Sep10.210219@clstac>, bstaranto@csupomona.edu wrote:
>
>> I'm looking for a communications expert to gather data, document and then
>> testify in court. I need someone to identify the frequency (bandwidth) my
>> thoughts are broadcasted on. The transmission must be traced back to the
>> repeaters and ultimatly the source.
>
>I think it would be better if you shipped your transmitter (head) here so
>that I could put it on the test bench :-).

I agree. It's a lot cheaper to ship the transmitter than for me to ship all
of my equipment around. Make sure all of the contacts are good and clean
prior to shipment. Don't ship the power supply or waste disposal system,
either, or I will need to charge extra for the cleanup.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

1967. STS-69 Element_Set (95254.965)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95254.965@thomsoft.com>
Source record: 24163
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95254.96552919 .00002818 00000-0 39470-4 0 112
2 23667 28.4652 12.9359 0005435 277.7437 108.9494 15.55604737 699

1995048B
1 23668U 95048B 95252.59511764 .00018746 00000-0 17712-3 0 35
2 23668 28.4645 29.8766 0006148 288.1379 74.3024 15.65338999 212

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1968. Re: September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-12 00:00:00 UTC
From: rutledge@enuxsa.eas.asu.edu
Message-ID: <DEtGIr.AAs@ennews.eas.asu.edu>
Source record: 24164
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur

Bob Scott (bob@texas.net) wrote:
: In article <NEWTNews.810501690.25979.amsoft@amsoft>, amsoft@epix.net says:
: >
: >
: >PRESS RELEASE, AMATEUR RADIO DISTRIBUTION ONLY, SEPTEMBER 5, 1995:
: >
: >PUBLISHER: AmSoft
: >AUTHOR: Pete deVolpi, KC3TL

: [spam emetic removed for sake of viewers]

: I see Pete's right back to his spam-grams. What ever happened to
: that message he posted a few months back announcing he'd only
: post these ads I mean announcements to rec.radio.swap??

If it's a ham related CD (you deleted the message so I can't tell) then I wouldn't call it spam. Besides rec.radio.swap is usally empty, so I doubt anybody reads it. (BTW I wish there was a real for-sale group, maybe even with the packet ads echoed to it.) The swapping seems to go on in .equipment. Lighten up a bit, and be thankful that the FCC hasn't regulated most commerce out of the picture here as on packet. This is a free country - let's keep it that way.

--
_______ KB7PWD @ N7MRP.AZ.US.NOAM shawn.rutledge@asu.edu
(_ | |_) html: http://enuxsa.eas.asu.edu/~rutledge/home.html
__) | | ____
* sci fi * eschew obfuscation * ARS * SunSparc * Interpedia * cyberspace *

1969. STS-69 Element_Set (95256.027)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-13 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95256.027@thomsoft.com>
Source record: 24077
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95256.02768475 .00002300 00000-0 32386-4 0 145
2 23667 28.4692 5.3973 0006372 287.2337 299.8071 15.55460801 858

1995048B
1 23668U 95048B 95252.59511764 .00018746 00000-0 17712-3 0 35
2 23668 28.4645 29.8766 0006148 288.1379 74.3024 15.65338999 212

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1970. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-13 00:00:00 UTC
From: pcbusr2@pc719
Message-ID: <1995Sep13.224416.7561@lmpsbbs.comm.mot.com>
Source record: 24078
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

In article <1995Sep10.210219@clstac>, bstaranto@csupomona.edu writes:
>
> I'm looking for a communications expert to gather data, document and then
> testify in court. I need someone to identify the frequency (bandwidth) my
> thoughts are broadcasted on. The transmission must be traced back to the
> repeaters and ultimatly the source.
>
> Testamony of the transmission and what was personally heard must be included
> and fees for your services will be paid at time of settlement in dirrect
> proportion to the settlement. I suspect if you do your job correctly the
> settlement (and your fees) will be substantial enough to travel from other
> states to perform your task.
>
> Contact Brad at bstaranto@csupomona.edu or call (909) 595-4010.

Your transmissions are on subspace. Mr. Spock is monitoring them on Vulcan

--
Tom Garman KC4WAR
PCB Designer and Librarian

1971. WEFAX downconverter For Sale

Newsgroup: rec.radio.amateur.space
Date: 1995-09-13 00:00:00 UTC
From: tkreyche@well.sf.ca.us
Message-ID: <437bbr$car@nkosi.well.com>
Source record: 24079
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.equipment

WEFAX Downconverter For Sale
Microcomm Model RX-1691, microstripline design
4" x 8" x 2.5"
Ampilifies and filters incoming 1.7 GHz satellite signal
before heterodyning to 137 MHz region.
Unit is about 10 years old but works perfectly, has been
unused for about 5 years since I moved into apartments!
Includes comprehensive manaul, circuit diagrams, etc.
Cost new was about $800, reasonable offer accepted.
Can fax detailed spec sheet.
Reply to tkreyche@well.com or call 206-726-9838.

1972. ARLK047 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-09-13 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk047.1995@ampr.org>
Source record: 24080
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK047
ARLK047 Keplerian data

ZCZC SK72
QST de W1AW
Keplerian Bulletin 47 ARLK047
From ARRL Headquarters
Newington, CT September 12, 1995
To all radio amateurs

SB KEP ARL ARLK047
ARLK047 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-69
1 23667U 95048A 95254.58376157 .00000305 00000-0 00000+0 0 186
2 23667 28.4670 15.6401 0005287 279.4328 124.8738 15.55624470 627
Mir
1 16609U 86017A 95254.19651983 .00000510 00000-0 13535-4 0 02553
2 16609 51.6441 87.0589 0003789 71.1461 288.9942 15.57389045546339
AO-10
1 14129U 83058B 95248.37251192 .00000162 00000-0 10000-3 0 3727
2 14129 26.4527 249.8576 5985675 307.3504 11.6914 2.05877424 63980
RS-10/11
1 18129U 87054A 95254.22957781 -.00000003 00000-0 -20265-4 0 01346
2 18129 82.9263 355.4641 0010374 208.2994 151.7598 13.72355878411775
UO-11
1 14781U 84021B 95253.98902279 .00000215 00000-0 44153-4 0 08422
2 14781 97.7858 252.5144 0010441 270.1707 89.8286 14.69375498616509
RS-12/13
1 21089U 91007A 95253.91079766 .00000031 00000-0 16724-4 0 08443
2 21089 82.9192 37.1934 0028101 296.2604 63.5662 13.74059972230540
AO-13
1 19216U 88051B 95253.84451361 -.00000463 00000-0 11760-4 0 00889
2 19216 57.4530 165.2972 7325539 18.4599 358.0318 2.09726487023960
UO-14
1 20437U 90005B 95254.15213288 -.00000025 00000-0 72117-5 0 01291
2 20437 98.5651 337.1290 0010682 310.7258 49.2996 14.29895846294033
```

```
RS-15
1 23439U 94085A 95254.09184065 -.00000039 00000-0 10000-3 0 00915
2 23439 64.8182 116.0597 0166798 247.6149 110.7029 11.27524830029207
AO-16
1 20439U 90005D 95254.19062198 -.00000021 00000-0 89380-5 0 09439
2 20439 98.5727 338.9494 0011017 311.1351 48.8881 14.29950136294050
DO-17
1 20440U 90005E 95254.17062153 -.00000028 00000-0 60885-5 0 09278
2 20440 98.5778 339.4314 0011375 311.2847 48.7355 14.30091486294076
WO-18
1 20441U 90005F 95254.15462347 -.00000031 00000-0 49007-5 0 09341
2 20441 98.5762 339.3798 0011811 310.6816 49.3315 14.30062314294070
LO-19
1 20442U 90005G 95254.17124973 -.00000004 00000-0 15417-4 0 09273
2 20442 98.5795 339.7865 0011895 309.2756 50.7372 14.30166206294091
FO-20
1 20480U 90013C 95254.17361018 -.00000040 00000-0 -21821-4 0 08307
2 20480 99.0697 326.7746 0541160 38.7251 325.1378 12.83230941261971
AO-21
1 21087U 91006A 95254.19884131 .00000093 00000-0 82657-4 0 06445
2 21087 82.9413 168.9266 0034387 269.3326 90.3889 13.74558825231541
UO-22
1 21575U 91050B 95254.14090369 -.00000013 00000-0 10003-4 0 06352
2 21575 98.3884 323.3070 0008819 26.0312 334.1319 14.36988847217844
KO-23
1 22077U 92052B 95253.88347121 -.00000037 00000-0 10000-3 0 05210
2 22077 66.0821 56.3439 0002126 166.3210 193.7866 12.86292302144759
KO-25
1 22828U 93061F 95252.75637472 -.00000003 00000-0 16433-4 0 3949
2 22828 98.6086 328.1100 0010397 326.5591 33.4932 14.28110887 69949
IO-26
1 22826U 93061D 95254.18101438 -.00000015 00000-0 11492-4 0 04184
2 22826 98.6125 329.4733 0009692 337.7448 22.3311 14.27779470102043
AO-27
1 22825U 93061C 95254.16350632 .00000001 00000-0 17956-4 0 04245
2 22825 98.6102 329.3437 0008959 336.8353 23.2430 14.27671523102038
PO-28
1 22829U 93061G 95254.17047630 -.00000007 00000-0 14590-4 0 04238
2 22829 98.6080 329.5431 0010080 323.0809 36.9680 14.28090867102063

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
September 16, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1973. STS-69 Element_Set (95256.436)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-13 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95256.436@thomsoft.com>
Source record: 24081
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95256.43634369 .00000306 00000-0 00000 0 0 253
2 23667 28.4669 2.4954 0007153 291.8553 68.1288 15.55434765 934

Satellite: STS-69
Catalog number: 23667
Epoch time: 95256.43634369 (13 SEP 95 10:28:20.10 UTC)
Element set: GSFC-025
Inclination: 28.4669 deg
RA of node: 2.4954 deg Space Shuttle Flight STS-69
Eccentricity: 0.0007153 Keplerian Elements
Arg of perigee: 291.8553 deg
Mean anomaly: 68.1288 deg
Mean motion: 15.55434765 rev/day Semi-major Axis: 6779.0213 Km
Decay rate: 0.31E-05 rev/day*2 Apogee Alt: 405.48 Km
Epoch rev: 93 Perigee Alt: 395.78 Km

1995048B
1 23668U 95048B 95252.59511764 .00018746 00000-0 17712-3 0 35
2 23668 28.4645 29.8766 0006148 288.1379 74.3024 15.65338999 212

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1974. Looking for Novell trade!

Newsgroup: rec.radio.amateur.space
Date: 1995-09-13 00:00:00 UTC
From: darryl.linkow@ledge.com
Message-ID: <8B10231.01E9000A99.uuout@ledge.com>
Source record: 24082

Hello all and thanks for reading this. A couple of weeks ago I was negotiating a trade for an Icom 2 Meter All-Mode rig. The person who had the rig was interested in the Novell NetWare 4.02 that I have in trade for his radio and we are amidst negotiating when I didn't hear back from him. If you are that person, please Email me and let's put together a trade.
Regards,
Darryl Linkow KE6IHA
Email: darryl.linkow@grinder.com
OR
darryl.linkow@ledge.com

---
* OLX 2.2 * Darryl Linkow (818)346-5278 9 am - 5 pm PDT

1975. Is STS-69 SAREX??

Newsgroup: rec.radio.amateur.space
Date: 1995-09-13 00:00:00 UTC
From: n5zgt@swcp.com
Message-ID: <437nk8$lm4@sloth.swcp.com>
Source record: 24083

Hello,
I was just wondering if STS-69 is a SAREX mission. Also, has anybody
heard it if it is?
Thanks!
PSE E-Mail me at n5zgt@swcp.com
73,
Brian, N5ZGT...

1976. QSL Address Dr. Norm Thaggart

Newsgroup: rec.radio.amateur.space
Date: 1995-09-13 00:00:00 UTC
From: nicolas@netvoyage.net
Message-ID: <4378m5$6f6@news.netvoyage.net>
Source record: 24084

I am looking for the qsl info for Dr. Norm Thaggart. He was the US astronaut aboard MIR back in April. Any help would be highly appreciated.

73 de Nick KD3QY

1977. Re: September 95 CD-ROM Released

Newsgroup: rec.radio.amateur.space
Date: 1995-09-14 00:00:00 UTC
From: brian@synapse.net
Message-ID: <437s2l$cca@sentinel.synapse.net>
Source record: 24085
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

bob@ultranet.com (Bob Levine) wrote:
>In article <42o96k$3ka@newsbf02.news.aol.com>, headshrnkr@aol.com proclaims...
>>
>>May I ask why you needed to SPAM this ad across 4 boards? One posting
>>would have really been fine, ok?
>>
[lengthy sig deleted]
>>Bruce J. Howes
>>HeadShrnkr@aol.com
>
>I dont consider this a spam at all. Actually they are all places
>where people who might get benefit from this fine product can be
>found and they might appreciate knowing where they can get this
>CDROM.
>

I agree. On the other hand, replying in *10* newsgroups to a post on 4 does
strike me as spamming.

Brian VE3BGB

1978. STS-69 Element_Set (95256.949)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-14 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95256.949@thomsoft.com>
Source record: 24086
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95256.94957558 .00000307 00000-0 00000 0 0 270
2 23667 28.4664 358.8525 0006856 299.4165 60.5753 15.55622296 1014

Satellite: STS-69
Catalog number: 23667
Epoch time: 95256.94957558 (13 SEP 95 22:47:23.33 UTC)
Element set: GSFC-027
Inclination: 28.4664 deg
RA of node: 358.8525 deg Space Shuttle Flight STS-69
Eccentricity: 0.0006856 Keplerian Elements
Arg of perigee: 299.4165 deg
Mean anomaly: 60.5753 deg
Mean motion: 15.55622296 rev/day Semi-major Axis: 6778.4764 Km
Decay rate: 0.31E-05 rev/day*2 Apogee Alt: 404.74 Km
Epoch rev: 101 Perigee Alt: 395.44 Km

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1979. STS-69 Element_Set (95257.782)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-14 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95257.782@thomsoft.com>
Source record: 24087
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95257.78276918 .00004379 00000-0 13966-4 0 9112
2 23667 28.4656 352.9291 0005615 278.5382 81.4754 15.76159446 1132

Satellite: STS-69
Catalog number: 23667
Epoch time: 95257.78276918 = yrday.fracday
Element set: 911
Inclination: 28.4656 deg
RA of node: 352.9291 deg
Eccentricity: .0005615
Arg of perigee: 278.5382 deg
Mean anomaly: 81.4754 deg
Mean motion: 15.76159446 rev/day
Decay rate: 4.37854E-05 rev/day^2
Epoch rev: 113

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1980. NORAD Two-Line Orbital Element Set: Space Shuttle (95256.41610185)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-14 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.811055663@dolphin>
Source record: 24088

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
STS 69
1 23667U 95048A 95256.41610185 .00000306 00000-0 00000+0 0 251
2 23667 28.4669 2.6390 0007153 291.6215 314.7833 15.55434765 906
1995048B
1 23668U 95048B 95252.59511764 .00018746 00000-0 17712-3 0 35
2 23668 28.4645 29.8766 0006148 288.1379 74.3024 15.65338999 212
1995048C
1 23669U 95048C 95255.98727876 -.00159474 00000-0 -22940-2 0 40
2 23669 28.4295 5.7196 0019336 253.9860 105.9659 15.55328586 240
```

--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

1981. NEED satelite tracking program for Apple IIe

Newsgroup: rec.radio.amateur.space
Date: 1995-09-14 00:00:00 UTC
From: Buster <lathrop@azstarnet.com>
Message-ID: <439sdv$lqb@news.azstarnet.com>
Source record: 24089

Anybody know of, or have, any software for the Apple IIe for tracking satelites. I'd even take a program written in BASIC. Just as long as it will give be bearing and elevation information.

The Apple's just sitting there collecting dust...

Buster, KC7KMJ, DM42

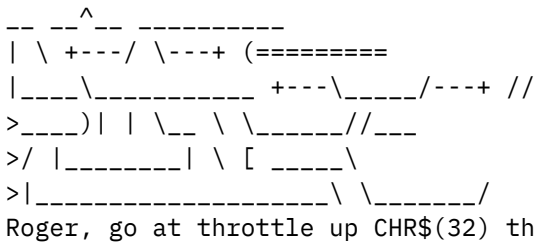
1982. Re: QSL Address Dr. Norm Thagard

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <43aquu$kiu@paperboy.ids.net>
Source record: 24090

In article <4378m5$6f6@news.netvoyage.net> Nick Condaras,
nicolas@netvoyage.net writes:
>I am looking for the qsl info for Dr. Norm Thaggart. He was the US
>astronaut aboard MIR back in April. Any help would be highly
>appreciated.

His name is Dr. Norman Thagard. Check the September/October issue of the
AMSAT Journal. Modesty prevents me from telling you who interviewed him.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET



Roger, go at throttle up CHR$(32) the final frontier

1983. Re: NEED satelite tracking program for Apple IIe

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <43ar4k$kiu@paperboy.ids.net>
Source record: 24091

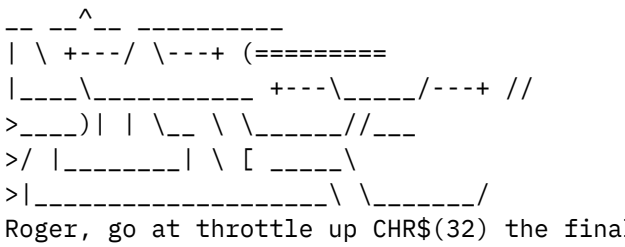
In article <439sdv$lqb@news.azstarnet.com> Buster, lathrop@azstarnet.com
writes:
> Anybody know of, or have, any software for the Apple IIe for tracking
>satelites. I'd even take a program written in BASIC. Just as long as it
>will give be bearing and elevation information.

AMSAT's Quicktrak is available for MS DOS, Commodore 64, and Apple II.

The Apple II version retails for $35, and members get a $10 discount.

Contact AMSAT at:
850 Sligo Ave. #600
Silver Spring, MD 20910
(301)-589-6062

Talk to Martha and tell her that Phil sent you.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

1984. Re: QSL Address Dr. Norm Thaggart

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: buch@exis.net
Message-ID: <43atcu$n9m@grouper.Exis.Net>
Source record: 24092

nicolas@netvoyage.net (Nick Condaras) wrote:

>I am looking for the qsl info for Dr. Norm Thaggart. He was the US
>astronaut aboard MIR back in April. Any help would be highly
>appreciated.

>73 de Nick KD3QY
October QST lists the address. See page 66.

Joe Buch N2JB
buch@exis.net

1985. Re: Satellite Tracking Programs

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: "N.L. Hannon" <73614.2047@CompuServe.COM>
Message-ID: <43brmu$6al$1@mhafm.production.compuserve.com>
Source record: 24093

One tip: NORAD 2lmes epoch occurs exactly at nothbound
equatorial crossing times. So at the epoch you have an exact
latitude of zero degrees. If not you have funny sw. Remember if
you use NORAd 2lmes you should be using an algorithm based on
NORAD's SGP4; otherwise errors are ensured. Most of the stuff I
have seen that is "free" uses SGP not SGP4. But I haven't tried
everything. Get a copy of NORAD's <Project Spacetrack> for
details. Buena Suerte!

--
nlh

1986. STS-69 Element_Set (95258.289)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95258.289@thomsoft.com>
Source record: 24094
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95258.28939913 .00000408 00000-0 00000 0 0 322
2 23667 28.4695 349.2290 0007369 281.8264 78.1517 15.75787528 1224

Satellite: STS-69
Catalog number: 23667
Epoch time: 95258.28939913 (15 SEP 95 06:56:44.09 UTC)
Element set: GSFC-032
Inclination: 28.4695 deg
RA of node: 349.2290 deg Space Shuttle Flight STS-69
Eccentricity: 0.0007369 Keplerian Elements
Arg of perigee: 281.8264 deg
Mean anomaly: 78.1517 deg
Mean motion: 15.75787528 rev/day Semi-major Axis: 6720.5233 Km
Decay rate: 0.41E-05 rev/day*2 Apogee Alt: 347.09 Km
Epoch rev: 122 Perigee Alt: 337.18 Km

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1987. radio meteors--my antenna is....

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: andromed@Rain.cs.dal.ca
Message-ID: <DEyprL.52F@cs.dal.ca>
Source record: 24095

Hello;

I have yet to hear a radio meteor, the antenna I bought from
Radio Shack is a VHF/UHF/FM type BUT I have no place to mount it
outside and its on a tripod in my room.
Our house has no aluminum siding, and there are 2 outlets in my room,
the house is about 100 yrs old but we have fixed it up.
will the antenna be usable inside (radio Shack calls it an inside/outside
one).
Also, since I am not having much luck would a Ham receiver be senstive
enough to do this work ? There is a possibility I could get a used analog
one at the end of the month, if the person retiring sells it.

thank you in advance...

Mike

PS: I've read and re-read that FAQ on meteors...now I know how the
guys at SETI feel, searching for that alien signal..hell they
probally would get one before I get a meteor signal !!

1988. Re: FAQ & FM Birds

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: Jensen's Catalog Sales <lathrop@azstarnet.com>
Message-ID: <43cgtf$lb@news.azstarnet.com>
Source record: 24096

ke6cth@ix.netcom.com (John Regent) wrote:
> Hi,
> Is there a FAQ avail for this group? Also, I understand that MIR &
> SAREX are capable of FM, but are there any satellites capable? What Are
> their frequencies?
> TNX,
> John...
> KE6CTH

From what I know (not much). MIR & SAREX are FM. In fact I
hear MIR last Sunday on 145.55 Simplex Voice. More commonly though
they use packet on SAREX & MIR. AO-27 is an FM bird on the weekends.
It's downlink is 436.80, Uplink on 145.85.

They're putting together a 70cm repeater on the MIR right now.
Downlink freqs. will be 437,925, 437.950, and 437.975. They will also
be working an 23cm TV stuff.

A0-27 isn't all that strong. I once heard it on my handheld. I've
even heard of people working it with a handheld. It's plenty sensative
to incoming signals. Just not to strong on the output.

Because of FM's constant carrier, it tend to use up too much power.
With the power budgets on satelites, you probably won't see much in the
way of FM in the future either. Packet, SSB, CW are the popular modes.

I don't even think Phase 3D is going to have FM. it'll have a lot
more capabilities though. With 2m, 70cm, and the microwave bands it'll
be interesting to see what it evolves into.

That's about all I can contribute. . .
Please correct me if I'm wrong on anything.

Buster

1989. STS-69 Element_Set (95258.682)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95258.682@thomsoft.com>
Source record: 24097
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95258.68252363 .00006161 16075-9 38168-4 0 201
2 23667 28.4617 346.3547 0004570 292.3179 142.5029 15.75811601 1273
```

This data is also available on the Shuttle Elements Mailing List. For information about the list, send the command "info elements" to "listserv@thomsoft.com" or read about the list with your web browser at <URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)

1990. *SPAM APOLOGY*

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: cleopatra@cyberden.com
Message-ID: <166977501.11568048@cyberden.com>
Source record: 24098

Cleopatra records would like to express a public apology for the "SPAHN RANCH" Spam sent out over various newgroups. It was a misguided but well intentioned effort of a new and over zealous intern, who now has had his/her access to the companies email account revoked. We are sorry for the disruption to the newsgroups and Cleopatra wishes to be a responsible participant on the net.

Thank You - Cleopatra Records

1991. FAQ & FM Birds

Newsgroup: rec.radio.amateur.space
Date: 1995-09-15 00:00:00 UTC
From: ke6cth@ix.netcom.com
Message-ID: <43c72j$fp0@ixnews2.ix.netcom.com>
Source record: 24099

Hi,

Is there a FAQ avail for this group? Also, I understand that MIR &
SAREX are capable of FM, but are there any satellites capable? What Are
their frequencies?

TNX,

John...
KE6CTH

1992. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.space
Date: 1995-09-16 00:00:00 UTC
From: jmaynard@admin5.hsc.uth.tmc.edu
Message-ID: <radio/personal-intro_811233929@rtfm.mit.edu>
Source record: 24100
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 3.1.1.2
Archive-name: radio/personal-intro
Revision: 2.1 1994/11/01 03:50:23
Posting-Frequency: posted on the 15th of each month

This message describes the rec.radio.amateur.*, rec.radio.cb,
rec.radio.info, and rec.radio.swap newsgroups, as well as their Internet
mailing list counterparts and complements. It is intended to serve as a
guide for the new reader on what to find where. Questions and comments may
be directed to the author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@admin5.hsc.uth.tmc.edu. This message was last changed on 31 October
1994 to add the discussion of non-Usenet mailing lists and streamline most
of the history discussion, and to change the moderator information for
rec.radio.info.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

Over the years, as the net grew, the volume of discussion became
progressively higher. First one by one, and then as part of two
reorganizations, what was once one group became many. In the process,
developments elsewhere on the net were reflected in the groups as they were
created, most notably the change to place all of the ham radio groups in one
hierarchy.

The collection of newsgroups continues to grow as more people join the net,
and as more topics of discussion gain volume, I expect to see more groups be
created as well. This follows what is happening on the rest of the net.

Nearly all of the radio newsgroups have corresponding mailing lists, the
notable exception being rec.radio.swap. There are also a few mailing lists
that don't have newsgroups.

The Current Groups
==================

It's important to post messages to the group that's appropriate for them,
and not to the groups that aren't. The whole idea of having different
```

newsgroups is so that folks who aren't interested in, say, homebrewing, don't have to wade through messages about homebrewing on the way to read about Field Day. Posting appropriately is just good etiquette.

The rec.radio.amateur.misc group is the catchall. It is what rec.ham-radio was renamed to during the first major reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, was removed on September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there. To answer a frequently asked question: No, there is no mailing list that goes along with this group. If you can't read Usenet news directly, you're out of luck.

The group rec.radio.amateur.policy was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate - it's now legal to order a pizza on the autopatch, if you're not in the pizza business - as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The group rec.radio.cb is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently David Dodell, WB7TPY. The email address for submissions to the group is rec-radio-info@stat.com. Inquires and other administrivia should be directed to rec-radio-info-request@stat.com. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

Mailing Lists

In addition to the mailing lists that mirror the Usenet newsgroups, there also are a few that stand alone. These cover specific areas of ham radio, and discussion is focused on just those areas.

The cq-contest mailing list is for discussions of contesting in ham radio. To join, send email with the word "subscribe" on a line by itself to cq-contest-request@tgv.com.

The DX mailing list covers the finer points of DXing. This one is also joined by mailing "subscribe" on a line by itself, this time to

dx-request@unbc.edu.

There's also a VHF mailing list, for VHF operators of the weak signal persuasion. You can join this one be sending "subscribe vhf" on a line by itself to vhf-request@w6yx.stanford.edu.

All of the following mailing lists are sponsored to the Boston Amateur Radio Club, as well as some others of local interest. Thanks to N1IST for the information.

qrp-l: This is the qrp mailing list, previously maintained by Bruce Walker at Think.com. It is for discussions about the design, construction, and use of qrp (low power) radios and related equipment.
arrl-ve-list: This is a one-way list, run by Bart Jahnke of the ARRL VEC, for announcements to VEs and VE teams.
w1aw-list: ARRL bulletins, news, and information
newsline-list: Redistribution of Amateur Radio Newsline
letter-list: Redistribution of the ARRL Letter
fox-list: Fox hunting and Radio Direction Finding
fieldorg-l: ARRL field organization discussions
ham-tech: Technical discussions and questions about Amateur Radio
arrl-exam-list: amateur radio license examinations scheduled in the US and in some foreign areas.

To sign up or inquire about these lists, send mail to listserv@netcom.com with the following in the body (subject is ignored) of the message.
<listname> is the name of the list to subscribe to.
To subscribe: subscribe <listname>
To unsubscribe: unsubscribe <listname>
For more information: help
To post (to the two-way lists), send your message to <listname>@netcom.com

Please do NOT send subscription requests to the mailing lists themselves; that doesn't work very often, and is very annoying to those on the list. Also, please keep your electronic mail address current with any mailing lists you subscribe to, as dealing with returned email is a nuisance for the person maintaining the mailing list.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while

still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
"All is strange and vague." "Are we dead?" "Or is this Ohio?"
-- Yakko and Dot Warner

1993. ARLK048 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-09-16 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk048.1995@ampr.org>
Source record: 24101
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK048
ARLK048 Keplerian data

ZCZC SK73
QST de W1AW
Keplerian Bulletin 48 ARLK048
From ARRL Headquarters
Newington, CT September 16, 1995
To all radio amateurs

SB KEP ARL ARLK048
ARLK048 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-69
1 23667U 95048A 95258.25042824 .00000408 00000-0 00000+0 0 325
2 23667 28.4695 349.5139 0007369 281.3622 217.0764 15.75787534 1193
Mir
1 16609U 86017A 95258.11067613 .00003351 00000-0 51488-4 0 02443
2 16609 51.6457 67.4435 0003171 89.6092 270.5255 15.57424234546948
AO-10
1 14129U 83058B 95248.37251192 .00000162 00000-0 10000-3 0 3727
2 14129 26.4527 249.8576 5985675 307.3504 11.6914 2.05877424 63980
RS-10/11
1 18129U 87054A 95257.72918340 .00000007 00000-0 -92968-5 0 01086
2 18129 82.9266 352.8786 0010515 197.3613 162.7192 13.72355822412257
UO-11
1 14781U 84021B 95258.00676642 .00000116 00000-0 27406-4 0 08424
2 14781 97.7860 256.3455 0010455 255.8982 104.1059 14.69376042617099
RS-12/13
1 21089U 91007A 95257.84296579 .00000032 00000-0 18258-4 0 08447
2 21089 82.9194 34.2767 0027962 285.0700 74.7356 13.74060034231086
AO-13
1 19216U 88051B 95255.75179021 -.00000515 00000-0 10352-4 0 00908
2 19216 57.4521 164.9386 7326206 18.6139 358.0485 2.09726621024000
UO-14
1 20437U 90005B 95258.14071113 .00000016 00000-0 23223-4 0 01284
2 20437 98.5649 341.0523 0010676 299.1590 60.8523 14.29896460294606
```

```
RS-15
1 23439U 94085A 95258.08306557 -.00000039 00000-0 10000-3 0 00897
2 23439 64.8178 109.6052 0166712 246.9449 111.3825 11.27524869029659
AO-16
1 20439U 90005D 95258.17904844 -.00000006 00000-0 14458-4 0 09463
2 20439 98.5732 342.8777 0010915 299.1376 60.8713 14.29950523294623
DO-17
1 20440U 90005E 95258.08868938 -.00000020 00000-0 91448-5 0 09256
2 20440 98.5778 343.2934 0011156 299.5334 60.4738 14.30091563294637
WO-18
1 20441U 90005F 95258.14273696 .00000014 00000-0 22282-4 0 09335
2 20441 98.5764 343.3096 0011684 299.0087 60.9938 14.30063002294644
LO-19
1 20442U 90005G 95258.15907397 -.00000003 00000-0 15556-4 0 09244
2 20442 98.5780 343.7173 0011656 296.5216 63.4772 14.30166572294660
FO-20
1 20480U 90013C 95258.14973056 -.00000012 00000-0 43665-4 0 08273
2 20480 99.0697 330.0105 0541159 29.7345 333.3395 12.83230962262480
AO-21
1 21087U 91006A 95258.12959400 .00000093 00000-0 82657-4 0 06488
2 21087 82.9416 166.0198 0034098 258.1959 101.5377 13.74558939232087
UO-22
1 21575U 91050B 95258.10981927 .00000038 00000-0 27248-4 0 06378
2 21575 98.3880 327.1752 0008577 15.9511 344.1946 14.36989656218418
KO-23
1 22077U 92052B 95257.84875317 -.00000037 00000-0 10000-3 0 05482
2 22077 66.0813 48.0404 0001922 163.6749 196.4331 12.86292413145267
KO-25
1 22828U 93061F 95258.15117924 .00000017 00000-0 24548-4 0 04013
2 22828 98.6082 333.4270 0010120 310.5305 49.4994 14.28111488070712
IO-26
1 22826U 93061D 95258.17549647 .00000011 00000-0 22241-4 0 4173
2 22826 98.6123 333.4102 0009650 326.8361 33.2213 14.27780011102611
AO-27
1 22825U 93061C 95258.15829191 -.00000001 00000-0 17448-4 0 04224
2 22825 98.6101 333.2795 0008689 325.5013 34.5611 14.27671697102607
PO-28
1 22829U 93061G 95258.16408846 .00000010 00000-0 21734-4 0 04197
2 22829 98.6077 333.4789 0010015 311.4835 48.5487 14.28091449102631

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
September 19, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

1994. NORAD Two-Line Orbital Element Set: Space Shuttle (95258.25042824)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-16 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.811295062@dolphin>
Source record: 24102

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

```
STS 69
1 23667U 95048A 95258.25042824 .00000408 00000-0 00000+0 0 325
2 23667 28.4695 349.5139 0007369 281.3622 217.0764 15.75787534 1193
1995048B
1 23668U 95048B 95252.59511764 .00018746 00000-0 17712-3 0 35
2 23668 28.4645 29.8766 0006148 288.1379 74.3024 15.65338999 212
1995048C
1 23669U 95048C 95256.43640510 .00007341 00000-0 99104-4 0 52
2 23669 28.4668 2.4977 0006057 296.5100 63.5162 15.55505275 319
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1995. STS-69 Element_Set (95259.699)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-16 00:00:00 UTC
From: elements-request@thomsoft.com
Message-ID: <STS-69.95259.699@thomsoft.com>
Source record: 24103
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-69
1 23667U 95048A 95259.69950141 .00005579 13180-9 34590-4 0 236
2 23667 28.4629 338.9180 0005598 306.5186 149.6127 15.75783762 1434

This data is also available on the Shuttle Elements Mailing List. For
information about the list, send the command "info elements" to
"listserv@thomsoft.com" or read about the list with your web browser at
<URL:http://www.cts.com/browse/garym/elements>

--
Gary Morris Internet: elements-request@thomsoft.com
KK6YB Web page: <http://www.cts.com/browse/garym/elements>
San Diego, CA, USA Phone: +1 619-457-2700 x128 (w)
```

1996. NORAD Two-Line Orbital Element Sets (TLE676)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-16 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.811295125@dolphin>
Source record: 24104

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #676 -
Alouette 1
1 00424U 62049A 95255.83203184 .00000048 00000-0 45573-4 0 1358
2 00424 80.4642 198.3951 0024214 32.3161 327.9461 13.67849584644282
ATS 1
1 02608U 66110A 95235.01105310 .00000102 00000-0 10000-3 0 9420
2 02608 14.6443 355.9733 0010162 70.9499 289.2146 1.00349976 21861
ATS 3
1 03029U 67111A 95255.12426149 -.00000128 00000-0 10000-3 0 4008
2 03029 14.8534 2.7453 0008876 259.0717 28.1579 1.00272954101961
Cosmos 398
1 04966U 71016A 95257.84064495 .00324702 99691-5 24276-3 0 13
2 04966 51.3928 164.1511 0439976 51.5890 312.2820 15.31198995838750
Starlette
1 07646U 75010A 95256.91330411 -.00000156 00000-0 -84069-5 0 9148
2 07646 49.8290 162.8856 0205734 34.7799 326.6343 13.82189119 40614
LAGEOS
1 08820U 76039A 95256.28095461 .00000010 00000-0 10000-3 0 1352
2 08820 109.8533 290.8071 0044012 188.3187 171.6913 6.38664535196081
ETS-2
1 09852U 77014A 95255.32796166 -.00000262 00000-0 10000-3 0 388
2 09852 12.8624 36.1334 0004811 90.1691 269.9212 1.00003631 14852
GOES 2
1 10061U 77048A 95257.42239378 .00000060 00000-0 10000-3 0 5794
2 10061 11.9558 40.3310 0013407 130.7662 160.2215 1.00296892 11668
IUE
1 10637U 78012A 95256.75172700 -.00000249 00000-0 10000-3 0 1689
2 10637 35.3438 87.5520 1336865 49.4031 87.2505 1.00303826 17159
GPS BI-01
1 10684U 78020A 95253.58415921 -.00000062 00000-0 10000-3 0 3879
2 10684 64.8799 32.1731 0060761 162.8471 197.3337 1.98069430113851
```

```
GPS BI-02
1 10893U 78047A 95257.06019650 .00000013 00000-0 10000-3 0 1813
2 10893 63.2831 269.8726 0224199 14.1573 346.4798 2.01627552127229
GOES 3
1 10953U 78062A 95256.44329016 .00000091 00000-0 10000-3 0 5324
2 10953 10.9285 43.1248 0006684 124.8220 196.3368 1.00354049 16267
SeaSat 1
1 10967U 78064A 95256.74749223 -.00000064 00000-0 23488-4 0 4280
2 10967 108.0011 320.7396 0002954 240.0914 119.9934 14.38053381901569
GPS BI-03
1 11054U 78093A 95256.98025321 .00000014 00000-0 10000-3 0 3505
2 11054 62.9878 268.3301 0045837 180.9800 179.0470 1.93505344123298
Nimbus 7
1 11080U 78098A 95257.62333781 -.00000037 00000-0 45332-5 0 5295
2 11080 98.9838 127.7201 0009312 356.6148 3.4945 13.83705088852929
GPS BI-04
1 11141U 78112A 95255.94107021 -.00000049 00000-0 10000-3 0 20
2 11141 64.8856 34.0830 0049018 27.3884 332.8722 1.92894844 12514
GPS BI-05
1 11690U 80011A 95256.63856842 -.00000042 00000-0 10000-3 0 9380
2 11690 65.2372 33.6570 0148170 192.1954 167.4524 2.00566418128631
GPS BI-06
1 11783U 80032A 95256.16160610 .00000011 00000-0 10000-3 0 998
2 11783 62.4278 263.0009 0218667 29.2169 331.9715 2.03457122113178
GOES 5
1 12472U 81049A 95252.37761878 -.00000293 00000-0 10000-3 0 8783
2 12472 7.6807 53.1279 0007650 39.2501 320.9589 1.00244469 10277
Cosmos 1383
1 13301U 82066A 95255.74903712 .00000020 00000-0 61532-5 0 4336
2 13301 82.9327 337.9496 0026250 289.7211 70.1108 13.68067661659301
LandSat 4
1 13367U 82072A 95255.58481081 .00000052 00000-0 21480-4 0 7703
2 13367 98.1210 309.3022 0006236 297.3793 62.6780 14.57157185699949
DMSP B5D2-1
1 13736U 82118A 95257.02573458 .00000060 00000-0 43687-4 0 8472
2 13736 98.6295 84.8333 0009380 113.0343 247.1822 14.25752070661579
IRAS
1 13777U 83004A 95257.55997183 -.00000272 00000-0 -15768-3 0 809
2 13777 98.9686 83.9407 0012562 139.0382 221.1725 13.99235088314686
Cosmos 1447
1 13916U 83021A 95257.85731860 .00000022 00000-0 69557-5 0 5313
2 13916 82.9416 35.4152 0036765 200.6809 159.2861 13.74329755625780
TDRS 1
1 13969U 83026B 95258.23948390 .00000077 00000-0 00000+0 0 4622
2 13969 8.5279 46.4154 0002565 131.2861 123.4600 1.00268120 18617
GOES 6
1 14050U 83041A 95250.47253457 -.00000161 00000-0 10000-3 0 4408
2 14050 6.4980 56.3963 0003529 28.6835 330.8728 1.00326948103347
OSCAR 10
1 14129U 83058B 95248.37251192 .00000162 00000-0 10000-3 0 3727
```

```
2 14129 26.4527 249.8576 5985675 307.3504 11.6914 2.05877424 63980
LandSat 5
1 14780U 84021A 95257.13092630 .00000075 00000-0 26529-4 0 3474
2 14780 98.1023 311.1840 0003538 301.3868 58.6985 14.57165338613588
UoSat 2
1 14781U 84021B 95256.03194427 .00000123 00000-0 28582-4 0 8267
2 14781 97.7861 254.4629 0010472 263.7295 96.2717 14.69375450616808
GPS BI-09
1 15039U 84059A 95254.48372952 -.00000065 00000-0 10000-3 0 3630
2 15039 64.5540 28.4887 0082026 18.4764 341.8105 1.92302246 82055
Cosmos 1574
1 15055U 84062A 95257.60282356 .00000047 00000-0 33623-4 0 7323
2 15055 82.9556 89.9355 0028749 33.7049 326.5922 13.73626285563015
GPS BI-10
1 15271U 84097A 95255.30364388 .00000004 00000-0 10000-3 0 545
2 15271 62.1292 263.4263 0156098 354.4039 5.4561 2.00603152 79672
Cosmos 1602
1 15331U 84105A 95255.37476492 .00000247 00000-0 26189-4 0 4177
2 15331 82.5322 14.2203 0020616 144.4137 215.8453 14.84661745591603
NOAA 9
1 15427U 84123A 95257.62886160 .00000074 00000-0 62782-4 0 4010
2 15427 98.9885 316.8529 0015787 19.3405 340.8360 14.13730461554550
GPS BI-11
1 16129U 85093A 95254.94123827 -.00000058 00000-0 10000-3 0 6765
2 16129 65.2159 31.7346 0155547 86.3782 275.3866 1.89368070 16639
Mir
1 16609U 86017A 95257.78984887 .00003356 00000-0 51559-4 0 2350
2 16609 51.6456 69.0508 0003158 88.7710 271.3788 15.57421773546897
SPOT 1
1 16613U 86019A 95257.38334737 .00000090 00000-0 62356-4 0 8519
2 16613 98.6427 326.7160 0001212 46.2966 313.8277 14.20069242181022
Cosmos 1766
1 16881U 86055A 95256.87480503 .00000242 00000-0 26370-4 0 3332
2 16881 82.5170 70.6414 0019398 166.2126 193.9625 14.83655390492728
EGP
1 16908U 86061A 95258.05481445 -.00000083 00000-0 10000-3 0 284
2 16908 50.0077 125.9478 0011345 31.3339 328.8170 12.44412977 82029
NOAA 10
1 16969U 86073A 95257.75653298 .00000028 00000-0 29893-4 0 3133
2 16969 98.5147 257.9496 0014292 80.2725 280.0068 14.24954203467231
MOS-1
1 17527U 87018A 95256.72623827 .00000092 00000-0 10000-3 0 2459
2 17527 98.9822 319.5852 0000969 119.4974 240.6282 13.95259463436176
GOES 7
1 17561U 87022A 95253.54129392 .00000061 00000-0 10000-3 0 5388
2 17561 2.5026 71.4908 0002268 320.3176 16.7262 1.00268382 14487
Kvant-1
1 17845U 87030A 95257.85401549 .00005930 00000-0 85939-4 0 3772
2 17845 51.6452 68.7360 0003710 89.5653 270.5770 15.57423011481041
DMSP B5D2-3
```

```
1 18123U 87053A 95257.76957515 .00000039 00000-0 42345-4 0 1403
2 18123 98.7771 87.5188 0014193 327.8398 32.1913 14.15417635425390
RS-10/11
1 18129U 87054A 95257.29173253 -.00000003 00000-0 -20311-4 0 1072
2 18129 82.9265 353.2018 0010510 198.7177 161.3586 13.72355743412191
Meteor 2-16
1 18312U 87068A 95254.91420828 .00000050 00000-0 31297-4 0 4247
2 18312 82.5523 213.5715 0010964 291.0153 68.9829 13.84062169407549
Meteor 2-17
1 18820U 88005A 95257.51805852 .00000044 00000-0 25737-4 0 7233
2 18820 82.5386 267.1833 0017175 350.5130 9.5703 13.84743432385235
DMSP B5D2-4
1 18822U 88006A 95258.09636779 .00000000 00000-0 18404-4 0 687
2 18822 98.3996 98.1228 0006876 87.6330 272.5636 14.23164216395302
Glonass 34
1 19163U 88043A 95252.50123286 .00000032 00000-0 10000-3 0 162
2 19163 65.1604 95.3280 0007580 150.3361 209.7868 2.13102565 56231
Glonass 36
1 19165U 88043C 95254.90407753 .00000009 00000-0 10000-3 0 4230
2 19165 65.1621 95.2131 0000964 250.1619 109.8966 2.13102141 56903
METEOSAT 3
1 19215U 88051A 95256.16344563 -.00000290 00000-0 10000-3 0 1762
2 19215 2.6860 69.3869 0000613 85.5210 185.6012 1.00285822 14459
AO-13
1 19216U 88051B 95253.84451361 -.00000463 00000-0 11760-4 0 889
2 19216 57.4530 165.2972 7325539 18.4599 358.0318 2.09726487 23960
OKEAN 1
1 19274U 88056A 95257.24394636 .00000228 00000-0 25510-4 0 333
2 19274 82.5150 170.8021 0019390 321.8474 38.1361 14.82382600388348
Meteor 3-2
1 19336U 88064A 95255.34758951 .00000051 00000-0 10000-3 0 4227
2 19336 82.5419 3.7317 0015788 210.4677 149.5529 13.16974471342771
Glonass 39
1 19503U 88085C 95258.21755645 -.00000071 00000-0 10000-3 0 3178
2 19503 65.6793 334.0157 0008504 163.5267 196.5725 2.13101904 54461
NOAA 11
1 19531U 88089A 95257.73382387 -.00000005 00000-0 22780-4 0 2094
2 19531 99.1982 263.5060 0011365 301.2518 58.7539 14.13063248359407
TDRS 2
1 19548U 88091B 95245.99760681 -.00000203 00000-0 00000+0 0 1441
2 19548 1.9096 73.9982 0006781 117.0317 234.4182 1.00263639 12630
Glonass 40
1 19749U 89001A 95255.44025005 .00000006 00000-0 10000-3 0 5282
2 19749 65.0988 94.7711 0004774 258.4742 101.5324 2.13101449 51918
Glonass 41
1 19750U 89001B 95256.43416967 .00000004 00000-0 10000-3 0 4372
2 19750 65.1233 94.8192 0004429 251.3834 108.6198 2.13101870 51958
GPS BII-01
1 19802U 89013A 95255.93810092 -.00000015 00000-0 10000-3 0 1048
2 19802 55.2519 121.6904 0027609 172.7818 187.3544 2.00555407 48136
```

```
Akebono
1 19822U 89016A 95257.20644370 .00007896 00000-0 38432-3 0 5685
2 19822 75.0976 283.9483 3774684 314.4392 20.2717 7.87515779144824
Meteor 2-18
1 19851U 89018A 95255.15834030 .00000050 00000-0 31294-4 0 4229
2 19851 82.5236 143.5732 0015819 41.4706 318.7652 13.84396307330229
MOP-1
1 19876U 89020B 95254.92177662 .00000042 00000-0 10000-3 0 1379
2 19876 1.3987 72.4485 0003020 114.3268 145.5641 1.00270945 3884
TDRS 3
1 19883U 89021B 95250.48390063 -.00000297 00000-0 00000+0 0 1173
2 19883 0.0274 77.8791 0004045 124.0148 277.3179 1.00266829196271
GPS BII-02
1 20061U 89044A 95253.28620504 -.00000045 00000-0 10000-3 0 1137
2 20061 54.3812 297.9731 0148699 216.1589 142.8967 2.00563001 45824
Nadezhda 1
1 20103U 89050A 95257.60883995 .00000008 00000-0 -81254-5 0 5174
2 20103 82.9617 312.6500 0039252 103.3209 257.2328 13.73856896310703
GPS BII-03
1 20185U 89064A 95256.11527565 -.00000016 00000-0 10000-3 0 1367
2 20185 55.0259 122.2329 0017330 330.7897 29.2181 2.00567880 44452
GMS 4
1 20217U 89070A 95256.60949792 -.00000385 00000-0 10000-3 0 2397
2 20217 1.2094 75.7086 0000840 325.7116 290.4181 1.00269427 22639
INTERCOSMOS 24
1 20261U 89080A 95258.06972694 .00000017 00000-0 40963-5 0 4392
2 20261 82.5914 87.0981 1241771 309.5614 40.1988 12.47274524271486
GPS BII-04
1 20302U 89085A 95256.15186265 .00000004 00000-0 10000-3 0 1167
2 20302 53.3563 237.8260 0058554 213.9185 145.7090 2.00558357 43253
Meteor 3-3
1 20305U 89086A 95257.69377803 .00000044 00000-0 10000-3 0 3909
2 20305 82.5533 315.7535 0005056 258.6505 101.4056 13.04410506282153
COBE
1 20322U 89089A 95257.05220609 -.00000091 00000-0 -30062-4 0 1512
2 20322 98.9604 271.7635 0009744 86.9200 273.3085 14.03447415298052
Kvant-2
1 20335U 89093A 95257.85404503 .00005930 00000-0 85939-4 0 3796
2 20335 51.6452 68.7358 0003710 89.5654 270.7426 15.57423011330051
GPS BII-05
1 20361U 89097A 95253.67171393 -.00000037 00000-0 10000-3 0 9700
2 20361 55.8309 64.3880 0081911 124.7769 236.0374 2.00563276 32684
COSMOS 2054 (Altair-1)
1 20391U 89101A 95257.02538370 -.00000148 00000-0 10000-3 0 2205
2 20391 3.3058 65.2593 0004099 82.5795 197.9736 1.00274212 21211
SPOT 2
1 20436U 90005A 95256.17310634 .00000169 00000-0 10000-3 0 9733
2 20436 98.7264 329.1058 0001685 29.1189 331.0079 14.20029232292383
UO-14
1 20437U 90005B 95257.72086122 -.00000011 00000-0 12633-4 0 1259
```

```
2 20437 98.5650 340.6394 0010582 299.9947 60.0187 14.29896157294543
UO-15
1 20438U 90005C 95255.21163512 -.00000026 00000-0 67564-5 0 9215
2 20438 98.5611 336.5601 0009991 313.1778 46.8569 14.29212952294078
PACSAT
1 20439U 90005D 95254.26059436 -.00000022 00000-0 84535-5 0 9234
2 20439 98.5727 339.0183 0011012 310.9262 49.0964 14.29950123294062
DO-17
1 20440U 90005E 95257.73886190 -.00000025 00000-0 70581-5 0 9246
2 20440 98.5778 342.9486 0011146 300.4464 59.5619 14.30091501294583
WO-18
1 20441U 90005F 95256.74339903 -.00000008 00000-0 13963-4 0 9287
2 20441 98.5761 341.9303 0011649 302.8854 57.1207 14.30062683294441
LO-19
1 20442U 90005G 95257.73930275 -.00000004 00000-0 15289-4 0 9231
2 20442 98.5780 343.3037 0011660 297.7852 62.2137 14.30166529294607
GPS BII-06
1 20452U 90008A 95257.05700994 -.00000012 00000-0 10000-3 0 722
2 20452 54.0285 178.0438 0057961 82.8232 277.8569 2.00551842 41256
MOS-1B
1 20478U 90013A 95256.20861847 .00000090 00000-0 10000-3 0 8359
2 20478 99.1413 323.8015 0000538 192.5599 167.5549 13.94865289205805
DEBUT
1 20479U 90013B 95256.18725731 -.00000082 00000-0 -11378-3 0 9238
2 20479 99.0694 328.5729 0541216 33.7081 329.7232 12.83332718262240
FO-20
1 20480U 90013C 95256.74639670 -.00000069 00000-0 -84339-4 0 8207
2 20480 99.0698 328.8685 0541193 32.9057 330.4546 12.83230468262301
MOS-1B R/B
1 20491U 90013D 95257.32913227 .00000144 00000-0 33921-3 0 1707
2 20491 99.0573 25.8790 0469227 222.6695 133.7068 13.02992707265803
LACE
1 20496U 90015A 95257.34363516 .00001289 00000-0 45732-4 0 5750
2 20496 43.1026 342.7969 0007994 61.4625 298.7034 15.34817889311273
Nadezhda 2
1 20508U 90017A 95257.81480353 .00000041 00000-0 26951-4 0 5169
2 20508 82.9492 87.0579 0045855 55.7117 304.8367 13.73498139277959
OKEAN 2
1 20510U 90018A 95255.15443488 .00000129 00000-0 14502-4 0 4419
2 20510 82.5255 125.0583 0019403 144.7583 215.4916 14.78521124298440
GPS BII-07
1 20533U 90025A 95255.47275574 -.00000053 00000-0 10000-3 0 978
2 20533 54.7547 298.5399 0046169 78.6182 281.9510 2.00569013 39992
PegSat
1 20546U 90028A 95256.81585091 .00006887 00000-0 13866-3 0 8412
2 20546 94.1198 194.4991 0064783 358.6125 1.4903 15.44352633302150
HST
1 20580U 90037B 95257.93171501 .00005012 00000-0 48127-3 0 7158
2 20580 28.4692 194.1518 0006414 160.8995 199.1827 14.90939059 97316
MACSAT 2
```

```
1 20608U 90043B 95255.78529786 .00000157 00000-0 24698-4 0 1246
2 20608 89.9320 175.7513 0104719 310.6814 48.5327 14.64860157285537
Glonass 44
1 20619U 90045A 95257.68570667 -.00000071 00000-0 10000-3 0 2276
2 20619 65.2719 333.4089 0025307 208.7872 151.1143 2.13102470 41417
Glonass 45
1 20620U 90045B 95254.51963103 -.00000062 00000-0 10000-3 0 2290
2 20620 65.2946 333.5082 0006877 43.7253 316.3875 2.13102518 41382
Glonass 46
1 20621U 90045C 95254.58644678 -.00000062 00000-0 10000-3 0 8220
2 20621 65.2900 333.5687 0011112 187.6920 172.3529 2.13101688 41384
Kristall
1 20635U 90048A 95257.85404503 .00005930 00000-0 85939-4 0 1711
2 20635 51.6452 68.7358 0003710 89.5654 270.7426 15.57423011300882
ROSAT
1 20638U 90049A 95256.08903481 .00000056 00000-0 22578-4 0 4917
2 20638 52.9904 111.3014 0012130 13.5307 346.6002 15.07241955290378
Meteor 2-19
1 20670U 90057A 95256.89902717 -.00000102 00000-0 -10492-3 0 9226
2 20670 82.5480 208.0952 0015357 320.0341 39.9676 13.84158719263383
CRRES
1 20712U 90065A 95256.40795023 .00000784 00000-0 78441-3 0 1526
2 20712 18.1200 3.3738 7196224 169.7706 222.7059 2.35529632 36561
GPS BII-08
1 20724U 90068A 95255.79396862 -.00000014 00000-0 10000-3 0 9398
2 20724 54.8649 119.8421 0120261 175.6968 184.5156 2.00565681 35868
Feng Yun1-2
1 20788U 90081A 95258.21372698 -.00000027 00000-0 10000-4 0 5294
2 20788 98.8136 268.2089 0014862 183.8225 176.2780 14.01360244257445
Meteor 2-20
1 20826U 90086A 95255.13949487 .00000052 00000-0 34070-4 0 9335
2 20826 82.5290 146.3836 0011854 218.5817 141.4499 13.83614813250252
GPS BII-09
1 20830U 90088A 95253.84631000 -.00000041 00000-0 10000-3 0 9488
2 20830 55.7767 62.3610 0067909 99.9281 260.8704 2.00556672 36468
GPS BIIA-10
1 20959U 90103A 95257.74381221 -.00000023 00000-0 10000-3 0 9141
2 20959 55.0540 121.7649 0100032 230.4301 128.7677 2.00571446 35134
DMSP B5D2-5
1 20978U 90105A 95257.59330036 .00000029 00000-0 26264-4 0 3357
2 20978 98.6319 325.4923 0078120 266.3609 92.8641 14.32576257250113
Glonass 47
1 21006U 90110A 95256.95791232 .00000005 00000-0 10000-3 0 7958
2 21006 65.0824 94.0592 0058907 188.1226 171.8387 2.13102777 37108
Glonass 48
1 21007U 90110B 95255.73929942 .00000004 00000-0 10000-3 0 9204
2 21007 65.1182 94.1820 0036165 178.6369 181.4343 2.13101229 37061
Glonass 49
1 21008U 90110C 95257.97731863 .00000011 00000-0 00000+0 0 1234
2 21008 65.0804 94.0587 0007827 269.1446 90.8276 2.13098999 37108
```

```
AO-21
1 21087U 91006A 95255.80025833 .00000093 00000-0 82657-4 0 6316
2 21087 82.9416 167.7430 0034255 264.7520 94.9724 13.74558895231762
RS-12/13
1 21089U 91007A 95254.85743102 .00000014 00000-0 -33285-6 0 8297
2 21089 82.9193 36.4914 0028015 293.5428 66.2786 13.74059807230677
MOP-2
1 21140U 91015B 95256.27175637 -.00000029 00000-0 10000-3 0 985
2 21140 0.0852 307.0514 0001622 240.1455 262.2723 1.00267065 18827
Nadezhda 3
1 21152U 91019A 95257.78322592 -.00000066 00000-0 -86329-4 0 2075
2 21152 82.9294 350.5121 0042563 33.8346 326.5511 13.73521614225804
Glonass 50
1 21216U 91025A 95255.09968087 -.00000064 00000-0 10000-3 0 4385
2 21216 65.0173 333.1386 0007314 198.0778 161.9583 2.13102804 34571
Glonass 51
1 21217U 91025B 95256.10744240 -.00000067 00000-0 10000-3 0 8457
2 21217 65.0200 333.1181 0012675 227.1023 132.8731 2.13101641 34580
Glonass 52
1 21218U 91025C 95255.28049542 -.00000064 00000-0 10000-3 0 3170
2 21218 65.0071 333.1069 0012591 58.2282 301.9549 2.13102854 34571
GRO
1 21225U 91027B 95255.53236280 .00002294 00000-0 44667-4 0 2942
2 21225 28.4611 326.8492 0002664 279.9701 80.0596 15.42987938126837
Meteor 3-4
1 21232U 91030A 95254.99612937 .00000051 00000-0 10000-3 0 8320
2 21232 82.5406 210.1587 0013783 132.3841 227.8444 13.16468993210807
NOAA 12
1 21263U 91032A 95257.79627128 .00000097 00000-0 62388-4 0 6353
2 21263 98.5837 279.5456 0013447 2.5540 357.5707 14.22557762225160
OKEAN 3
1 21397U 91039A 95257.33330695 .00000156 00000-0 19182-4 0 1320
2 21397 82.5219 36.3805 0020921 216.3632 143.6159 14.76400488230515
GPS BIIA-11
1 21552U 91047A 95256.51614823 -.00000039 00000-0 10000-6 0 8925
2 21552 56.0582 59.9665 0065284 242.2678 117.0830 2.00560055 30702
ERS-1
1 21574U 91050A 95257.75163094 .00000035 00000-0 29305-4 0 2025
2 21574 98.5505 330.7935 0001745 89.9830 270.1553 14.32245532217876
UO-22
1 21575U 91050B 95256.71721757 .00000014 00000-0 19129-4 0 6302
2 21575 98.3883 325.8188 0008584 19.8635 340.2887 14.36989226218219
ORBCOMM-X
1 21576U 91050C 95257.67727820 .00000037 00000-0 27236-4 0 7254
2 21576 98.3858 325.0624 0004920 28.5903 331.5552 14.36399013218259
TUBSAT-A
1 21577U 91050D 95257.73702062 .00000025 00000-0 22980-4 0 6249
2 21577 98.3858 325.6644 0007480 20.5242 339.6243 14.36493358218297
SARA
1 21578U 91050E 95256.69064901 .00000191 00000-0 75834-4 0 8249
```

```
2 21578 98.4084 330.6407 0005492 24.5034 335.6413 14.39055925218424
TDRS 4
1 21639U 91054B 95253.60158939 .00000056 00000-0 00000+0 0 9399
2 21639 0.0536 286.7983 0002968 228.4631 236.1038 1.00271164109084
Meteor 3-5
1 21655U 91056A 95255.21202677 .00000051 00000-0 10000-3 0 8307
2 21655 82.5552 157.5011 0013855 142.0737 218.1363 13.16841163195951
UARS
1 21701U 91063B 95256.92113849 -.00000014 00000-0 19889-4 0 7021
2 21701 56.9852 141.0667 0006008 100.9563 259.2177 14.96424098218855
DMSP B5D2-6
1 21798U 91082A 95257.77208865 .00000063 00000-0 57163-4 0 9870
2 21798 98.9610 269.7211 0012247 295.6208 64.3693 14.13916773195860
Glonass 53
1 21853U 92005A 95255.02308612 .00000007 00000-0 10000-3 0 388
2 21853 65.0241 93.8154 0006582 196.1393 163.9074 2.13102342 28178
Glonass 54
1 21854U 92005B 95256.72006278 .00000004 00000-0 10000-3 0 1872
2 21854 65.0336 93.7562 0016155 22.0271 338.1032 2.13103815 28193
Glonass 55
1 21855U 92005C 95256.78473310 .00000004 00000-0 00000+0 0 1767
2 21855 65.0351 93.7589 0007266 193.4643 166.5806 2.13102149 28189
JERS-1
1 21867U 92007A 95258.18084695 .00000498 00000-0 46371-4 0 6669
2 21867 97.7144 334.0156 0002873 87.4314 272.7240 14.98654553196524
GPS BIIA-12
1 21890U 92009A 95255.48258914 -.00000000 00000-0 10000-3 0 6977
2 21890 53.8928 238.1290 0059054 186.2839 173.6192 2.00569752 26050
GPS BIIA-13
1 21930U 92019A 95257.68279541 -.00000093 00000-0 10000-3 0 6811
2 21930 55.7214 359.6732 0039377 164.7323 195.4125 2.00567073 25027
EUVE
1 21987U 92031A 95255.76222137 .00000663 00000-0 21032-4 0 4822
2 21987 28.4336 254.5165 0009812 241.8231 118.1319 15.19410732181281
SAMPEX
1 22012U 92038A 95256.87553188 .00000373 00000-0 30383-4 0 6598
2 22012 81.6687 52.0730 0118709 358.6901 1.3988 14.91436294173890
GPS BIIA-14
1 22014U 92039A 95253.73507065 -.00000010 00000-0 10000-3 0 5834
2 22014 54.8516 179.7677 0089836 316.6070 42.6922 2.00569047 16781
Glonass 56
1 22056U 92047A 95256.21479697 -.00000068 00000-0 00000+0 0 882
2 22056 64.8554 333.1986 0005559 260.4419 99.5566 2.13103215 24264
Glonass 57
1 22057U 92047B 95254.16398148 -.00000061 00000-0 00000+0 0 823
2 22057 64.8669 333.2940 0007084 311.0493 48.9477 2.13102316 24195
Glonass 58
1 22058U 92047C 95254.57324711 -.00000063 00000-0 10000-3 0 449
2 22058 64.8544 333.2766 0007503 270.9021 89.0629 2.13102993 24253
TOPEX
```

```
1 22076U 92052A 95257.83169251 -.00000038 00000-0 10000-3 0 9062
2 22076 66.0370 66.6708 0007766 265.0901 94.9228 12.80930920144729
KO-23
1 22077U 92052B 95253.88347116 -.00000037 00000-0 10000-3 0 5203
2 22077 66.0822 56.3440 0002127 166.2618 193.8456 12.86292309144757
S80/T
1 22078U 92052C 95257.36795533 -.00000037 00000-0 10000-3 0 5188
2 22078 66.0762 47.8421 0002438 124.8845 235.2388 12.86576347145283
GPS BIIA-15
1 22108U 92058A 95257.18407486 .00000014 00000-0 10000-3 0 6191
2 22108 54.1269 238.8533 0115611 153.2360 207.3427 2.00570530 22033
FREJA
1 22161U 92064A 95254.41434046 -.00000126 00000-0 -48734-5 0 5453
2 22161 62.9897 230.2990 0816959 354.2368 4.9660 13.21846199141442
LAGEOS II
1 22195U 92070B 95256.78510746 -.00000009 00000-0 10000-3 0 4317
2 22195 52.6450 166.9881 0137996 315.4246 43.5284 6.47293958 68319
GPS BIIA-16
1 22231U 92079A 95254.87662872 -.00000005 00000-0 10000-3 0 5950
2 22231 54.6789 180.8773 0034904 284.3480 75.2625 2.00562173 20560
GPS BIIA-17
1 22275U 92089A 95254.02293299 -.00000009 00000-0 10000-3 0 6123
2 22275 54.7312 178.3346 0321717 230.6183 126.6456 2.00566412 19958
TDRS 5
1 22314U 93003B 95249.41818287 -.00000309 00000-0 10000-3 0 5549
2 22314 2.0447 71.4653 0002932 138.1552 239.6402 1.00260577 9731
GPS BIIA-18
1 22446U 93007A 95256.09391934 -.00000055 00000-0 10000-3 0 6039
2 22446 54.3752 298.7004 0082133 357.5870 2.4437 2.00574267 18987
Glonass 59
1 22512U 93010A 95255.49387503 .00000005 00000-0 10000-3 0 7290
2 22512 65.0477 93.6574 0008635 190.6181 169.4277 2.13102042 19758
Glonass 60
1 22513U 93010B 95255.43294896 .00000005 00000-0 00000+0 0 8079
2 22513 65.0358 93.6695 0007201 185.5830 174.4721 2.13102506 19949
Glonass 61
1 22514U 93010C 95256.19569444 .00000003 00000-0 00000+0 0 8010
2 22514 65.0617 93.6339 0011180 180.9886 179.0711 2.13102514 19965
ASTRO-D
1 22521U 93011A 95256.75453457 .00000969 00000-0 62303-4 0 4350
2 22521 31.1045 33.4521 0057135 296.2951 63.1834 15.02431330140700
UFO F1
1 22563U 93015A 95253.87778891 .00000061 00000-0 00000+0 0 4514
2 22563 25.8444 293.0207 0008448 245.0085 174.6735 0.99249452 13313
GPS BIIA-19
1 22581U 93017A 95257.23269119 -.00000094 00000-0 10000-3 0 4611
2 22581 55.2183 359.2260 0057502 37.3086 323.0818 2.00571174 18064
ARSENE
1 22654U 93031B 95252.78359225 -.00000139 00000-0 10000-3 0 3294
2 22654 2.7251 81.5048 2888511 219.2109 116.4681 1.42203085 7594
```

```
GPS BIIA-20
1 22657U 93032A 95257.36690950 -.00000094 00000-0 10000-3 0 5168
2 22657 55.2328 359.0470 0068929 205.8679 153.8018 2.00561586 13393
RADCAL
1 22698U 93041A 95257.14402708 .00000053 00000-0 17336-4 0 4300
2 22698 89.5375 285.8867 0091319 147.1402 213.5511 14.21352386115079
GPS BIIA-21
1 22700U 93042A 95251.84851688 -.00000010 00000-0 10000-3 0 4529
2 22700 54.2976 239.8761 0040639 343.8322 16.0204 2.00566722 16087
NOAA 13
1 22739U 93050A 95257.85255611 -.00000036 00000-0 48721-5 0 8885
2 22739 99.0010 206.8307 0009245 285.2915 74.7241 14.10941342108083
GPS BIIA-22
1 22779U 93054A 95253.43035867 -.00000047 00000-0 10000-3 0 5103
2 22779 54.5279 298.8296 0020380 247.9378 111.9159 2.00549480 14877
Meteor 2-21
1 22782U 93055A 95250.90019369 .00000050 00000-0 31581-4 0 4274
2 22782 82.5473 211.6311 0024144 53.6407 306.6984 13.83037648101974
UFO F2
1 22787U 93056A 95257.77676701 -.00000088 00000-0 10000-3 0 5265
2 22787 4.4150 325.2741 0004112 217.3524 162.5555 1.00278638 6064
SPOT 3
1 22823U 93061A 95256.21393982 -.00000044 00000-0 00000+0 0 4713
2 22823 98.7342 329.1985 0000685 81.9316 278.1940 14.20023856101785
STELLA
1 22824U 93061B 95256.18421765 -.00000048 00000-0 -17007-5 0 4155
2 22824 98.6122 330.9580 0006669 334.0525 26.0323 14.27101950102284
AO-27
1 22825U 93061C 95257.24720062 -.00000010 00000-0 13653-4 0 4189
2 22825 98.6101 332.3819 0008722 328.2235 31.8418 14.27671533102477
IO-26
1 22826U 93061D 95258.17549647 .00000011 00000-0 22241-4 0 4173
2 22826 98.6123 333.4102 0009650 326.8361 33.2213 14.27780011102611
HEATHSAT
1 22827U 93061E 95257.69802064 -.00000000 00000-0 17607-4 0 4781
2 22827 98.6098 332.8682 0009186 314.8579 45.1856 14.27905201102559
ITAMSAT
1 22828U 93061F 95257.17030606 -.00000003 00000-0 16416-4 0 3958
2 22828 98.6083 332.4605 0010120 313.2947 46.7392 14.28111191 70573
PO-28
1 22829U 93061G 95256.20231403 .00000003 00000-0 18917-4 0 4093
2 22829 98.6076 331.5450 0010075 317.2049 42.8342 14.28091187102356
KO-25
1 22830U 93061H 95257.17346598 -.00000022 00000-0 84736-5 0 4280
2 22830 98.5079 324.6884 0010999 288.7397 71.2596 14.28096106102495
GPS BIIA-23
1 22877U 93068A 95255.47749438 -.00000045 00000-0 10000-3 0 3116
2 22877 55.5367 60.2998 0037738 294.4088 65.2261 2.00573776 13807
METEOSAT 6
1 22912U 93073B 95250.17463567 -.00000118 00000-0 10000-3 0 3627
```

```
2 22912 0.6522 278.0861 0001191 292.5937 187.5821 1.00272743 5018
HST Array
1 22920U 90037C 95258.01878182 .00004881 00000-0 35246-3 0 3682
2 22920 28.4668 144.6120 0001964 29.6399 330.4310 15.01855202 97826
Meteor 3-6
1 22969U 94003A 95257.63362044 .00000051 00000-0 10000-3 0 1969
2 22969 82.5589 95.6347 0014297 206.5446 153.4935 13.16731705 78651
TUBSAT-B
1 22970U 94003B 95255.61372051 .00000051 00000-0 10000-3 0 1876
2 22970 82.5576 96.9891 0014977 209.4777 150.5501 13.16825809 78398
GPS BIIA-24
1 23027U 94016A 95256.05713789 -.00000094 00000-0 10000-3 0 2554
2 23027 55.0831 1.1301 0064942 198.8965 160.8870 2.00561345 11126
Glonass 62
1 23043U 94021A 95256.27380948 -.00000069 00000-0 00000+0 0 2567
2 23043 64.7308 333.5929 0007100 191.8489 168.1934 2.13103038 11087
Glonass 63
1 23044U 94021B 95256.15646220 -.00000068 00000-0 00000+0 0 2270
2 23044 64.7342 333.6004 0030644 203.5435 156.3766 2.13103014 11088
Glonass 64
1 23045U 94021C 95254.92506418 -.00000064 00000-0 00000+0 0 2353
2 23045 64.7204 333.6481 0009969 34.7896 325.3362 2.13102694 11056
GOES 8
1 23051U 94022A 95258.25349579 -.00000271 00000-0 10000-3 0 3787
2 23051 0.2065 83.5053 0003724 102.0335 184.8271 1.00280537 12606
MSTI 2
1 23101U 94028A 95255.55039937 .00004879 00000-0 84959-4 0 2324
2 23101 97.0931 87.5597 0010785 276.4128 83.5893 15.51170191 76066
STRV-1A
1 23125U 94034B 95253.35935219 .00004256 00000-0 10319-2 0 1944
2 23125 7.5161 356.1168 7267918 189.3854 139.8792 2.30358497 9619
STRV-1B
1 23126U 94034C 95248.04000883 .00004378 00000-0 95890-3 0 1724
2 23126 7.5180 358.5368 7272645 184.6199 160.3046 2.29954955 9533
Nadezhda 4
1 23179U 94041A 95257.58436590 .00000042 00000-0 27729-4 0 1302
2 23179 82.9432 81.6115 0035806 173.9529 186.2062 13.75671627 58768
Glonass 65
1 23203U 94050A 95257.40894764 .00000031 00000-0 00000+0 0 1904
2 23203 64.7939 213.4090 0006709 157.5530 202.4628 2.13101963 8500
Glonass 66
1 23204U 94050B 95256.23515046 .00000027 00000-0 00000+0 0 1992
2 23204 64.7729 213.4801 0015383 341.3477 18.5805 2.13102398 8471
Glonass 67
1 23205U 94050C 95253.30244277 .00000001 00000-0 00000+0 0 1849
2 23205 64.7902 213.5621 0002932 287.2326 72.7039 2.13102137 8419
DMSP B5D2-7
1 23233U 94057A 95257.57125050 .00000051 00000-0 51363-4 0 4859
2 23233 98.8722 314.8144 0011329 243.4478 116.5533 14.12635732 53774
OKEAN 1-7
```

```
1 23317U 94066A 95257.20211696 .00000093 00000-0 10831-4 0 941
2 23317 82.5447 313.8250 0024123 261.9890 97.8587 14.73957165 49732
ELEKTRO
1 23327U 94069A 95251.99307082 -.00000130 00000-0 10000-3 0 894
2 23327 0.6169 261.2175 0005549 211.5794 308.2995 1.00273212 3172
RESURS 1-3
1 23342U 94074A 95257.75432011 .00000011 00000-0 10000-4 0 3181
2 23342 98.0066 315.7762 0001600 99.6892 260.4496 14.69767333 46208
Glonass 68
1 23396U 94076A 95255.96151246 .00000003 00000-0 00000+0 0 1443
2 23396 64.9766 93.7222 0030321 187.9637 172.0493 2.13102402 6319
Glonass 69
1 23397U 94076B 95256.60631761 .00000004 00000-0 00000+0 0 1509
2 23397 64.9655 93.7119 0011523 325.0440 34.9454 2.13102257 6324
Glonass 70
1 23398U 94076C 95256.02053578 .00000003 00000-0 00000+0 0 1587
2 23398 64.9574 93.7135 0001863 284.4666 75.5772 2.13102115 6324
LUCH (Altair-2)
1 23426U 94082A 95258.21960338 -.00000286 00000-0 00000+0 0 1719
2 23426 2.0209 272.3064 0000580 311.1687 303.9260 1.00261240 2737
RS-15
1 23439U 94085A 95255.68833064 -.00000039 00000-0 10000-3 0 775
2 23439 64.8182 113.4781 0166686 247.4090 110.9116 11.27524903 29381
NOAA 14
1 23455U 94089A 95257.55822100 -.00000003 00000-0 22744-4 0 3193
2 23455 98.9094 199.3944 0008903 309.5481 50.4895 14.11532238 36425
ODERACS II A
1 23471U 95004C 95254.80562706 .00034908 00000-0 12984-3 0 1874
2 23471 51.6476 43.4457 0011271 73.7521 286.4679 15.87594178 34916
ODERACS II B
1 23472U 95004D 95258.02126806 .00346307 73120-4 29839-3 0 2458
2 23472 51.6414 12.7511 0005071 37.4145 322.6921 16.12731285 35600
Glonass 71
1 23511U 95009A 95256.91933143 -.00000070 00000-0 00000+0 0 948
2 23511 64.7559 333.8445 0007588 215.7027 144.3051 2.13102843 4064
Glonass 72
1 23512U 95009B 95255.15980884 -.00000065 00000-0 00000+0 0 1033
2 23512 64.7448 333.9100 0005535 307.4657 52.5461 2.13102145 4025
Glonass 73
1 23513U 95009C 95257.33016165 -.00000071 00000-0 00000+0 0 1079
2 23513 64.7505 333.8474 0014313 202.5554 157.4415 2.13102695 4077
SFU
1 23521U 95011A 95256.89183290 .00002875 00000-0 91197-4 0 978
2 23521 28.4569 189.8975 0020254 127.0340 233.2114 15.28821896 27528
GMS 5
1 23522U 95011B 95256.63548900 -.00000306 00000-0 10000-3 0 559
2 23522 0.7452 299.9025 0001292 229.7440 191.1508 1.00262586 1671
DMSP B5D2-8
1 23533U 95015A 95257.72384469 .00000038 00000-0 44003-4 0 2154
2 23533 98.8354 258.8732 0007923 113.7614 246.4388 14.12701360 24594
```

```
Microlab 1
1 23547U 95017C 95256.59917266 .00000131 00000-0 54193-4 0 492
2 23547 69.9781 94.1904 0014268 218.3460 141.6642 14.45407857 23559
OFEQ 3
1 23549U 95018A 95257.88317563 .00006844 00000-0 17765-3 0 1099
2 23549 143.3685 351.7297 0250934 342.2041 17.0075 15.08625187 24513
GFZ-1
1 23558U 86017JE 95254.90913918 .00002389 00000-0 34797-4 0 571
2 23558 51.6495 80.5643 0005963 250.6732 109.3619 15.60376920546372
ERS-2
1 23560U 95021A 95255.74766438 .00000034 00000-0 28835-4 0 1173
2 23560 98.5501 328.8245 0001025 99.6759 260.4539 14.32244398 20710
Spektr
1 23579U 95024A 95257.85404503 .00005930 00000-0 85939-4 0 1305
2 23579 51.6452 68.7358 0003710 89.5654 270.7426 15.57423011 18361
GOES 9
1 23581U 95025A 95254.61591209 -.00000208 00000-0 10000-3 0 545
2 23581 0.3917 270.2137 0002271 290.6771 281.2120 1.00270842 1121
Helios 1A
1 23605U 95033A 95256.83183081 .00000103 00000-0 28753-4 0 865
2 23605 98.0921 191.9259 0001495 69.0411 291.0951 14.63863856 9975
UPM SAT 1
1 23606U 95033B 95257.78744041 -.00000038 00000-0 18309-5 0 562
2 23606 98.0733 193.0711 0006001 351.6758 8.4347 14.66889117 10191
CERISE
1 23607U 95033C 95254.29758869 .00000161 00000-0 37237-4 0 251
2 23607 98.0732 189.6571 0009134 1.2961 358.8265 14.67142676 9697
TDRS 6
1 23613U 95035B 95257.44834299 .00000111 00000-0 00000+0 0 485
2 23613 0.1029 89.0022 0001309 138.9181 136.4424 1.00282014 613
Progress M-28
1 23617U 95036A 95247.84389206 -.00013481 00000-0 -17436-3 0 500
2 23617 51.6463 118.8723 0003479 67.7599 292.4521 15.57345555 7290
Glonass 74
1 23620U 95037A 95254.29908108 .00000010 00000-0 00000+0 0 462
2 23620 64.8414 213.3644 0018203 171.5666 188.4384 2.13102860 1045
Glonass 75
1 23621U 95037B 95256.35241555 .00000027 00000-0 00000+0 0 523
2 23621 64.8521 213.2847 0017952 182.6398 177.3322 2.13102081 1082
Glonass 76
1 23622U 95037C 95255.47252778 .00000021 00000-0 00000+0 0 462
2 23622 64.8477 213.3178 0036978 166.8657 193.2174 2.13102379 1062
Prognoz-M2
1 23632U 95039A 95252.49547350 -.00001202 00000-0 00000+0 0 101
2 23632 63.0580 259.8600 9226312 314.4720 313.7000 0.26340101 96
1995044A
1 23651U 95044A 95254.61142641 -.00000353 00000-0 00000+0 0 205
2 23651 0.0566 254.0218 0004244 306.4124 141.7787 1.00295969 110
1995044B
1 23652U 95044B 95256.36929105 .00113537 70860-6 28438-3 0 145
```

```
2 23652 6.7319 248.7881 7367959 189.8505 137.1361 2.23377650 339
1995045A
1 23653U 95045A 95257.66382131 -.00000156 00000-0 00000+0 0 128
2 23653 1.5660 277.6662 0012201 267.6064 126.5016 1.00276893 155
1995045B
1 23654U 95045B 95246.28682870 .15820329 12759-4 92745-4 0 192
2 23654 51.6410 261.6737 0003545 231.8539 128.2479 16.54149064 574
1995045C
1 23655U 95045C 95243.54236111 .17934734 12422-4 11810-2 0 100
2 23655 51.6305 277.1380 0001561 87.2215 277.1570 16.40807312 123
SICH-1
1 23657U 95046A 95256.51686715 .00000191 00000-0 26032-4 0 150
2 23657 82.5308 96.1338 0026369 230.7677 129.1192 14.73411791 1946
1995046C
1 23659U 95046C 95255.56353109 .00000098 00000-0 11526-4 0 107
2 23659 82.5313 97.0076 0026070 236.1266 123.7436 14.73720782 1805
1995045E
1 23660U 95045E 95257.40420389 .00001147 00000-0 61198-3 0 91
2 23660 47.4563 276.9340 7280435 3.7287 359.6754 2.27030044 321
1995045F
1 23661U 95045F 95248.16300830 .00000016 00000-0 10000-4 0 49
2 23661 47.5222 279.5051 7258157 1.3073 0.0161 2.26606721 112
1995045G
1 23663U 95045G 95249.20627900 -.00003572 11294-4 00000+0 0 43
2 23663 51.6035 247.4465 0162001 98.9000 278.8630 15.93516943 819
1995045H
1 23664U 95045H 95245.30021991 .00005473 10708-4 10000-4 0 45
2 23664 51.6830 269.1703 0261886 93.8534 276.1056 15.66747594 222
Soyuz TM-22
1 23665U 95047A 95257.85401539 .00005930 00000-0 85939-4 0 222
2 23665 51.6452 68.7360 0003710 89.5653 270.5765 15.57423011 1804
1995047B
1 23666U 95047B 95249.18156250 .20145336 12715-4 11758-3 0 164
2 23666 51.6206 111.2938 0007333 232.1815 128.1265 16.53993193 462
STS 69
1 23667U 95048A 95258.25042824 .00000408 00000-0 00000+0 0 325
2 23667 28.4695 349.5139 0007369 281.3622 217.0764 15.75787534 1193
1995048B
1 23668U 95048B 95252.59511764 .00018746 00000-0 17712-3 0 35
2 23668 28.4645 29.8766 0006148 288.1379 74.3024 15.65338999 212
1995048C
1 23669U 95048C 95256.43640510 .00007341 00000-0 99104-4 0 52
2 23669 28.4668 2.4977 0006057 296.5100 63.5162 15.55505275 319
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

1997. KLM antenna relays

Newsgroup: rec.radio.amateur.space
Date: 1995-09-16 00:00:00 UTC
From: sonealca@aol.com
Message-ID: <43fnkh$g7v@newsbf02.news.aol.com>
Source record: 24105

Does anyone have a source for replacement of the KLM 22c relays. Mine seem to have gone bad, and I've tried the cleaning tricks with no avail. I suppose I could go through KLM, but wondered if anyone out there has had to replace and found other makers of either the relays or the complete L/R switch modules.

Steve

1998. Re: KLM antenna relays

Newsgroup: rec.radio.amateur.space
Date: 1995-09-17 00:00:00 UTC
From: Leo Schaaf <ljschaaf@rcinet.com>
Message-ID: <43htdk$pug@sally.dma.org>
Source record: 24106

I just put in an order for the Guardian relay this past week at work . I will look up the part number and tell you what it cost me. I had one go bad also so I thought I had better order some spares. Leo Schaaf

1999. AO-10 & 13 Signal Levels

Newsgroup: rec.radio.amateur.space
Date: 1995-09-18 00:00:00 UTC
From: jbuckham@ix.netcom.com
Message-ID: <43j017$26m@ixnews7.ix.netcom.com>
Source record: 24107

I need to compare some notes. I have just pulled my satellite station together, and this is what I have:

A KLM 2M-14C Downlink antenna.
A KLM 435-18C Uplink antenna w/CS-2 relay box
A Landwehr mast mounted preamp.
An RF Concepts 4-310 70cm 100w power amp.
Kenpro GB-500 Elevation Rotor.
Old Alliance HD-73 Azimuth rotor.
40' of RG-214 on uplink & downlink (2.5 dB of loss at 70CM, .9dB on 2M)
An ICOM 820H Radio.

Sounds like it should be up to the task? Right?

What kind of typical receive level should I see from AO-10 and 13 when the bird is, say, 20,000 miles out? I can receive the beacon quite well, and likewise on a loop test my signal comes in slightly under the beacon level and sounds clear- (beacon is about S-3 on my meter, my signal slightly under that reading.) I have been able to make contacts, however some stations are way "down in the mud" - and other receive stations are reasonably close (a few hundred miles) to me seem to be receiving them pretty well.

Since Oscar shares a reasonably low power, (35 watts?) for all users, is this a "normal" signal level for a setup of this type? Or is something wrong? Maybe I should I stack one more receiving antenna in the array? Right now, surprisingly the signal from AO-10 is much better than AO-13, I presume because of the attitude AO-13 is in for the next few months?

Anyhow, if you have any light to shine on my observations or suggestions please let me know.

John - KE6PID

--

____
John Buckham	San Francisco	4CX35,000, R-100G/S
jbuckham@ix.netcom.com	N37-30 W122-14	K-100RT, 6L6, V-100G5
_____________________	_____________	_____________________

| :-) How can THIS be broken, I just fixed it! (-: |
|____|

2000. Re: FAQ & FM Birds

Newsgroup: rec.radio.amateur.space
Date: 1995-09-18 00:00:00 UTC
From: mbv@ti.com
Message-ID: <43k2ai$8ou@superb.csc.ti.com>
Source record: 24108

In article <43c72j$fp0@ixnews2.ix.netcom.com>, ke6cth@ix.netcom.com (John Regent) says:
>

>
, but are there any satellites capable? What Are
>their frequencies?
>~~~~~~

AO-27 uplink 145.850 Mhz FM
downlink 436.800 Mhz FM

Ken K5MBV mbv@ti.com>
>
>

2001. Satellite Antenna Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-09-19 00:00:00 UTC
From: kory@avatar.com
Message-ID: <43n6hq$sp8@avatar.avatar.com>
Source record: 24109
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.space

Hi everyone,

I`m trying to put together a sat station. I can't afford a al/ez rotor, so I'm researching into what fixed antennas I can build myself. I've narrowed it down to two types: an eggbeater or a TR array (turnstile-reflector). I know I can't work AO-10 or A0-13 with either of these antennas, but I expect to be able to work the LEO birds.

This brings up a bunch of questions that I hope some of you sat/antenna gurus can help me with:

1. Which one would you choose and why?

2. Both antennas require phasing (delay lines). To calculate the length of the coax, you need to know the velocity factor for that particular coax. How does one figure that out? Do I need to call the manufacturer of the coax for this?

3. I would like to add radials for the eggbeaters to increase the gain slightly. How long to the radials need to be? Can I just use a reflector like the TR array? If so, what is the best distance between the eggbeaters and the mesh? How about the eggbeaters and the radials?

Any help would be greatly appreciated.

Thanks,
Kory
KE6VWO

2002. St. Thomas, USVI after Hurricane Marilyn

Newsgroup: rec.radio.amateur.space
Date: 1995-09-19 00:00:00 UTC
From: Geoff Caplan <icanews@icanect.net>
Message-ID: <43muva$4u4@dormouse.icanect.net>
Source record: 24110

We have set up an Internet WWW information page for posting of information about survivors, messages to deliver, etc. from St. Thomas. We're also trying to find out if any amateur radio iscoming from the island. Please feel free to post information directly to http://www.icanect.net/thomas

Thank you.

2003. What freq of Ku band (SATCOM?)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-19 00:00:00 UTC
From: wilder@clark.net
Message-ID: <43nbrh$4ur@clarknet.clark.net>
Source record: 24111

I hate letter bands! Especially when radar and comm guys get togther
and mean something a bit different. Anyway, to the point.

What is the uplink and downlink for the Ku band SATCOM ?

Also, they guy asking may be saying generic Sattelite-communications and
not be addressing the specific SATCOM bird.

Is there a commercial satellite newsgroup?

73, Dick Wilder, K3DI wilder@clark.net

2004. ARLK049 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-09-19 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk049.1995@ampr.org>
Source record: 24112
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK049
ARLK049 Keplerian data

ZCZC SK74
QST de W1AW
Keplerian Bulletin 49 ARLK049
From ARRL Headquarters
Newington, CT September 19, 1995
To all radio amateurs

SB KEP ARL ARLK049
ARLK049 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-73
1 99973U 99999A 95271.74804840 .00129591 00000-0 21727-3 0 14
2 99973 39.0117 88.0152 0008080 283.2287 76.7747 16.00409897 48
Mir
1 16609U 86017A 95261.59221818 .00000247 00000-0 10000-4 0 2433
2 16609 51.6457 50.0131 0003420 84.1140 9.1193 15.57423137547488
AO-10
1 14129U 83058B 95248.37251192 .00000162 00000-0 10000-3 0 3727
2 14129 26.4527 249.8576 5985675 307.3504 11.6914 2.05877424 63980
RS-10/11
1 18129U 87054A 95261.22878757 .00000038 00000-0 25562-4 0 1104
2 18129 82.9266 350.2929 0010832 186.4839 173.6180 13.72356227412730
UO-11
1 14781U 84021B 95258.00676642 .00000116 00000-0 27406-4 0 08424
2 14781 97.7860 256.3455 0010455 255.8982 104.1059 14.69376042617099
RS-12/13
1 21089U 91007A 95258.86241736 .00000023 00000-0 91406-5 0 8307
2 21089 82.9194 33.5203 0027914 282.1263 77.6764 13.74059973231223
AO-13
1 19216U 88051B 95255.75179021 -.00000515 00000-0 10352-4 0 00908
2 19216 57.4521 164.9386 7326206 18.6139 358.0485 2.09726621024000
UO-14
1 20437U 90005B 95258.14071113 .00000016 00000-0 23223-4 0 01284
2 20437 98.5649 341.0523 0010676 299.1590 60.8523 14.29896460294606
```

```
RS-15
1 23439U 94085A 95258.08306557 -.00000039 00000-0 10000-3 0 00897
2 23439 64.8178 109.6052 0166712 246.9449 111.3825 11.27524869029659
AO-16
1 20439U 90005D 95258.73882748 -.00000003 00000-0 15803-4 0 9241
2 20439 98.5731 343.4287 0010850 297.3124 62.6949 14.29950605294705
DO-17
1 20440U 90005E 95258.08868938 -.00000020 00000-0 91448-5 0 09256
2 20440 98.5778 343.2934 0011156 299.5334 60.4738 14.30091563294637
WO-18
1 20441U 90005F 95261.08134659 .00000012 00000-0 21447-4 0 9292
2 20441 98.5766 346.2053 0011561 290.4497 69.5446 14.30063247295062
LO-19
1 20442U 90005G 95258.15907397 -.00000003 00000-0 15556-4 0 09244
2 20442 98.5780 343.7173 0011656 296.5216 63.4772 14.30166572294660
FO-20
1 20480U 90013C 95258.14973056 -.00000012 00000-0 43665-4 0 08273
2 20480 99.0697 330.0105 0541159 29.7345 333.3395 12.83230962262480
AO-21
1 21087U 91006A 95258.12959400 .00000093 00000-0 82657-4 0 06488
2 21087 82.9416 166.0198 0034098 258.1959 101.5377 13.74558939232087
UO-22
1 21575U 91050B 95261.17354147 .00000091 00000-0 45006-4 0 6312
2 21575 98.3877 330.1613 0008735 6.8352 353.2937 14.36990716218850
KO-23
1 22077U 92052B 95258.47075804 -.00000037 00000-0 10000-3 0 5216
2 22077 66.0811 46.7379 0001983 163.2171 196.8904 12.86292397145343
KO-25
1 22828U 93061F 95258.15117924 .00000017 00000-0 24548-4 0 04013
2 22828 98.6082 333.4270 0010120 310.5305 49.4994 14.28111488070712
IO-26
1 22826U 93061D 95258.17549647 .00000011 00000-0 22241-4 0 4173
2 22826 98.6123 333.4102 0009650 326.8361 33.2213 14.27780011102611
AO-27
1 22825U 93061C 95258.15829191 -.00000001 00000-0 17448-4 0 04224
2 22825 98.6101 333.2795 0008689 325.5013 34.5611 14.27671697102607
PO-28
1 22829U 93061G 95260.75643271 .00000027 00000-0 28317-4 0 4101
2 22829 98.6071 336.0326 0009810 303.6802 56.3443 14.28091945103001

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
September 23, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

2005. Re: KLM antenna relays

Newsgroup: rec.radio.amateur.space
Date: 1995-09-19 00:00:00 UTC
From: zardoz@ornews.intel.com
Message-ID: <43nhup$le@ornews.intel.com>
Source record: 24113

I have a KLM 2M-14C that I bought at a swap meet for $40. The relay was
bad and I fixed it but I found that I didn't seem to need Left Hand
circular much so the next time the relay gave me trouble I removed it as
well as the corroded circuit board and wired it up permanently for RHC.
Yes, the wires on the phasing harness do break easy and I had to repair
a broken center conductor on one of them. If you insist on using the
relay, KLM wants about $35 for a new relay with phasing harness.
KLM Antenna is 206-794-2923. An old ARRL article mentions installing
a Tupperware box over the relay to somewhat weatherproof it.

My 2M-14C model indicates big sidelobes and real testing shows me that
the model may be conservative. An old article in the AMSAT magazine described
adding 4 more elements (2X2) which would make it a 2M-18C. I modeled this
and it indicates 1.5db more gain. Might be worth it anyway but the sidelobes
remain large.
--
zardoz@ornews.intel.com WA7LDV Wow!! Panhandlers in Cyberspace!
I speak only for myself What's next, The Cyberspace Homeless?

2006. Re: What freq of Ku band (SATCOM?)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-20 00:00:00 UTC
From: Tom Williams <williamt@ccmail.orst.edu>
Message-ID: <43pfav$33p@news.orst.edu>
Source record: 24015

>Ku is 14Ghz downlink and 11Ghz uplink. All of the video Ku satellites use
>the same frequency range >
>David A. Hoatson, KC6WYG
Sorry to dispute you, but your freqs are just backward, 14 up 11/12 down
with the difference freq being 2300 Mhz.
Also, there are different Freq ranges, but usually for the Domsats, the above
holds true.
--
Thomas E Williams, Transmission Systems Engineer
Network Services / Oregon State University
williamt@ccmail.orst.edu 503.737.3822
http://www.nero.net/neropeople/williamt

2007. Re: Satellite Antenna Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-09-20 00:00:00 UTC
From: Dennis Erwin Thurlow <geosynq@indy.net>
Message-ID: <43ohjg$cgi@news.indy.net>
Source record: 24114
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.space

kory@avatar.com (Kory Hamzeh) wrote:
> expect to be able to work the LEO birds.
I can work Mir and Dove on 2m just fine with a J pole.
Worked Oscar 8 with a rubber duck, and used to listen to
the 30MHz beacons with a long wire. Sure a steerable
Yagi with preamp would be nice, but....

2008. Re: St. Thomas, USVI after Hurricane Marilyn

Newsgroup: rec.radio.amateur.space
Date: 1995-09-21 00:00:00 UTC
From: dennisg@microware.com
Message-ID: <43rp73$dah@mcrware.microware.com>
Source record: 24016

In <43muva$4u4@dormouse.icanect.net> Geoff Caplan <icanews@icanect.net> writes:

>We have set up an Internet WWW information page for posting of
>information about survivors, messages to deliver, etc. from St.
>Thomas. We're also trying to find out if any amateur radio
>iscoming from the island. Please feel free to post information
>directly to http://www.icanect.net/thomas

There is a Navy MARS station active there. He has a good signal into the
midwest. I don't know if there are any amateur stations up and running
or not.

--
Dennis Gabler --o-------------------------=o=-------------------------o--
|
dennisg@microware.com KB5HVN/NNN0BQG__________| KB5HVN@WB0UGO.IA.USA.NA

2009. Re: AZ-EL alternatives?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-21 00:00:00 UTC
From: jordan@tesla.iar.nrc.ca
Message-ID: <43runi$7bi@nrcnet0.nrc.ca>
Source record: 24017

Rob Janssen (rob@pe1chl.ampr.org) wrote:
: >Curious. Has anyone come up with a viable alternative for the
: >Yaesu az-el rotors ? I took a look at the specs, and was not
: >particularly impressed with +- 4% resolution back from the pots.

: Note that Freddy ON6UG has published a design of a tracking system that
: replaces the pots with optical encoder wheels for much better resolution.
: I have no experience with it, but it is said to be working very well.

Where do we find this ? One of the ham mags ?
I would appreciate more details.

Jim
---
e-mail: jordan@tesla.iar.nrc.ca
jordan@convax.iar.nrc.ca

2010. NORAD Two-Line Orbital Element Sets (TLE680)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-22 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.811809325@dolphin>
Source record: 24018

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #680 -
Alouette 1
1 00424U 62049A 95264.24376280 .00000061 00000-0 61421-4 0 1378
2 00424 80.4643 190.0963 0024195 10.9450 349.2215 13.67850240645439
ATS 1
1 02608U 66110A 95258.92509051 .00000114 00000-0 10000-3 0 9439
2 02608 14.6442 355.7307 0010202 72.9234 287.2124 1.00360716 22106
ATS 3
1 03029U 67111A 95261.76228596 -.00000115 00000-0 10000-3 0 4029
2 03029 14.8608 2.6785 0009223 259.1226 264.3929 1.00272736102033
Cosmos 398
1 04966U 71016A 95264.87886726 .00305494 10105-4 21964-3 0 79
2 04966 51.3884 129.8165 0422077 77.4689 287.3154 15.35656557839830
Starlette
1 07646U 75010A 95261.10684932 -.00000110 00000-0 28091-4 0 9157
2 07646 49.8283 146.3380 0205838 48.6447 313.1952 13.82189538 41190
LAGEOS
1 08820U 76039A 95264.58030121 .00000037 00000-0 10000-3 0 1377
2 08820 109.8496 293.6485 0044008 186.8791 173.1486 6.38664373196619
ETS-2
1 09852U 77014A 95263.32748681 -.00000212 00000-0 10000-3 0 404
2 09852 12.8793 36.0626 0005108 94.1618 265.9469 1.00001307 14932
GOES 2
1 10061U 77048A 95263.45941818 .00000074 00000-0 10000-3 0 5811
2 10061 11.9682 40.2788 0014958 106.5963 204.3215 1.00298665 11728
IUE
1 10637U 78012A 95263.90141731 -.00000185 00000-0 10000-3 0 1694
2 10637 35.3611 87.4326 1337175 49.6156 148.8513 1.00301809 17220
GPS BI-01
1 10684U 78020A 95264.69144819 -.00000037 00000-0 10000-3 0 3904
2 10684 64.8909 31.8475 0061516 162.6061 197.6060 1.98069489114072
```

```
GPS BI-02
1 10893U 78047A 95264.00365535 .00000050 00000-0 10000-3 0 1845
2 10893 63.2736 269.6438 0224107 14.6883 346.0042 2.01628315127360
GOES 3
1 10953U 78062A 95264.24514247 .00000098 00000-0 10000-3 0 5375
2 10953 10.9426 43.0313 0007238 125.7768 134.1867 1.00357554 16346
SeaSat 1
1 10967U 78064A 95261.19946031 -.00000044 00000-0 29944-4 0 4293
2 10967 108.0009 329.9505 0002859 239.0618 121.0244 14.38054308902202
GPS BI-03
1 11054U 78093A 95261.11449131 .00000050 00000-0 10000-3 0 3516
2 11054 62.9874 268.2099 0045725 180.7346 179.2931 1.93505297123376
Nimbus 7
1 11080U 78098A 95261.67262650 -.00000060 00000-0 -16625-4 0 5302
2 11080 98.9810 131.5902 0008776 345.7395 14.3511 13.83704520853488
GPS BI-04
1 11141U 78112A 95262.68050374 -.00000032 00000-0 10000-3 0 41
2 11141 64.8765 33.8886 0049011 27.9921 332.2585 1.92894682 12647
GPS BI-05
1 11690U 80011A 95261.12588373 -.00000030 00000-0 10000-3 0 9399
2 11690 65.2410 33.5209 0150003 192.8315 166.8610 2.00566469128723
GPS BI-06
1 11783U 80032A 95264.02577522 .00000047 00000-0 10000-3 0 1019
2 11783 62.4260 262.7433 0220189 29.4850 331.7633 2.03456680113330
GOES 5
1 12472U 81049A 95262.35290314 -.00000274 00000-0 10000-3 0 8817
2 12472 7.7013 53.0401 0007363 43.1306 317.0179 1.00240923 10375
Cosmos 1383
1 13301U 82066A 95264.67171359 .00000030 00000-0 17663-4 0 4350
2 13301 82.9328 331.4099 0025917 263.6554 96.1645 13.68068005660523
LandSat 4
1 13367U 82072A 95261.69621422 .00000002 00000-0 10470-4 0 7721
2 13367 98.1202 315.2580 0005687 273.4292 86.6256 14.57157948700835
DMSP B5D2-1
1 13736U 82118A 95264.04356169 .00000036 00000-0 33607-4 0 8520
2 13736 98.6294 91.7407 0009541 94.6076 265.6192 14.25753054662572
IRAS
1 13777U 83004A 95264.56765512 -.00000253 00000-0 -14468-3 0 879
2 13777 98.9688 90.8024 0013013 120.8250 239.4194 13.99231830315666
Cosmos 1447
1 13916U 83021A 95261.86154031 .00000023 00000-0 83541-5 0 5329
2 13916 82.9436 32.4545 0037138 189.1044 170.9444 13.74329898626339
TDRS 1
1 13969U 83026B 95264.48732641 .00000087 00000-0 00000+0 0 4661
2 13969 8.5385 46.3486 0002480 135.8750 214.2680 1.00270744 18673
GOES 6
1 14050U 83041A 95261.62361103 -.00000158 00000-0 10000-3 0 4445
2 14050 6.5168 56.2997 0003027 27.3723 39.8165 1.00325822103461
OSCAR 10
1 14129U 83058B 95261.00004520 -.00000463 00000-0 10000-3 0 3740
```

```
2 14129 26.4622 247.8460 5984110 310.7505 10.7663 2.05882538 64241
LandSat 5
1 14780U 84021A 95263.17363292 .00000018 00000-0 13903-4 0 3491
2 14780 98.1027 317.0634 0003279 277.8880 82.1947 14.57165702614464
UoSat 2
1 14781U 84021B 95260.52636694 .00000096 00000-0 24064-4 0 8274
2 14781 97.7860 258.7476 0010498 246.3410 113.6692 14.69376609617464
GPS BI-09
1 15039U 84059A 95263.32402049 -.00000045 00000-0 10000-3 0 3654
2 15039 64.5521 28.2447 0082099 18.4425 341.8475 1.92302202 82229
Cosmos 1574
1 15055U 84062A 95261.90043251 .00000009 00000-0 -65676-5 0 7334
2 15055 82.9555 86.7652 0028554 22.1288 338.1096 13.73625990563608
GPS BI-10
1 15271U 84097A 95263.77796703 .00000048 00000-0 10000-3 0 565
2 15271 62.1196 263.1431 0157227 354.2990 5.5462 2.00604086 79845
Cosmos 1602
1 15331U 84105A 95264.27118376 .00000236 00000-0 24921-4 0 4192
2 15331 82.5330 5.8885 0021463 116.2047 244.1363 14.84665175592924
NOAA 9
1 15427U 84123A 95264.91858382 .00000053 00000-0 51882-4 0 4099
2 15427 98.9883 324.1785 0015403 359.3051 0.8095 14.13731803555586
GPS BI-11
1 16129U 85093A 95260.75008521 -.00000035 00000-0 10000-3 0 6770
2 16129 65.2230 31.5823 0155510 86.3418 275.4366 1.89368060 16740
Mir
1 16609U 86017A 95263.24390723 .00003104 00000-0 48124-4 0 2487
2 16609 51.6473 41.7366 0003232 100.3894 259.7465 15.57455876547740
SPOT 1
1 16613U 86019A 95264.21786555 .00000090 00000-0 62356-4 0 8530
2 16613 98.6424 333.3934 0001227 34.0868 326.0363 14.20069893181994
Cosmos 1766
1 16881U 86055A 95260.92137862 .00000155 00000-0 15810-4 0 3341
2 16881 82.5168 66.8473 0019614 152.9339 207.2900 14.83655988493321
EGP
1 16908U 86061A 95262.07049852 -.00000083 00000-0 10000-3 0 294
2 16908 50.0093 113.6054 0011609 40.5097 319.6600 12.44412979 82520
NOAA 10
1 16969U 86073A 95264.91872887 .00000026 00000-0 29368-4 0 3210
2 16969 98.5151 264.8984 0014397 61.3218 298.9405 14.24955155468251
MOS-1
1 17527U 87018A 95263.18019615 .00000092 00000-0 10000-3 0 2473
2 17527 98.9773 325.8678 0001841 132.3368 227.7947 13.95257255437079
GOES 7
1 17561U 87022A 95264.49072873 .00000077 00000-0 10000-3 0 5517
2 17561 2.5248 71.4540 0001971 318.3367 11.2976 1.00272738 14598
Kvant-1
1 17845U 87030A 95265.04051260 .00011957 00000-0 16601-3 0 3868
2 17845 51.6451 32.7350 0003568 106.4454 253.7191 15.57477435482162
DMSP B5D2-3
```

```
1 18123U 87053A 95264.76788769 .00000025 00000-0 35148-4 0 1480
2 18123 98.7774 94.4075 0013644 307.3771 52.6160 14.15418221426386
RS-10/11
1 18129U 87054A 95264.72839185 .00000049 00000-0 37507-4 0 1131
2 18129 82.9265 347.7066 0011031 176.1624 183.9616 13.72356536413217
Meteor 2-16
1 18312U 87068A 95264.23985037 .00000041 00000-0 24013-4 0 4261
2 18312 82.5575 206.1803 0010460 259.1407 100.8571 13.84062594408835
Meteor 2-17
1 18820U 88005A 95265.03269666 .00000025 00000-0 89746-5 0 7292
2 18820 82.5384 261.2026 0016519 329.3717 30.6468 13.84743390386279
DMSP B5D2-4
1 18822U 88006A 95264.56452230 -.00000006 00000-0 15699-4 0 730
2 18822 98.3991 104.2926 0007071 72.2003 287.9945 14.23164711396221
Glonass 34
1 19163U 88043A 95263.76345128 .00000071 00000-0 10000-3 0 188
2 19163 65.1640 94.9487 0007628 150.7042 209.4124 2.13102558 56478
Glonass 36
1 19165U 88043C 95261.00446704 .00000045 00000-0 10000-3 0 4250
2 19165 65.1624 95.0085 0000897 258.3668 101.6902 2.13102125 57038
METEOSAT 3
1 19215U 88051A 95263.11813949 -.00000281 00000-0 10000-3 0 1797
2 19215 2.6999 69.2925 0000613 85.7437 176.3331 1.00283389 14522
AO-13
1 19216U 88051B 95264.81136757 -.00000481 00000-0 60699-4 0 916
2 19216 57.4525 163.2313 7328447 19.3701 358.0002 2.09726765 24192
OKEAN 1
1 19274U 88056A 95261.76647601 .00000205 00000-0 22686-4 0 345
2 19274 82.5153 166.5716 0018872 306.3988 53.5468 14.82384273389018
Meteor 3-2
1 19336U 88064A 95263.78046221 .00000051 00000-0 10000-3 0 4246
2 19336 82.5403 357.7649 0016017 188.0331 172.0536 13.16974449343884
Glonass 39
1 19503U 88085C 95263.37943948 -.00000045 00000-0 10000-3 0 3188
2 19503 65.6736 333.8423 0008599 164.8965 195.1936 2.13101879 54576
NOAA 11
1 19531U 88089A 95264.88535533 -.00000010 00000-0 19610-4 0 2174
2 19531 99.1956 270.8497 0011079 279.9377 80.0542 14.13063922360413
TDRS 2
1 19548U 88091B 95254.68490459 -.00000206 00000-0 00000+0 0 1454
2 19548 1.9320 73.2202 0011104 114.9433 133.3157 1.00264906 12725
Glonass 40
1 19749U 89001A 95260.60214209 .00000040 00000-0 10000-3 0 5291
2 19749 65.0998 94.5988 0004670 261.3478 98.6703 2.13101452 52021
Glonass 41
1 19750U 89001B 95263.47309406 .00000069 00000-0 10000-3 0 4396
2 19750 65.1251 94.5758 0005098 253.9232 106.0956 2.13101885 52104
GPS BII-01
1 19802U 89013A 95263.91570038 .00000036 00000-0 10000-3 0 1073
2 19802 55.2362 121.3920 0027571 162.3864 197.7379 2.00556602 48297
```

```
Akebono
1 19822U 89016A 95263.42896990 .00006239 00000-0 30513-3 0 5719
2 19822 75.0999 280.3627 3773987 309.7887 22.6319 7.87610939145314
Meteor 2-18
1 19851U 89018A 95264.12034318 .00000034 00000-0 17323-4 0 4248
2 19851 82.5230 136.4295 0015378 18.1390 342.0315 13.84396865331460
MOP-1
1 19876U 89020B 95262.75422454 .00000054 00000-0 10000-3 0 1396
2 19876 1.4166 72.4441 0002315 116.0337 91.3028 1.00273931 3962
TDRS 3
1 19883U 89021B 95263.10514727 -.00000278 00000-0 00000+0 0 1226
2 19883 0.0555 30.1898 0005477 180.7282 144.4863 1.00267824196394
GPS BII-02
1 20061U 89044A 95260.26629924 -.00000029 00000-0 10000-3 0 1152
2 20061 54.3772 297.6869 0149810 215.9714 143.0712 2.00562992 45965
Nadezhda 1
1 20103U 89050A 95264.81889037 .00000050 00000-0 36667-4 0 5238
2 20103 82.9613 307.3335 0039202 83.8183 276.7438 13.73857561311691
GPS BII-03
1 20185U 89064A 95262.09813607 .00000012 00000-0 10000-3 0 1383
2 20185 55.0337 121.9958 0012832 324.2745 35.7593 2.00567767 44571
GMS 4
1 20217U 89070A 95264.57732528 -.00000375 00000-0 10000-3 0 2433
2 20217 1.2285 75.7267 0000716 323.2277 289.0417 1.00265401 22718
INTERCOSMOS 24
1 20261U 89080A 95262.48124478 .00000086 00000-0 26022-4 0 4409
2 20261 82.5932 84.2782 1241530 299.5234 48.7645 12.47275371272030
GPS BII-04
1 20302U 89085A 95264.13102520 .00000006 00000-0 10000-3 0 1236
2 20302 53.3282 237.5158 0015373 126.3677 233.8158 2.00557897 43419
Meteor 3-3
1 20305U 89086A 95264.59696571 .00000044 00000-0 10000-3 0 3968
2 20305 82.5500 310.9795 0005605 232.8395 127.2305 13.04420601283053
COBE
1 20322U 89089A 95263.53980731 .00000204 00000-0 15835-3 0 1526
2 20322 98.9595 278.1526 0009657 67.3965 292.9020 14.03452732298969
Kvant-2
1 20335U 89093A 95265.04051260 .00011957 00000-0 16601-3 0 3878
2 20335 51.6451 32.7350 0003568 106.4454 253.7191 15.57477435331174
GPS BII-05
1 20361U 89097A 95263.64335036 .00000009 00000-0 10000-3 0 9724
2 20361 55.8326 63.9935 0082163 124.9638 235.8432 2.00563011 32887
COSMOS 2054 (Altair-1)
1 20391U 89101A 95264.56164609 -.00000138 00000-0 10000-3 0 2234
2 20391 3.3211 65.2601 0004057 87.4417 33.6523 1.00273796 21295
SPOT 2
1 20436U 90005A 95264.20565180 .00000169 00000-0 10000-3 0 9767
2 20436 98.7254 337.0312 0002027 17.9168 342.2050 14.20029690293524
UO-14
1 20437U 90005B 95261.77941353 .00000016 00000-0 23237-4 0 1262
```

```
2 20437 98.5646 344.6303 0010619 288.6713 71.3315 14.29897020295122
UO-15
1 20438U 90005C 95264.17271998 -.00000011 00000-0 12739-4 0 9237
2 20438 98.5607 345.3602 0009546 285.7184 74.2937 14.29213749295354
PACSAT
1 20439U 90005D 95263.21706033 .00000017 00000-0 23720-4 0 9254
2 20439 98.5738 347.8404 0010676 283.8280 76.1715 14.29951202295346
DO-17
1 20440U 90005E 95262.21665149 .00000058 00000-0 39374-4 0 9254
2 20440 98.5776 347.3609 0011070 287.7635 72.2339 14.30092804295220
WO-18
1 20441U 90005F 95265.13942646 -.00000010 00000-0 13028-4 0 9302
2 20441 98.5767 350.2041 0011328 277.6519 82.3365 14.30063460295642
LO-19
1 20442U 90005G 95262.21685910 .00000021 00000-0 25154-4 0 9244
2 20442 98.5775 347.7158 0011675 284.5682 75.4213 14.30167337295244
GPS BII-06
1 20452U 90008A 95263.04025762 -.00000030 00000-0 10000-3 0 743
2 20452 54.0284 177.7978 0058158 83.0980 277.5845 2.00552206 41374
MOS-1B
1 20478U 90013A 95262.52089546 .00000090 00000-0 10000-3 0 8371
2 20478 99.1411 330.0527 0000658 186.2902 173.8250 13.94866924206685
DEBUT
1 20479U 90013B 95264.68453047 -.00000054 00000-0 -49519-4 0 9250
2 20479 99.0684 335.4860 0541235 14.5103 347.0875 12.83332952263332
FO-20
1 20480U 90013C 95261.19028300 -.00000055 00000-0 -52699-4 0 8214
2 20480 99.0692 332.4831 0541224 22.8574 339.5655 12.83230755262878
MOS-1B R/B
1 20491U 90013D 95265.23829056 -.00000158 00000-0 -23234-3 0 1727
2 20491 99.0573 32.5331 0469514 204.1369 153.7061 13.02989359266839
LACE
1 20496U 90015A 95263.59107528 .00000999 00000-0 37321-4 0 5777
2 20496 43.1029 307.1948 0008809 97.0439 263.1415 15.34834208312232
Nadezhda 2
1 20508U 90017A 95264.88101614 .00000005 00000-0 -10947-4 0 5220
2 20508 82.9494 81.8429 0045683 36.5760 323.8500 13.73497898278926
OKEAN 2
1 20510U 90018A 95264.02009498 .00000159 00000-0 18536-4 0 4430
2 20510 82.5249 116.8230 0020133 116.9786 243.3480 14.78523603299753
GPS BII-07
1 20533U 90025A 95262.45266835 -.00000013 00000-0 10000-3 0 1005
2 20533 54.7424 298.2651 0046168 78.3293 282.2668 2.00570566 40134
PegSat
1 20546U 90028A 95263.36010426 .00006033 00000-0 12156-3 0 8431
2 20546 94.1210 198.2170 0063596 333.2741 26.5236 15.44438493303168
HST
1 20580U 90037B 95263.22010341 .00000425 00000-0 26909-4 0 7193
2 20580 28.4686 160.1720 0006427 217.5304 142.4876 14.90931092 98107
MACSAT 2
```

```
1 20608U 90043B 95264.18751978 .00000141 00000-0 22018-4 0 1269
2 20608 89.9329 175.6849 0103609 280.7841 78.1736 14.64862277286765
Glonass 44
1 20619U 90045A 95264.25539582 -.00000038 00000-0 10000-3 0 2282
2 20619 65.2630 333.1885 0025895 209.4453 150.4970 2.13102453 41551
Glonass 45
1 20620U 90045B 95260.15076141 -.00000067 00000-0 10000-3 0 2301
2 20620 65.2923 333.3178 0007247 42.8370 317.2853 2.13102548 41506
Glonass 46
1 20621U 90045C 95264.44095064 -.00000037 00000-0 10000-3 0 8249
2 20621 65.2839 333.2294 0011573 189.6067 170.4368 2.13101693 41590
Kristall
1 20635U 90048A 95265.04051260 .00011957 00000-0 16601-3 0 1792
2 20635 51.6451 32.7350 0003568 106.4454 253.7191 15.57477435302007
ROSAT
1 20638U 90049A 95264.84186477 .00000100 00000-0 25460-4 0 4933
2 20638 52.9912 71.8955 0013018 39.5415 320.6523 15.07247471291690
Meteor 2-19
1 20670U 90057A 95261.23623099 -.00000116 00000-0 -11744-3 0 9230
2 20670 82.5478 204.6510 0015008 307.4421 52.5373 13.84157446263980
CRRES
1 20712U 90065A 95264.44554464 .00000798 00000-0 79089-3 0 1581
2 20712 18.1209 0.1405 7197095 175.7998 198.0704 2.35547815 36759
GPS BII-08
1 20724U 90068A 95259.78254110 -.00000014 00000-0 10000-3 0 9413
2 20724 54.8643 119.6810 0120299 175.6605 184.5388 2.00565644 35946
Feng Yun1-2
1 20788U 90081A 95265.21076653 -.00000027 00000-0 10000-4 0 5452
2 20788 98.8137 274.9690 0015442 162.7906 197.3602 14.01321936258426
Meteor 2-20
1 20826U 90086A 95263.60037424 .00000061 00000-0 41735-4 0 9353
2 20826 82.5287 139.6537 0012386 192.5164 167.5697 13.83615622251426
GPS BII-09
1 20830U 90088A 95261.32523524 -.00000002 00000-0 10000-3 0 9512
2 20830 55.7724 62.0629 0066671 100.3494 260.4345 2.00557734 36610
GPS BIIA-10
1 20959U 90103A 95261.73223651 .00000007 00000-0 10000-3 0 9171
2 20959 55.0571 121.6034 0100600 230.7910 128.3847 2.00571577 35214
DMSP B5D2-5
1 20978U 90105A 95264.85710709 .00000136 00000-0 64555-4 0 3436
2 20978 98.6316 332.7241 0078110 244.7122 114.5953 14.32579167251159
Glonass 47
1 21006U 90110A 95263.52756886 .00000069 00000-0 10000-3 0 7977
2 21006 65.0854 93.8374 0058973 188.3027 171.6898 2.13102779 37242
Glonass 48
1 21007U 90110B 95260.43192866 .00000038 00000-0 10000-3 0 9212
2 21007 65.1197 94.0235 0036129 178.5337 181.5402 2.13101220 37169
Glonass 49
1 21008U 90110C 95264.54707312 .00000074 00000-0 00000+0 0 1269
2 21008 65.0829 93.8373 0007757 268.7051 91.2822 2.13099083 37246
```

```
AO-21
1 21087U 91006A 95263.15222637 .00000093 00000-0 82657-4 0 6336
2 21087 82.9423 162.3056 0033487 243.8367 115.9344 13.74559167232775
RS-12/13
1 21089U 91007A 95263.37713248 .00000010 00000-0 -48416-5 0 8312
2 21089 82.9197 30.1719 0027772 269.1888 90.6088 13.74059925231840
MOP-2
1 21140U 91015B 95264.50627365 -.00000021 00000-0 10000-3 0 993
2 21140 0.0774 313.0591 0001358 243.1557 345.6461 1.00268046 18908
Nadezhda 3
1 21152U 91019A 95264.70360849 .00000017 00000-0 23755-5 0 2138
2 21152 82.9305 345.3912 0041998 14.2768 345.9563 13.73522985226758
Glonass 50
1 21216U 91025A 95261.20006353 -.00000061 00000-0 10000-3 0 4392
2 21216 65.0162 332.9276 0007589 199.3044 160.7293 2.13102786 34707
Glonass 51
1 21217U 91025B 95264.08488305 -.00000040 00000-0 10000-3 0 8473
2 21217 65.0199 332.8410 0008652 226.5944 133.3816 2.13101797 34754
Glonass 52
1 21218U 91025C 95263.25796686 -.00000046 00000-0 10000-3 0 3208
2 21218 65.0028 332.8342 0009738 54.6488 305.5409 2.13102863 34744
GRO
1 21225U 91027B 95263.16423217 .00001929 00000-0 36615-4 0 2968
2 21225 28.4618 273.7045 0002601 32.7062 327.3679 15.43013400128010
Meteor 3-4
1 21232U 91030A 95263.28022981 .00000051 00000-0 10000-3 0 8348
2 21232 82.5393 204.3012 0014130 111.7296 248.5330 13.16469032211891
NOAA 12
1 21263U 91032A 95264.90017323 .00000048 00000-0 40511-4 0 6433
2 21263 98.5832 286.4628 0013005 342.5729 17.4998 14.22558990226179
OKEAN 3
1 21397U 91039A 95261.39974809 .00000170 00000-0 21181-4 0 1331
2 21397 82.5218 32.6146 0021294 201.8940 158.1360 14.76401325231119
GPS BIIA-11
1 21552U 91047A 95261.50206411 -.00000003 00000-0 10000-6 0 8932
2 21552 56.0630 59.7688 0065489 242.3284 117.0289 2.00559954 30805
ERS-1
1 21574U 91050A 95264.17878897 .00000035 00000-0 29305-4 0 2045
2 21574 98.5500 337.1250 0001343 91.8010 268.3329 14.32246381218793
UO-22
1 21575U 91050B 95261.17354147 .00000091 00000-0 45006-4 0 6312
2 21575 98.3877 330.1613 0008735 6.8352 353.2937 14.36990716218850
ORBCOMM-X
1 21576U 91050C 95261.71748319 .00000056 00000-0 33547-4 0 7264
2 21576 98.3855 328.9943 0004918 17.6570 342.4783 14.36399897218839
TUBSAT-A
1 21577U 91050D 95262.19488540 .00000010 00000-0 17820-4 0 6259
2 21577 98.3853 330.0031 0007429 9.3159 350.8156 14.36493737218937
SARA
1 21578U 91050E 95264.75613876 .00000184 00000-0 73355-4 0 8266
```

```
2 21578 98.4074 338.5437 0005170 2.0341 358.0866 14.39059917219582
TDRS 4
1 21639U 91054B 95259.43137013 .00000067 00000-0 00000+0 0 9400
2 21639 0.0427 286.4699 0003016 228.8715 180.5016 1.00273343109131
Meteor 3-5
1 21655U 91056A 95263.72172439 .00000051 00000-0 10000-3 0 8326
2 21655 82.5560 151.4947 0013962 121.3598 238.8900 13.16841627197071
UARS
1 21701U 91063B 95261.06298451 -.00000038 00000-0 17779-4 0 7038
2 21701 56.9851 124.4711 0006062 99.2015 260.9707 14.96425798219476
DMSP B5D2-6
1 21798U 91082A 95264.91933740 .00000060 00000-0 55404-4 0 9953
2 21798 98.9608 276.8834 0011934 273.7676 86.2127 14.13917836196873
Glonass 53
1 21853U 92005A 95262.53124584 .00000062 00000-0 10000-3 0 398
2 21853 65.0268 93.5619 0006678 196.1061 163.9479 2.13102348 28331
Glonass 54
1 21854U 92005B 95261.88187863 .00000055 00000-0 10000-3 0 1893
2 21854 65.0386 93.5834 0016204 22.7355 337.4055 2.13104314 28308
Glonass 55
1 21855U 92005C 95263.82363950 .00000071 00000-0 00000+0 0 1784
2 21855 65.0372 93.5201 0007459 192.1508 167.9037 2.13102350 28333
JERS-1
1 21867U 92007A 95265.12471772 .00000092 00000-0 12566-4 0 6701
2 21867 97.7120 340.8800 0002333 70.4280 289.7204 14.98656626197560
GPS BIIA-12
1 21890U 92009A 95262.46250361 .00000014 00000-0 10000-3 0 7000
2 21890 53.8917 237.8441 0059202 186.4515 173.4894 2.00569703 26198
GPS BIIA-13
1 21930U 92019A 95263.16712390 -.00000084 00000-0 10000-3 0 6859
2 21930 55.7219 359.4588 0039163 165.7931 194.3160 2.00565642 25137
EUVE
1 21987U 92031A 95263.90695627 .00000856 00000-0 29937-4 0 4843
2 21987 28.4330 199.7908 0009274 333.9447 26.0675 15.19422255182527
SAMPEX
1 22012U 92038A 95260.90089160 .00000134 00000-0 95369-5 0 6604
2 22012 81.6694 47.8236 0118419 345.5619 14.2221 14.91436655174491
GPS BIIA-14
1 22014U 92039A 95263.70639028 -.00000025 00000-0 10000-3 0 5866
2 22014 55.4647 179.9315 0091773 322.8256 36.0918 2.00567724 16986
Glonass 56
1 22056U 92047A 95264.19218934 -.00000039 00000-0 00000+0 0 915
2 22056 64.8568 332.9176 0005954 259.9802 100.0196 2.13103255 24435
Glonass 57
1 22057U 92047B 95264.48770758 -.00000037 00000-0 00000+0 0 856
2 22057 64.8605 332.9389 0007211 310.2666 49.7384 2.13102654 24419
Glonass 58
1 22058U 92047C 95261.14286735 -.00000062 00000-0 10000-3 0 464
2 22058 64.8539 333.0498 0007759 270.0578 89.9129 2.13103024 24393
TOPEX
```

```
1 22076U 92052A 95261.89164032 -.00000038 00000-0 10000-3 0 9076
2 22076 66.0379 58.2381 0007753 265.7509 94.2620 12.80930968145248
KO-23
1 22077U 92052B 95262.82479364 -.00000037 00000-0 10000-3 0 5220
2 22077 66.0804 37.6202 0001834 160.7283 199.3804 12.86292455145904
S80/T
1 22078U 92052C 95261.48783123 -.00000037 00000-0 10000-3 0 5199
2 22078 66.0754 39.2096 0002457 124.1701 235.9549 12.86576112145817
GPS BIIA-15
1 22108U 92058A 95264.16443460 .00000009 00000-0 10000-3 0 6249
2 22108 54.1178 238.5774 0120143 155.3935 205.1741 2.00554473 22171
FREJA
1 22161U 92064A 95263.26545262 -.00000083 00000-0 11412-4 0 5474
2 22161 62.9895 207.8729 0817782 354.9975 4.3207 13.21849096142616
LAGEOS II
1 22195U 92070B 95264.81707521 -.00000009 00000-0 10000-3 0 4331
2 22195 52.6464 161.9077 0138044 318.9970 40.0281 6.47293951 68832
GPS BIIA-16
1 22231U 92079A 95264.34976586 -.00000020 00000-0 10000-3 0 5994
2 22231 54.6580 180.4958 0035340 283.8023 75.8364 2.00561383 20751
GPS BIIA-17
1 22275U 92089A 95264.00441841 -.00000022 00000-0 10000-3 0 6192
2 22275 54.6257 178.0514 0059949 40.5228 319.6122 2.00569165 20158
TDRS 5
1 22314U 93003B 95249.41818287 -.00000309 00000-0 10000-3 0 5549
2 22314 2.0447 71.4653 0002932 138.1552 239.6402 1.00260577 9731
GPS BIIA-18
1 22446U 93007A 95265.06806677 -.00000005 00000-0 10000-3 0 6070
2 22446 54.5676 298.5453 0089220 351.5911 8.3257 2.00574124 19162
Glonass 59
1 22512U 93010A 95264.40985380 .00000073 00000-0 10000-3 0 7338
2 22512 65.0441 93.3600 0008652 180.6555 179.4192 2.13102063 19940
Glonass 60
1 22513U 93010B 95262.00257999 .00000057 00000-0 00000+0 0 8092
2 22513 65.0439 93.4475 0007352 184.4955 175.5676 2.13102746 20080
Glonass 61
1 22514U 93010C 95263.23458186 .00000067 00000-0 00000+0 0 8035
2 22514 65.0665 93.3953 0011193 180.5181 179.5523 2.13102839 20110
ASTRO-D
1 22521U 93011A 95261.47162135 .00000933 00000-0 59875-4 0 4367
2 22521 31.1054 3.3978 0056886 342.7353 17.1352 15.02439363141414
UFO F1
1 22563U 93015A 95261.00000000 -.00000031 00000-0 00000+0 0 4527
2 22563 25.8312 292.9042 0009229 260.9068 183.6980 0.99253353 13381
GPS BIIA-19
1 22581U 93017A 95265.20976680 -.00000075 00000-0 10000-3 0 4636
2 22581 55.2029 358.8946 0057084 35.9643 324.4444 2.00570630 18221
ARSENE
1 22654U 93031B 95259.81413218 -.00000131 00000-0 10000-3 0 3302
2 22654 2.7384 81.3231 2887352 219.6814 115.5855 1.42203560 7694
```

```
GPS BIIA-20
1 22657U 93032A 95263.84853815 -.00000082 00000-0 10000-3 0 5212
2 22657 55.1692 358.7384 0070560 213.7045 145.8732 2.00560331 13521
RADCAL
1 22698U 93041A 95261.50888828 .00000035 00000-0 90874-5 0 4316
2 22698 89.5381 285.6589 0092071 132.9605 227.9362 14.21352548115699
GPS BIIA-21
1 22700U 93042A 95258.32991927 .00000021 00000-0 10000-3 0 4532
2 22700 54.2937 239.6112 0040661 343.9987 15.8671 2.00567088 16211
NOAA 13
1 22739U 93050A 95264.87303134 -.00000033 00000-0 65020-5 0 8933
2 22739 99.0018 213.8662 0009078 262.3635 97.6504 14.10942020109072
GPS BIIA-22
1 22779U 93054A 95261.90678174 -.00000018 00000-0 10000-3 0 5140
2 22779 54.5276 298.4838 0020112 249.6345 110.2265 2.00550066 15040
Meteor 2-21
1 22782U 93055A 95262.18604110 .00000020 00000-0 46163-5 0 4282
2 22782 82.5517 202.6918 0023764 23.6677 336.5631 13.83037768103537
UFO F2
1 22787U 93056A 95264.62786256 -.00000085 00000-0 10000-3 0 5317
2 22787 4.3971 325.4656 0003715 232.2913 100.7380 1.00279055 6128
SPOT 3
1 22823U 93061A 95264.73971522 -.00000044 00000-0 00000+0 0 4733
2 22823 98.7332 337.6098 0001089 107.1867 252.9429 14.20024723102994
STELLA
1 22824U 93061B 95260.67138003 -.00000045 00000-0 -47915-6 0 4164
2 22824 98.6064 335.3714 0006357 321.2060 38.8663 14.27102160102926
AO-27
1 22825U 93061C 95261.73257220 .00000011 00000-0 22264-4 0 4198
2 22825 98.6103 336.8014 0008418 315.0408 45.0091 14.27672199103118
IO-26
1 22826U 93061D 95262.24005687 .00000014 00000-0 23542-4 0 4186
2 22826 98.6120 337.4152 0009359 315.2560 44.7862 14.27780393103190
HEATHSAT
1 22827U 93061E 95261.76222434 .00000016 00000-0 24199-4 0 4792
2 22827 98.6093 336.8720 0009022 302.5594 57.4715 14.27905925103139
ITAMSAT
1 22828U 93061F 95261.23392377 .00000035 00000-0 31677-4 0 3967
2 22828 98.6078 336.4644 0009979 301.5092 58.5110 14.28112083 71150
PO-28
1 22829U 93061G 95260.75643271 .00000027 00000-0 28317-4 0 4101
2 22829 98.6071 336.0326 0009810 303.6802 56.3443 14.28091945103001
KO-25
1 22830U 93061H 95261.72757888 -.00000007 00000-0 14640-4 0 4294
2 22830 98.5076 329.1244 0010794 274.2416 85.7530 14.28096533103142
GPS BIIA-23
1 22877U 93068A 95263.45442573 .00000001 00000-0 10000-3 0 3147
2 22877 55.5209 59.9706 0037041 294.3953 65.2446 2.00572884 13962
METEOSAT 6
1 22912U 93073B 95258.32963178 -.00000104 00000-0 10000-3 0 3631
```

```
2 22912 0.6366 278.0198 0001206 294.0488 250.0511 1.00272821 5099
HST Array
1 22920U 90037C 95262.40466033 .00004645 00000-0 33448-3 0 3699
2 22920 28.4684 115.9444 0002425 87.9969 272.0809 15.01893840 98484
Meteor 3-6
1 22969U 94003A 95262.04079999 .00000051 00000-0 10000-3 0 1975
2 22969 82.5581 92.5229 0014320 195.4364 164.6326 13.16731723 79233
TUBSAT-B
1 22970U 94003B 95264.04754204 .00000051 00000-0 10000-3 0 1899
2 22970 82.5563 91.0342 0015237 188.0135 172.0737 13.16825883 79507
GPS BIIA-24
1 23027U 94016A 95263.53588748 -.00000083 00000-0 10000-3 0 2592
2 23027 55.0872 0.8266 0065043 199.4045 160.3773 2.00562396 11276
Glonass 62
1 23043U 94021A 95262.37418397 -.00000054 00000-0 00000+0 0 2592
2 23043 64.7362 333.3822 0007084 195.6779 164.3621 2.13102983 11216
Glonass 63
1 23044U 94021B 95263.19534173 -.00000048 00000-0 00000+0 0 2295
2 23044 64.7270 333.3543 0030911 204.0383 155.8806 2.13103090 11238
Glonass 64
1 23045U 94021C 95264.31025948 -.00000039 00000-0 00000+0 0 2386
2 23045 64.7160 333.3256 0009760 34.5885 325.5433 2.13102872 11250
GOES 8
1 23051U 94022A 95264.42228195 -.00000266 00000-0 10000-3 0 3833
2 23051 0.2204 83.7858 0003643 106.8625 246.7402 1.00278760 12665
MSTI 2
1 23101U 94028A 95263.54947650 .00004010 00000-0 69947-4 0 2352
2 23101 97.0934 95.4491 0010868 243.2494 116.7642 15.51239964 77303
STRV-1A
1 23125U 94034B 95263.30267438 .00004987 00000-0 11260-2 0 1982
2 23125 7.5389 351.8604 7267909 197.7595 108.7221 2.30501078 9845
STRV-1B
1 23126U 94034C 95258.86438277 .00006675 00000-0 12735-2 0 1747
2 23126 7.5249 354.0546 7272988 193.5545 123.7763 2.30099381 9783
Nadezhda 4
1 23179U 94041A 95261.87561822 .00000024 00000-0 84444-5 0 1315
2 23179 82.9427 78.4288 0036265 161.8564 198.3897 13.75671473 59357
Glonass 65
1 23203U 94050A 95264.44783417 .00000003 00000-0 00000+0 0 1929
2 23203 64.7877 213.1763 0006719 156.5552 203.4569 2.13102171 8652
Glonass 66
1 23204U 94050B 95261.39701720 .00000014 00000-0 00000+0 0 2011
2 23204 64.7721 213.3091 0014874 342.7312 17.2074 2.13102234 8585
Glonass 67
1 23205U 94050C 95264.56467038 .00000003 00000-0 00000+0 0 1876
2 23205 64.7791 213.1921 0002828 287.3349 72.6161 2.13102584 8651
DMSP B5D2-7
1 23233U 94057A 95264.65415917 .00000045 00000-0 48014-4 0 4931
2 23233 98.8714 321.8250 0011579 223.0756 136.9510 14.12637597 54774
OKEAN 1-7
```

```
1 23317U 94066A 95261.20739874 .00000179 00000-0 23804-4 0 959
2 23317 82.5446 310.1418 0024068 247.8621 112.0031 14.73958949 50322
ELEKTRO
1 23327U 94069A 95251.99307082 -.00000130 00000-0 10000-3 0 894
2 23327 0.6169 261.2175 0005549 211.5794 308.2995 1.00273212 3172
RESURS 1-3
1 23342U 94074A 95263.40487345 .00000011 00000-0 10000-4 0 3348
2 23342 98.0072 321.3181 0001606 98.2864 261.8530 14.69767092 47031
Glonass 68
1 23396U 94076A 95262.06188617 .00000057 00000-0 00000+0 0 1465
2 23396 64.9780 93.5165 0030248 187.9103 172.1130 2.13102749 6442
Glonass 69
1 23397U 94076B 95264.11458333 .00000072 00000-0 00000+0 0 1534
2 23397 64.9690 93.4585 0011549 325.2040 34.8765 2.13102569 6480
Glonass 70
1 23398U 94076C 95264.46722670 .00000073 00000-0 00000+0 0 1611
2 23398 64.9590 93.4254 0001618 277.4917 82.5655 2.13102260 6509
LUCH (Altair-2)
1 23426U 94082A 95264.78512699 -.00000285 00000-0 00000+0 0 1754
2 23426 2.0129 272.0100 0000386 268.3613 197.1648 1.00280996 2802
RS-15
1 23439U 94085A 95264.64641257 -.00000039 00000-0 10000-3 0 794
2 23439 64.8156 98.9860 0166588 245.8132 112.5292 11.27524818 30398
NOAA 14
1 23455U 94089A 95264.85930100 .00000115 00000-0 87863-4 0 3268
2 23455 98.9106 206.6444 0008697 288.0231 71.9989 14.11534821 37456
ODERACS II A
1 23471U 95004C 95263.49037633 .00027944 00000-0 10150-3 0 1926
2 23471 51.6490 357.9341 0011476 105.8030 254.4187 15.88203515 36291
ODERACS II B
1 23472U 95004D 95265.13384787 .00562569 11833-4 30510-3 0 2655
2 23472 51.6364 333.9375 0005127 25.0524 335.0776 16.19045405 36758
Glonass 71
1 23511U 95009A 95262.08118064 -.00000057 00000-0 00000+0 0 967
2 23511 64.7551 333.6613 0007678 215.6980 144.3110 2.13102988 4176
Glonass 72
1 23512U 95009B 95263.13722770 -.00000049 00000-0 00000+0 0 1052
2 23512 64.7425 333.6288 0005633 305.7762 54.2342 2.13102355 4199
Glonass 73
1 23513U 95009C 95264.36904301 -.00000039 00000-0 00000+0 0 1106
2 23513 64.7524 333.6002 0014546 202.8651 157.1365 2.13103141 4227
SFU
1 23521U 95011A 95264.85562100 .00002381 00000-0 74038-4 0 993
2 23521 28.4573 135.6287 0020108 214.1824 145.7472 15.28858571 28740
GMS 5
1 23522U 95011B 95261.52164098 -.00000302 00000-0 10000-3 0 573
2 23522 0.7405 300.1171 0001357 239.0060 145.3267 1.00260871 1713
DMSP B5D2-8
1 23533U 95015A 95264.87725627 .00000028 00000-0 38757-4 0 2230
2 23533 98.8358 265.9289 0008142 95.0593 265.1505 14.12702245 25601
```

```
Microlab 1
1 23547U 95017C 95260.88978132 .00000107 00000-0 47447-4 0 507
2 23547 69.9779 84.2349 0014240 212.5200 147.5056 14.45409187 24178
OFEQ 3
1 23549U 95018A 95264.23713220 .00005264 00000-0 13148-3 0 1126
2 23549 143.3705 30.0608 0250096 35.1144 326.5825 15.08694100 25478
GFZ-1
1 23558U 86017JE 95263.74710513 .00002495 00000-0 35991-4 0 596
2 23558 51.6508 36.0905 0005549 286.3802 73.6578 15.60434345547754
ERS-2
1 23560U 95021A 95265.17882902 .00000034 00000-0 28835-4 0 1200
2 23560 98.5480 338.1213 0001064 73.6751 286.4550 14.32245483 22069
Spektr
1 23579U 95024A 95265.04051260 .00011957 00000-0 16601-3 0 1386
2 23579 51.6451 32.7350 0003568 106.4454 253.7191 15.57477435 19484
GOES 9
1 23581U 95025A 95264.46469476 -.00000195 00000-0 10000-3 0 577
2 23581 0.3609 269.9547 0002527 310.3442 217.0098 1.00269273 1226
Helios 1A
1 23605U 95033A 95263.25702521 .00000113 00000-0 30588-4 0 887
2 23605 98.0927 198.2374 0001566 60.9740 299.1620 14.63865641 10915
UPM SAT 1
1 23606U 95033B 95264.88150707 .00000657 00000-0 12608-3 0 651
2 23606 98.0736 200.0572 0005378 331.8403 28.2470 14.66894381 11233
CERISE
1 23607U 95033C 95263.30004109 .00000148 00000-0 34907-4 0 272
2 23607 98.0737 198.5244 0008075 333.2375 26.8407 14.67146151 11019
TDRS 6
1 23613U 95035B 95264.24810301 .00000118 00000-0 00000+0 0 543
2 23613 0.1174 89.6363 0001300 120.8588 88.7706 1.00285011 678
Glonass 74
1 23620U 95037A 95265.09201391 .00000003 00000-0 00000+0 0 497
2 23620 64.8440 212.9970 0018328 170.9718 189.0434 2.13103018 1274
Glonass 75
1 23621U 95037B 95263.86057546 .00000003 00000-0 00000+0 0 548
2 23621 64.8550 213.0384 0017842 182.0870 177.8925 2.13102285 1243
Glonass 76
1 23622U 95037C 95262.04216565 .00000010 00000-0 00000+0 0 487
2 23622 64.8469 213.0971 0036802 166.6773 193.4106 2.13102455 1202
Prognoz-M2
1 23632U 95039A 95252.49547350 -.00001202 00000-0 00000+0 0 101
2 23632 63.0580 259.8600 9226312 314.4720 313.7000 0.26340101 96
N-STAR A
1 23651U 95044A 95254.61142641 -.00000353 00000-0 00000+0 0 205
2 23651 0.0566 254.0218 0004244 306.4124 141.7787 1.00295969 110
1995044B
1 23652U 95044B 95263.02198644 .00174896 -97543-7 12207-2 0 186
2 23652 6.7043 246.0673 7342680 194.9516 115.3253 2.25782121 485
Cosmos 2319
1 23653U 95045A 95264.72240159 -.00000150 00000-0 00000+0 0 175
```

```
2 23653 1.5807 281.1102 0010438 267.9989 150.8071 1.00274572 227
1995045B
1 23654U 95045B 95246.28682870 .15820329 12759-4 92745-4 0 192
2 23654 51.6410 261.6737 0003545 231.8539 128.2479 16.54149064 574
1995045C
1 23655U 95045C 95243.54236111 .17934734 12422-4 11810-2 0 100
2 23655 51.6305 277.1380 0001561 87.2215 277.1570 16.40807312 123
SICH-1
1 23657U 95046A 95264.53041323 .00000096 00000-0 11400-4 0 170
2 23657 82.5302 88.7542 0026544 203.3400 156.6589 14.73412861 3125
1995046C
1 23659U 95046C 95263.57539671 .00000149 00000-0 19399-4 0 122
2 23659 82.5306 89.6268 0026129 207.9542 152.0262 14.73722257 2986
1995045E
1 23660U 95045E 95263.13019961 .00001630 00000-0 67279-3 0 125
2 23660 47.4257 275.3351 7279964 5.3917 359.5645 2.27037812 451
1995045F
1 23661U 95045F 95264.04863472 .00000326 00000-0 27479-3 0 108
2 23661 47.4849 275.1756 7262578 5.4493 359.5180 2.26616688 478
1995045G
1 23663U 95045G 95249.20627900 -.00003572 11294-4 00000+0 0 43
2 23663 51.6035 247.4465 0162001 98.9000 278.8630 15.93516943 819
1995045H
1 23664U 95045H 95245.30021991 .00005473 10708-4 10000-4 0 45
2 23664 51.6830 269.1703 0261886 93.8534 276.1056 15.66747594 222
Soyuz TM-22
1 23665U 95047A 95265.04051260 .00011957 00000-0 16601-3 0 308
2 23665 51.6451 32.7350 0003568 106.4454 253.7191 15.57477435 2921
1995047B
1 23666U 95047B 95249.18156250 .20145336 12715-4 11758-3 0 164
2 23666 51.6206 111.2938 0007333 232.1815 128.1265 16.53993193 462
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

2011. Re: AO-10 & 13 Signal Levels

Newsgroup: rec.radio.amateur.space
Date: 1995-09-22 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Sep22.235517.27453@ke4zv.atl.ga.us>
Source record: 24019

In article <43j017$26m@ixnews7.ix.netcom.com> jbuckham@ix.netcom.com (John Buckham) writes:
>I need to compare some notes. I have just pulled my satellite station
>together, and this is what I have:
>
>A KLM 2M-14C Downlink antenna.

>the bird is, say, 20,000 miles out? I can receive the beacon quite
>well, and likewise on a loop test my signal comes in slightly under the
>beacon level and sounds clear- (beacon is about S-3 on my meter, my
>signal slightly under that reading.) I have been able to make
>contacts, however some stations are way "down in the mud" - and other
>receive stations are reasonably close (a few hundred miles) to me seem
>to be receiving them pretty well.

It's hard to say anything about S meter readings. With the setup
you describe, the beacon should be 12 to 15 db above your noise
floor (whatever S reading that is). That's not bad, but a KLM-22C
will improve it rather remarkably. The 14C isn't that good, better
than Cushcraft of course, but that's mild praise.

One acid test. Can you hear spin modulation on the transponder
noise floor? If you can't, then you need to improve your setup.
If you can, there's little point in going further.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

2012. AMSAT PR 95-03 - Official AMSAT Symposium Press release

Newsgroup: rec.radio.amateur.space
Date: 1995-09-22 00:00:00 UTC
From: Philip Chien <Pchien@ids.net>
Message-ID: <43tn6v$lu8@paperboy.ids.net>
Source record: 24020

AMSAT! The Radio Amateur Satellite Corporation
NEWS RELEASE

Contact:
Keith C. Baker, KB1SF
1324 Fairgrounds Road
Xenia, OH, 45385
Phone/FAX: 513-429-5325
kb1sf@amsat.org

FOR IMMEDIATE RELEASE
Number 95-03
September 22, 1995

NATIONAL AMATEUR SATELLITE SYMPOSIUM MEETING IN FLORIDA

Orlando, Florida - AMSAT, the Radio Amateur Satellite Corporation, will hold its thirteenth annual Space Symposium in Orlando Florida from October 6th to 8th, 1995. The meeting will be held at the Holiday Inn, located on SR-436 next to Orlando International Airport.

Some of the Symposium's highlights include:
! Steven Bible, N7HPR, will explain his innovative development of a World Wide Web Ground Station that monitors digital satellites.
! David Liberman, XE1TU, will describe UNAMSAT (Mexico) future activities.
! Bruce Paige, KK5DO, will discuss the Houston AMSAT Net re-transmission by commercial satellites.
! Peter Vekinis, KC1QF/EI4GV/SV4GV, will provide some interesting commentary on Picosats.

The Phase 3-D project was started by German amateur radio operator Dr. Karl Meinzer, DJ4ZC, who serves as the Project Leader for the international effort. Some of the participating countries include Germany, the United States, United Kingdom, Japan, Finland, Slovenia, the Czech Republic, Belgium, Hungary, Russia, and South Africa. Phase 3-D is the largest and most sophisticated spacecraft ever built for amateur radio operators.

AMSAT was incorporated as a non-profit organization in 1969 for the purpose of developing communications satellites for amateur radio operators. To date thirty one amateur radio satellites have been launched and fourteen are operational, in use by worldwide amateur radio operators.

Phase 3-D is scheduled for launch in mid-1996 on the second flight of the European Space Agency's Ariane 5 launch vehicle.

Information on Phase 3-D and other AMSAT activities is available on
Internet at AMSAT's WorldWideWeb site: http://www.amsat.org/amsat

# # #

2013. What freq of Ku band (SATCOM?)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-22 00:00:00 UTC
From: pve@dg13.cec.BE
Message-ID: <30626571@smtp>
Source record: 24021

Worldwide there are various frequency bands for KU.

Uplink are always around 14GHZ, downlinks are always 11GHz.

The Ku band is split in the following(at least in Europe):

10950-11750 Called the FSS band. Split in H/V channels, normally
16GHz channels. Intelsat birds (except K) use
10950-11200 and 11400-11700 while Eutelsat birds use
10950-11200 and 11500-11700. Intelsat K uses
11400-11750 and 12100-12300.
11750-12100 Ku High band.
12100-12700 Telecom band for Telecom Satellites (French). Also US
Ku satellites
10700-10950 Ku Low band.

Most LNBs have switchable oscillators to handle the spectrum of frequency. A
22KHz tone runs dosn the LNB cable and switches high or low. Satellite
receivers have the ability to tune from 10700 - 12700 continuous.

Peter Vekinis, KC1qf
pve@dg13.cec.be

2014. Re: What freq of Ku band (SATCOM?)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-22 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <43usva$81k@newsbf02.news.aol.com>
Source record: 24022

Ok, I give, you're right! I *did* get it backwards! Opps!

- David

2015. How best to filter ripple DC?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-23 00:00:00 UTC
From: fx514@cleveland.Freenet.Edu
Message-ID: <43vloj$4n2@usenet.INS.CWRU.Edu>
Source record: 24023

Hello,

I'm using a 12 VDC converter intended for RV use. It charges a
battery when mains power is present, draws off it otherwise.

The output is unfiltered (ripple) DC and introduces unacceptable
noise into my packet gear.

What would be the best way to filter this? Just a big capacitor
across the output?

Thanks in advance for favours anticipated.

73 de VE1DMS (David)

2016. Proposed State & Federal Regulations for the INTERNET!

Newsgroup: rec.radio.amateur.space
Date: 1995-09-23 00:00:00 UTC
From: Politics@usa.com
Message-ID: <440cso$9om@newsie.wis.com>
Source record: 24024

My name is Scott Glasrud, and I am running for the New Mexico State Senate during the 1996 elections. One of the reasons I have chosen to run is to combat the proposed state and federal regulations of the Internet. As you know, the Internet was never designed to be regulated! It was designed to allow communications in the event of anuclear war or a major catastrophe. I OPPOSE REGULATION, and if elected will fight to preserve your constitutional rights. HOWEVER, I NEED YOUR HELP!

I am asking each person who reeives this message to send $5.00 to the Scott Glasrud Campaign Committee. If we pull together, we CAN protect our first amendment rights! HELP ME show the politicians the POWER behind this important NETWORK. Please send contributions to:

The Scott Glasrud Campaign Committee
11024 Montgomery Blvd. NE, Suite 179
Albuquerque, New Mexico 87111

Thank you!

2017. ARLK050 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-09-23 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk050.1995@ampr.org>
Source record: 24025
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK050
ARLK050 Keplerian data

ZCZC SK75
QST de W1AW
Keplerian Bulletin 50 ARLK050
From ARRL Headquarters
Newington, CT September 23, 1995
To all radio amateurs

SB KEP ARL ARLK050
ARLK050 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-73
1 99973U 99999A 95271.74804840 .00129591 00000-0 21727-3 0 14
2 99973 39.0117 88.0152 0008080 283.2287 76.7747 16.00409897 48
Mir
1 16609U 86017A 95262.15310680 .00000247 00000-0 10000-4 0 2476
2 16609 51.6458 47.1995 0003125 102.5539 257.5739 15.57441261547576
AO-10
1 14129U 83058B 95261.00004520 -.00000463 00000-0 10000-3 0 3740
2 14129 26.4622 247.8460 5984110 310.7505 10.7663 2.05882538 64241
RS-10/11
1 18129U 87054A 95262.24950572 .00000034 00000-0 20567-4 0 1110
2 18129 82.9266 349.5387 0010894 183.3913 176.7169 13.72356220412875
UO-11
1 14781U 84021B 95260.52636694 .00000096 00000-0 24064-4 0 8274
2 14781 97.7860 258.7476 0010498 246.3410 113.6692 14.69376609617464
RS-12/13
1 21089U 91007A 95258.86241736 .00000023 00000-0 91406-5 0 8307
2 21089 82.9194 33.5203 0027914 282.1263 77.6764 13.74059973231223
AO-13
1 19216U 88051B 95259.08951525 -.00000012 00000-0 60077-4 0 894
2 19216 57.4539 164.3106 7326871 18.8911 358.0410 2.09720811 24071
UO-14
1 20437U 90005B 95261.77941353 .00000016 00000-0 23237-4 0 1262
2 20437 98.5646 344.6303 0010619 288.6713 71.3315 14.29897020295122
```

```
RS-15
1 23439U 94085A 95260.03433079 -.00000039 00000-0 10000-3 0 783
2 23439 64.8161 106.4455 0166577 246.6927 111.6391 11.27524905 29876
AO-16
1 20439U 90005D 95258.73882748 -.00000003 00000-0 15803-4 0 9241
2 20439 98.5731 343.4287 0010850 297.3124 62.6949 14.29950605294705
DO-17
1 20440U 90005E 95262.21665149 .00000058 00000-0 39374-4 0 9254
2 20440 98.5776 347.3609 0011070 287.7635 72.2339 14.30092804295220
WO-18
1 20441U 90005F 95261.08134659 .00000012 00000-0 21447-4 0 9292
2 20441 98.5766 346.2053 0011561 290.4497 69.5446 14.30063247295062
LO-19
1 20442U 90005G 95262.21685910 .00000021 00000-0 25154-4 0 9244
2 20442 98.5775 347.7158 0011675 284.5682 75.4213 14.30167337295244
FO-20
1 20480U 90013C 95258.14973056 -.00000012 00000-0 43665-4 0 08273
2 20480 99.0697 330.0105 0541159 29.7345 333.3395 12.83230962262480
AO-21
1 21087U 91006A 95259.22146960 .00000093 00000-0 82657-4 0 6322
2 21087 82.9419 165.2130 0033972 254.8534 104.8849 13.74558962232232
UO-22
1 21575U 91050B 95261.17354147 .00000091 00000-0 45006-4 0 6312
2 21575 98.3877 330.1613 0008735 6.8352 353.2937 14.36990716218850
KO-23
1 22077U 92052B 95258.47075804 -.00000037 00000-0 10000-3 0 5216
2 22077 66.0811 46.7379 0001983 163.2171 196.8904 12.86292397145343
KO-25
1 22828U 93061F 95261.23392377 .00000035 00000-0 31677-4 0 3967
2 22828 98.6078 336.4644 0009979 301.5092 58.5110 14.28112083 71150
IO-26
1 22826U 93061D 95262.24005687 .00000014 00000-0 23542-4 0 4186
2 22826 98.6120 337.4152 0009359 315.2560 44.7862 14.27780393103190
AO-27
1 22825U 93061C 95261.73257220 .00000011 00000-0 22264-4 0 4198
2 22825 98.6103 336.8014 0008418 315.0408 45.0091 14.27672199103118
PO-28
1 22829U 93061G 95260.75643271 .00000027 00000-0 28317-4 0 4101
2 22829 98.6071 336.0326 0009810 303.6802 56.3443 14.28091945103001

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
September 26, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

2018. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-24 00:00:00 UTC
From: wware@world.std.com
Message-ID: <DFFBnA.AxA@world.std.com>
Source record: 24026
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

bstaranto@csupomona.edu wrote:

: I'm looking for a communications expert to gather data, document and then
: testify in court. I need someone to identify the frequency (bandwidth) my
: thoughts are broadcasted on. The transmission must be traced back to the
: repeaters and ultimatly the source.

Unfortunately, transmissions of this type can be traced only for purely verbal thoughts. While it may be your subjective impression that most of your thoughts are verbal, it is likely that you actually have many thoughts in the forms of visual images. If you have studied math or computer programming, you may occasionally think directly in abstractions. (Doesn't sound like this will be a problem.)

Verbal thoughts are sent out on a bandwidth-hogging AM signal, usually at around 8.015 to 8.017 kHz. As you can see from sampling considerations, the audio quality is rather wretched. Another problem is that the signal is extremely weak, usually only a couple of nanovolts per meter even at the surface of the skull.

Fortunately, however, the low bandwidth of the carrier admits a rather elegant solution. Find a few square feet of sheet copper and build a hat like the Tin Person's head in "The Magic-Enabled Person of Oz". It should cover as much of your head as possible, being cylindrical up to the hairline, and conical from there up, ending in a vertical tube about 1/4" inch diameter. The purpose of this hat is to provide internal reflections that increase the intensity of your thought transmissions. Remember, the reflector must be as smooth as possible; no holes for eyes, nose, or mouth. The reflection properties will be improved if you can learn to hold some metallic object in your throat just above your Adam's apple; even a Brillo pad would be better than nothing.

The hat may have a subtle psychological effect on your thinking, and of course you would want to minimize that to get a clear signal. This can be done by wearing the hat continuously for several days. Do not be afraid to wear it in public places; you'll want to overcome any and all psychological reservations about the hat, including its social impact.

When the acclimation period is finished, you should find that at the end of the tube, you can pick up a signal of 20 or 30 nanovolts per meter. Because of the low frequency involved, you'll need to build a receiving antenna that will fit handily in the local high school's football field. The shape of the antenna doesn't matter too much, but the surface should be covered with alternating layers of copper, zinc, and chrome, each about 0.002" thick, to a full thickness of about 3". Other than that, the

only rule of thumb is to fill the field with as much metal as possible. You may need the school principal's permission.

If you are still unable to receive clear verbal thoughts, this may be due to a shortage of neural electrolytes. Several sports drinks like Gatorade claim to replenish electrolytes, and that may work fine for muscle electrolytes, but neural electrolytes are entirely another matter. What you want here is jalapeno peppers, eaten rapidly in liberal amounts, and washed down with one part Jolt Cola to three parts tequila. You may add salt and lime for taste. Plan on about 15 small jalapenos and one to two pints of tequila for each 20 minute transmission.

You may be tempted to reduce the acidity of the jalapenos by drinking water or milk, or eating sour cream, but don't do it! Any of those will immediately neutralize the electrolytes, and will not only ruin your experiment, but place you at risk for a brain siezure. Should this occur, your brain could only be restarted with one of those cardiac convulsion-inducer gadgets that they always use on those "real emergency" TV shows with the bad camera work. Paramedics should immediately remove your hat and apply the paddles to your ears. You may keep emergency personnel constantly apprised of the state of your brain by counting backwards loudly in Spanish during your experiment. But practice doing this beforehand until it becomes second nature, so it doesn't affect your transmitted thoughts.

Well, I think that covers everything. It's been a couple of years since I did this, and my notes are fuzzy in places, but that should get you started. When you're ready to tackle non-verbal thoughts, post another note and we'll discuss obscure demodulation techniques.
--

Will Ware <wware@world.std.com> web <http://world.std.com/~wware/>
PGP fingerprint 45A8 722C D149 10CC F0CF 48FB 93BF 7289

2019. Re: How best to filter ripple DC?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-24 00:00:00 UTC
From: Clifford Buttschardt <cbuttsch@biggulp.callamer.com>
Message-ID: <Pine.OSF.3.91.950924132737.15936E-100000@biggulp.callamer.com>
Source record: 24027

Dave, be sure and take your load directly from the battery. Then remote you charging supply WITH and large capacitor on that supply and connect to the batter through a small inductance. Even a few microhenries will do wonders to limite the hash generated by the charger. Cliff W6HDO

2020. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-25 00:00:00 UTC
From: Phil Moreau <Phil@elworth.demon.co.uk>
Message-ID: <Fsvw7CAE$wZwEwTn@demon.co.uk>
Source record: 24028
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

In article <DFFBnA.AxA@world.std.com>, Will Ware <wware@world.std.com>
writes
>bstaranto@csupomona.edu wrote:
>
>: I'm looking for a communications expert to gather data, document and then
>: testify in court. I need someone to identify the frequency (bandwidth) my
>: thoughts are broadcasted on. The transmission must be traced back to the
>: repeaters and ultimatly the source.
>
>Unfortunately, transmissions of this type can be traced only for purely
>verbal thoughts. While it may be your subjective impression that most of
>your thoughts are verbal, it is likely that you actually have many thoughts
>in the forms of visual images. If you have studied math or computer
>programming, you may occasionally think directly in abstractions. (Doesn't
>sound like this will be a problem.)
>
>Verbal thoughts are sent out on a bandwidth-hogging AM signal, usually at
>around 8.015 to 8.017 kHz. As you can see from sampling considerations,
>the audio quality is rather wretched. Another problem is that the signal
>is extremely weak, usually only a couple of nanovolts per meter even at
>the surface of the skull.
>
>Fortunately, however, the low bandwidth of the carrier admits a rather
>elegant solution. Find a few square feet of sheet copper and build a hat
>like the Tin Person's head in "The Magic-Enabled Person of Oz". It should
>cover as much of your head as possible, being cylindrical up to the
>hairline, and conical from there up, ending in a vertical tube about 1/4"
>inch diameter. The purpose of this hat is to provide internal reflections
>that increase the intensity of your thought transmissions. Remember, the
>reflector must be as smooth as possible; no holes for eyes, nose, or
>mouth. The reflection properties will be improved if you can learn to
>hold some metallic object in your throat just above your Adam's apple;
>even a Brillo pad would be better than nothing.
>
>The hat may have a subtle psychological effect on your thinking, and of
>course you would want to minimize that to get a clear signal. This can
>be done by wearing the hat continuously for several days. Do not be
>afraid to wear it in public places; you'll want to overcome any and all
>psychological reservations about the hat, including its social impact.
>
>When the acclimation period is finished, you should find that at the end
>of the tube, you can pick up a signal of 20 or 30 nanovolts per meter.
>Because of the low frequency involved, you'll need to build a receiving

>antenna that will fit handily in the local high school's football field.
>The shape of the antenna doesn't matter too much, but the surface should
>be covered with alternating layers of copper, zinc, and chrome, each
>about 0.002" thick, to a full thickness of about 3". Other than that, the
>only rule of thumb is to fill the field with as much metal as possible.
>You may need the school principal's permission.
>
>If you are still unable to receive clear verbal thoughts, this may be due
>to a shortage of neural electrolytes. Several sports drinks like Gatorade
>claim to replenish electrolytes, and that may work fine for muscle
>electrolytes, but neural electrolytes are entirely another matter. What
>you want here is jalapeno peppers, eaten rapidly in liberal amounts, and
>washed down with one part Jolt Cola to three parts tequila. You may add
>salt and lime for taste. Plan on about 15 small jalapenos and one to two
>pints of tequila for each 20 minute transmission.
>
>You may be tempted to reduce the acidity of the jalapenos by drinking
>water or milk, or eating sour cream, but don't do it! Any of those will
>immediately neutralize the electrolytes, and will not only ruin your
>experiment, but place you at risk for a brain siezure. Should this occur,
>your brain could only be restarted with one of those cardiac
>convulsion-inducer gadgets that they always use on those "real emergency"
>TV shows with the bad camera work. Paramedics should immediately remove
>your hat and apply the paddles to your ears. You may keep emergency
>personnel constantly apprised of the state of your brain by counting
>backwards loudly in Spanish during your experiment. But practice doing
>this beforehand until it becomes second nature, so it doesn't affect
>your transmitted thoughts.
>
>Well, I think that covers everything. It's been a couple of years since
>I did this, and my notes are fuzzy in places, but that should get you
>started. When you're ready to tackle non-verbal thoughts, post another
>note and we'll discuss obscure demodulation techniques.

Why not just say "Thats a load of crap" going on like that will make you
very bitter and twisted.....Just like a person I know.
--
Cheers
Phil Moreau phil@elworth.demon.co.uk (Fire & flames....Eh)
Buy Design
Cheshire
England

2021. What has happened to RS12?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-25 00:00:00 UTC
From: kd9xc@execpc.com
Message-ID: <4472te$enl@homer.alpha.net>
Source record: 24029

Has RS12 gone off the air? I have not heard it since August 28, 1995.
Any input will be appreciated.

2022. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-26 00:00:00 UTC
From: wware@world.std.com
Message-ID: <DFIJqo.40B@world.std.com>
Source record: 24030
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

Phil Moreau (Phil@elworth.demon.co.uk) wrote:
: very bitter and twisted

I'm at a loss to see what you find bitter in my post. I thought it was
pretty funny, as did a few other folks. As far as twisted, well, it's a
little late to be worrying about that.
--

Will Ware <wware@world.std.com> web <http://world.std.com/~wware/>
PGP fingerprint 45A8 722C D149 10CC F0CF 48FB 93BF 7289

2023. Amateur Satellite info

Newsgroup: rec.radio.amateur.space
Date: 1995-09-26 00:00:00 UTC
From: "Lloyd R. Wells" <lwells@public.compusult.nf.ca>
Message-ID: <448soe$6p8@hobbes.compusult.nf.ca>
Source record: 24031

Hello from VO1LRW - LLoyd, I am new into the satellite side of the hobby. Can anyone please tell me what Amateur satellites are active on 2 meters and 70cm, and the up/down link freq. I am using a Kenwood TS-790A and Cushcraft AOP-1 OSCAR antennas. Any and All help would be appreciated.

73's de VO1LRW - LLoyd

2024. Need Ham Radio GIF Images

Newsgroup: rec.radio.amateur.space
Date: 1995-09-26 00:00:00 UTC
From: sid@hal-pc.org
Message-ID: <448uvp$64q@news.hal-pc.org>
Source record: 24032

If anyone has any ham related gif images, please forward them to
sid@hal-pc.org
We need some images for our homepage at http://www.hal-pc.org/~sid

Thanks,
AB5XU

2025. ARLK051 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-09-26 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk051.1995@ampr.org>
Source record: 24033
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK051
ARLK051 Keplerian data

ZCZC SK76
QST de W1AW
Keplerian Bulletin 51 ARLK051
From ARRL Headquarters
Newington, CT September 26, 1995
To all radio amateurs

SB KEP ARL ARLK051
ARLK051 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-73
1 99973U 99999A 95271.74804840 .00129591 00000-0 21727-3 0 14
2 99973 39.0117 88.0152 0008080 283.2287 76.7747 16.00409897 48
Mir
1 16609U 86017A 95268.18451407 .00003780 00000-0 57064-4 0 03239
2 16609 51.6469 16.9819 0003051 117.3022 242.8281 15.57498610548510
AO-10
1 14129U 83058B 95261.00004520 -.00000463 00000-0 10000-3 0 3740
2 14129 26.4622 247.8460 5984110 310.7505 10.7663 2.05882538 64241
RS-10/11
1 18129U 87054A 95268.22799654 .00000024 00000-0 95480-5 0 01224
2 18129 82.9270 345.1216 0011292 165.9416 194.2051 13.72356416413693
UO-11
1 14781U 84021B 95268.01706774 .00000087 00000-0 22488-4 0 08495
2 14781 97.7862 265.8900 0010659 219.5649 140.4778 14.69378346618567
RS-12/13
1 21089U 91007A 95267.81903154 .00000056 00000-0 43639-4 0 08345
2 21089 82.9199 26.8769 0027566 256.4401 103.3682 13.74060463232459
AO-13
1 19216U 88051B 95267.67228928 -.00000320 00000-0 38800-4 0 00949
2 19216 57.4550 162.7033 7329104 19.6195 358.0350 2.09725123024254
UO-14
1 20437U 90005B 95268.14714472 -.00000030 00000-0 53236-5 0 01350
2 20437 98.5641 350.8918 0010372 269.6333 90.3655 14.29897055296038
```

```
RS-15
1 23439U 94085A 95267.92808652 -.00000039 00000-0 10000-3 0 00938
2 23439 64.8155 93.6789 0166525 245.2243 113.1277 11.27524847030760
AO-16
1 20439U 90005D 95268.18510058 .00000007 00000-0 19491-4 0 09322
2 20439 98.5741 352.7334 0010534 268.5862 91.4114 14.29951535296057
DO-17
1 20440U 90005E 95268.16371826 -.00000016 00000-0 10547-4 0 09335
2 20440 98.5771 353.2193 0010713 268.7047 91.2910 14.30092734296070
WO-18
1 20441U 90005F 95268.07803670 .00000003 00000-0 18208-4 0 09442
2 20441 98.5764 353.0988 0011230 269.1430 90.8473 14.30063840296063
LO-19
1 20442U 90005G 95268.16361363 -.00000004 00000-0 15513-4 0 09337
2 20442 98.5771 353.5758 0011644 266.9157 93.0692 14.30167820296096
FO-20
1 20480U 90013C 95268.12896056 -.00000089 00000-0 -12724-3 0 08373
2 20480 99.0685 338.1268 0541182 7.1711 353.6752 12.83230247263769
AO-21
1 21087U 91006A 95268.17486140 .00000094 00000-0 82657-4 0 06481
2 21087 82.9425 158.5915 0033469 228.5316 131.2960 13.74559233233468
UO-22
1 21575U 91050B 95268.13654859 .00000000 00000-0 14425-4 0 06454
2 21575 98.3870 336.9451 0008199 348.7316 11.3689 14.36990551219853
KO-23
1 22077U 92052B 95267.80083326 -.00000037 00000-0 10000-3 0 05266
2 22077 66.0799 27.2007 0001695 160.7924 199.3158 12.86292533146542
KO-25
1 22828U 93061F 95268.17010072 -.00000007 00000-0 14698-4 0 04130
2 22828 98.6074 343.2995 0009580 279.6900 80.3206 14.28112311072145
IO-26
1 22826U 93061D 95268.19674071 -.00000034 00000-0 40342-5 0 04265
2 22826 98.6113 343.2832 0008922 297.3353 62.6926 14.27780527104041
AO-27
1 22825U 93061C 95268.18029442 -.00000001 00000-0 17278-4 0 04321
2 22825 98.6099 343.1533 0008217 295.8707 64.1626 14.27672635104036
PO-28
1 22829U 93061G 95268.18314845 .00000028 00000-0 28841-4 0 04325
2 22829 98.6071 343.3525 0009579 281.8580 78.1519 14.28092789104065

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
September 30, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

2026. Re: Amateur Satellite info

Newsgroup: rec.radio.amateur.space
Date: 1995-09-27 00:00:00 UTC
From: rwa@cs.athabascau.ca
Message-ID: <44btfv$ivd@aurora.cs.athabascau.ca>
Source record: 24034

mbv@ti.com (Ken Durham) writes:

>In article <448soe$6p8@hobbes.compusult.nf.ca>, "Lloyd R. Wells"
<lwells@public.compusult.nf.ca> says:
>>
> Can anyone please tell me what Amateur satellites are active
>>on 2 meters and 70cm, and the up/down link freq.
>>~~~~~~

>Lloyd, you can find it ALL here:
> http:www.amsat.org/amsat/amsat-na/orginfo.html
>Ken Durham K5MBV

I think

http://www.amsat.org/amsat/AmsatHome.html

might be a better choice. Nice web site, congrats to all involved.

regards,
Ross ve6pdq
--
Ross Alexander, ve6pdq -- (403) 675 6311 -- rwa@cs.athabascau.ca

2027. Is AO-13 Mode-S working?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-27 00:00:00 UTC
From: Douglas Braun <dbraun@hol.gr>
Message-ID: <44cgl4$vv0@newsflash.hol.gr>
Source record: 24035

I built a DEM S-band receiver converter (w/ preamp) and a helical antenna a couple of weeks ago, and I eagerly pointed it at AO-13 at the appropriate time, and heard absolutely nothing. I'm sure that is works OK and has reasonable gain, since I can hear the difference between ground and sky noise, and I can also receive the UO-11 S-band beacon. But I don't hear even the tiniest peep from AO-13!

Thanks,

Doug Braun (SV/N1OWU)

P.S.: If you want any advice or tips building the DEM stuff, let me know.

2028. Is AO-13 Mode-S working?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-27 00:00:00 UTC
From: Douglas Braun <dbraun@hol.gr>
Message-ID: <44cglb$vv3@newsflash.hol.gr>
Source record: 24036

I built a DEM S-band receiver converter (w/ preamp) and a helical antenna a couple of weeks ago, and I eagerly pointed it at AO-13 at the appropriate time, and heard absolutely nothing. I'm sure that is works OK and has reasonable gain, since I can hear the difference between ground and sky noise, and I can also receive the UO-11 S-band beacon. But I don't hear even the tiniest peep from AO-13!

Thanks,

Doug Braun (SV/N1OWU)

P.S.: If you want any advice or tips building the DEM stuff, let me know.

2029. Re: AO-10 & 13 Signal Levels

Newsgroup: rec.radio.amateur.space
Date: 1995-09-27 00:00:00 UTC
From: jlbarber@wolfenet.com
Message-ID: <44ava1$qul@news1.wolfe.net>
Source record: 24037

In article <1995Sep22.235517.27453@ke4zv.atl.ga.us>, gary@ke4zv.atl.ga.us (Gary Coffman) says:

[snip]
>
>It's hard to say anything about S meter readings. With the setup
>you describe, the beacon should be 12 to 15 db above your noise
>floor (whatever S reading that is). That's not bad, but a KLM-22C
>will improve it rather remarkably. The 14C isn't that good, better
>than Cushcraft of course, but that's mild praise.
>

Out of curiosity, then, what would you recommend as better ?
I've been looking for a satellite-related winter project, and
one or more 2m antennas would be great!

Regards,
Jim Barber, N7CXI

2030. Re: Amateur Satellite info

Newsgroup: rec.radio.amateur.space
Date: 1995-09-27 00:00:00 UTC
From: caseycct@ridgecrest.ca.us
Message-ID: <DFL7xw.Eo5@ridgecrest.ca.us>
Source record: 24038

> Can anyone please tell me what Amateur satellites are active
> >on 2 meters and 70cm, and the up/down link freq.
> >~~~~~~
> Lloyd, you can find it ALL here:
> http:www.amsat.org/amsat/amsat-na/orginfo.html

Of course, that should be http://www.amsat.org/amsat/amsat-na/orginfo.html
Just so as not to confuse everybody

--
Erik van Bronkhorst
CW/KotGT DoD#4342585443 AMA#438054
caseycct@owens.ridgecrest.ca.us
ftp://www.ridgecrest.ca.us/pub/users/caseycct/erik.html
kc6uut@wa6ybn.#soca.ca.usa.na

2031. Re: How best to filter ripple DC?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-27 00:00:00 UTC
From: Nick Gleeson <ng@shannon.tellabs.com>
Message-ID: <1995Sep27.092053.11534@tellab5.tellabs.com>
Source record: 24039

fx514@cleveland.Freenet.Edu (David M. Swan) wrote:
>
>Hello,
>
>I'm using a 12 VDC converter intended for RV use. It charges a
>battery when mains power is present, draws off it otherwise.
>
>The output is unfiltered (ripple) DC and introduces unacceptable
>noise into my packet gear.
>
>What would be the best way to filter this? Just a big capacitor
>across the output?
>
>Thanks in advance for favours anticipated.
>
>73 de VE1DMS (David)

--
Hi,

A 1000 uF cap and an inductor should do the trick. You can find a suitable
inductor in a scrap PSU from a computer or other similar PSU. Connect as
follows;

```
Vin *--------///////-------------* Vout
| Inductor
|
-----
----- Cap 1000uf
|
|
*----------------------------* -ve
```

Gluck,
-Niko.

Nick Gleeson
==========
Tellabs Limited,
Shannon Industrial Estate,
Shannon,
County Clare,
Ireland.
Phone: +353 61 471 433
Fax: +353 61 471 000
Department: R&D

e-mail: ng@shannon.tellabs.com

2032. Re: Expert Witness

Newsgroup: rec.radio.amateur.space
Date: 1995-09-29 00:00:00 UTC
From: sid@hal-pc.org
Message-ID: <44hr62$1he@news.hal-pc.org>
Source record: 24040
Cross-posted to: rec.radio.amateur.space,rec.radio.swap

I thought it was a great response.
AB5XU

Will Ware (wware@world.std.com) wrote:
: Phil Moreau (Phil@elworth.demon.co.uk) wrote:
: : very bitter and twisted

: I'm at a loss to see what you find bitter in my post. I thought it was
: pretty funny, as did a few other folks. As far as twisted, well, it's a
: little late to be worrying about that.
: --
: --
: Will Ware <wware@world.std.com> web <http://world.std.com/~wware/>
: PGP fingerprint 45A8 722C D149 10CC F0CF 48FB 93BF 7289

2033. 2m "Turnstile" Antenna for MIR (etc.)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-29 00:00:00 UTC
From: rhebel@earth.execpc.COM
Message-ID: <199509292117.QAA17171@earth.execpc.com>
Source record: 24041

I built the 2m "turnstile" antenna shown in the VHF section of the latest ARRL Antenna Handbook. Near as I can tell, I built it correctly! I'm curious if anyone else has built this, or had experience with similar antennas.

Specifically, how do you tune the thing? Phasing link and all? Also, how critical is it for both dipoles to be in exactly the same plane? And if this is critical, how do you handle the connections to, and spacing between, the centerfed elements, which seem to create a kind of traffic "jam"?

My main use for this will be for space work, especially MIR.

Thanks for any help!

73 de KJ7OH "Rich" in Walla Walla, WA

2034. ARLK052 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-09-30 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk052.1995@ampr.org>
Source record: 24042
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK052
ARLK052 Keplerian data

ZCZC SK77
QST de W1AW
Keplerian Bulletin 52 ARLK052
From ARRL Headquarters
Newington, CT September 30, 1995
To all radio amateurs

SB KEP ARL ARLK052
ARLK052 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-73
1 99973U 99999A 95278.75152068 .00129590 00000-0 21727-3 0 20
2 99973 39.0119 96.1681 0008091 283.6580 76.3455 16.00409931 40
Mir
1 16609U 86017A 95272.22672283 .00004023 00000-0 60210-4 0 2514
2 16609 51.6488 356.7311 0002715 131.8922 228.2292 15.57536594549143
AO-10
1 14129U 83058B 95271.19932874 .00000110 00000-0 10000-3 0 3752
2 14129 26.4600 246.2066 5983806 313.5063 10.0386 2.05879642 64453
RS-10/11
1 18129U 87054A 95271.65469237 .00000035 00000-0 21696-4 0 1191
2 18129 82.9272 342.5904 0011491 156.1031 204.0662 13.72356579414167
UO-11
1 14781U 84021B 95271.01334558 .00000113 00000-0 26901-4 0 08401
2 14781 97.7862 268.7471 0010784 209.0868 150.9735 14.69379410619000
RS-12/13
1 21089U 91007A 95271.82402582 .00000024 00000-0 10177-4 0 8335
2 21089 82.9206 23.9082 0027474 244.6769 115.1539 13.74060228233001
AO-13
1 19216U 88051B 95269.10277333 -.00000021 00000-0 33589-4 0 940
2 19216 57.4504 162.4183 7329760 19.7069 358.0549 2.09722128 24280
UO-14
1 20437U 90005B 95271.08609707 .00000008 00000-0 20145-4 0 01324
2 20437 98.5639 353.7820 0010291 261.3485 98.6537 14.29897633296454
```

```
RS-15
1 23439U 94085A 95270.94367755 -.00000039 00000-0 10000-3 0 00905
2 23439 64.8155 88.8017 0166534 244.6279 113.7322 11.27524919031108
AO-16
1 20439U 90005D 95271.75369288 .00000002 00000-0 17726-4 0 9274
2 20439 98.5740 356.2478 0010465 256.7937 103.2077 14.29951788296565
DO-17
1 20440U 90005E 95271.17223361 .00000008 00000-0 20055-4 0 9278
2 20440 98.5771 356.1845 0010647 259.2838 100.7147 14.30093174296500
WO-18
1 20441U 90005F 95271.08661394 -.00000018 00000-0 10103-4 0 09401
2 20441 98.5762 356.0627 0011116 259.3367 100.6563 14.30063857296492
LO-19
1 20442U 90005G 95271.10201065 .00000009 00000-0 20537-4 0 09276
2 20442 98.5771 356.4718 0011585 258.1271 101.8635 14.30168131296516
FO-20
1 20480U 90013C 95271.16949811 -.00000046 00000-0 -27969-4 0 08279
2 20480 99.0683 340.6006 0540979 0.3062 359.8248 12.83230608264155
AO-21
1 21087U 91006A 95271.15932667 .00000094 00000-0 82657-4 0 06472
2 21087 82.9425 156.3837 0033652 219.7196 140.1492 13.74559375233870
UO-22
1 21575U 91050B 95271.13063974 .00000019 00000-0 20876-4 0 06413
2 21575 98.3865 339.8616 0008013 340.4991 19.5892 14.36991113220285
KO-23
1 22077U 92052B 95271.76611560 -.00000037 00000-0 10000-3 0 5241
2 22077 66.0793 18.8976 0001333 154.8672 205.2410 12.86292545147058
KO-25
1 22828U 93061F 95271.18278322 -.00000004 00000-0 16113-4 0 04039
2 22828 98.6070 346.2679 0009481 270.0940 89.9160 14.28112611072576
IO-26
1 22826U 93061D 95271.21012137 -.00000017 00000-0 10899-4 0 4209
2 22826 98.6111 346.2524 0008782 287.9734 72.0493 14.27780824104473
AO-27
1 22825U 93061C 95271.19390335 .00000003 00000-0 18895-4 0 04235
2 22825 98.6096 346.1215 0008107 286.4803 73.5483 14.27672918104460
PO-28
1 22829U 93061G 95271.19587285 .00000009 00000-0 21036-4 0 04216
2 22829 98.6067 346.3203 0009464 272.2789 87.7307 14.28092983104498

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
October 3, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

2035. NORAD Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-09-30 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.812489209@dolphin>
Source record: 24043

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated daily) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2036. NORAD Two-Line Orbital Element Sets (TLE684)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-30 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.812489364@dolphin>
Source record: 24044

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #684 -
Alouette 1
1 00424U 62049A 95268.85192698 .00000042 00000-0 38644-4 0 1389
2 00424 80.4645 185.5501 0024003 359.5768 0.5348 13.67850287646065
ATS 1
1 02608U 66110A 95269.88484587 .00000122 00000-0 10000-3 0 9442
2 02608 14.6460 355.6072 0009581 75.0995 285.0626 1.00366013 22211
ATS 3
1 03029U 67111A 95271.25657529 -.00000117 00000-0 10000-3 0 4040
2 03029 14.8661 2.6133 0009302 259.8702 91.0155 1.00272730102123
Cosmos 398
1 04966U 71016A 95271.89667254 .00405811 10187-4 27296-3 0 159
2 04966 51.4178 95.3142 0403824 103.6503 260.9750 15.40413506840916
Starlette
1 07646U 75010A 95269.99998538 -.00000113 00000-0 25781-4 0 9170
2 07646 49.8275 111.2393 0205985 78.0409 284.3494 13.82189689 42428
LAGEOS
1 08820U 76039A 95268.65167224 .00000033 00000-0 10000-3 0 1381
2 08820 109.8488 295.0443 0044260 185.8427 174.1925 6.38664668196879
ETS-2
1 09852U 77014A 95270.32708655 -.00000177 00000-0 10000-3 0 410
2 09852 12.8886 35.9864 0005162 95.1522 264.9343 0.99999661 15007
GOES 2
1 10061U 77048A 95263.45941818 .00000074 00000-0 10000-3 0 5811
2 10061 11.9682 40.2788 0014958 106.5963 204.3215 1.00298665 11728
IUE
1 10637U 78012A 95271.28329957 -.00000179 00000-0 10000-3 0 1718
2 10637 35.3500 87.3270 1337788 49.7999 294.2618 1.00300065 17292
GPS BI-01
1 10684U 78020A 95270.24508415 -.00000024 00000-0 10000-3 0 3915
2 10684 64.8933 31.6834 0061491 162.6044 197.6111 1.98069488114187
```

```
GPS BI-02
1 10893U 78047A 95268.96328408 .00000036 00000-0 10000-3 0 1868
2 10893 63.2867 269.4914 0224224 14.6078 346.0536 2.01627247127460
GOES 3
1 10953U 78062A 95271.29788383 .00000087 00000-0 10000-3 0 5426
2 10953 10.9538 42.9480 0006893 121.9918 166.2037 1.00360603 16416
SeaSat 1
1 10967U 78064A 95269.75558040 -.00000053 00000-0 27156-4 0 4318
2 10967 108.0003 347.6515 0002796 236.5721 123.5150 14.38055672903435
GPS BI-03
1 11054U 78093A 95269.89969333 .00000037 00000-0 10000-3 0 3537
2 11054 62.9872 267.9515 0045864 180.5640 179.4351 1.93505333123540
Nimbus 7
1 11080U 78098A 95270.56660577 -.00000089 00000-0 -42590-4 0 5323
2 11080 98.9850 140.0886 0008488 321.3351 38.7198 13.83703438854715
GPS BI-04
1 11141U 78112A 95267.34630592 -.00000031 00000-0 10000-3 0 66
2 11141 64.8790 33.7616 0048973 27.6042 332.6748 1.92894979 12736
GPS BI-05
1 11690U 80011A 95271.09753605 -.00000020 00000-0 10000-3 0 9410
2 11690 65.2278 33.2332 0149997 192.5023 167.1625 2.00568131128922
GPS BI-06
1 11783U 80032A 95268.94076931 .00000034 00000-0 10000-3 0 1029
2 11783 62.4284 262.5753 0220212 29.4746 331.7609 2.03456710113438
GOES 5
1 12472U 81049A 95267.34081297 -.00000266 00000-0 10000-3 0 8821
2 12472 7.7097 52.9818 0007279 43.7466 316.4327 1.00239187 10420
Cosmos 1383
1 13301U 82066A 95268.69423548 .00000030 00000-0 17663-4 0 4367
2 13301 82.9329 328.4621 0025880 251.6120 108.2218 13.68068057661075
LandSat 4
1 13367U 82072A 95271.17231989 .00000005 00000-0 11013-4 0 7750
2 13367 98.1192 324.4928 0005736 236.8610 123.2039 14.57159053702213
DMSP B5D2-1
1 13736U 82118A 95272.04387361 .00000050 00000-0 39371-4 0 8583
2 13736 98.6291 99.6143 0009610 73.1213 287.1016 14.25754620663716
IRAS
1 13777U 83004A 95271.50383977 -.00000195 00000-0 -10456-3 0 937
2 13777 98.9630 97.5886 0013575 104.5582 255.7104 13.99230084316633
Cosmos 1447
1 13916U 83021A 95270.30680753 .00000018 00000-0 28772-5 0 5344
2 13916 82.9439 26.2085 0037676 165.2798 194.9463 13.74330237627494
TDRS 1
1 13969U 83026B 95271.24340396 .00000083 00000-0 00000+0 0 4683
2 13969 8.5497 46.2799 0002473 136.0636 132.9932 1.00273377 18740
GOES 6
1 14050U 83041A 95271.23962225 -.00000167 00000-0 10000-3 0 4478
2 14050 6.5351 56.2031 0003251 28.5204 271.8507 1.00324861103550
OSCAR 10
1 14129U 83058B 95271.19932874 .00000110 00000-0 10000-3 0 3752
```

```
2 14129 26.4600 246.2066 5983806 313.5063 10.0386 2.05879642 64453
LandSat 5
1 14780U 84021A 95269.55967294 .00000008 00000-0 11514-4 0 3519
2 14780 98.1023 323.2746 0003220 254.1409 105.9431 14.57166365615395
UoSat 2
1 14781U 84021B 95269.51520682 .00000106 00000-0 25713-4 0 8297
2 14781 97.7861 267.3184 0010754 213.9603 146.0914 14.69378901618786
GPS BI-09
1 15039U 84059A 95268.52419256 -.00000036 00000-0 10000-3 0 3660
2 15039 64.5566 28.0968 0082099 18.5307 341.7718 1.92302280 82320
Cosmos 1574
1 15055U 84062A 95269.98575831 .00000076 00000-0 65111-4 0 7352
2 15055 82.9543 80.7979 0028077 0.2494 359.8669 13.73626996564713
GPS BI-10
1 15271U 84097A 95270.75681689 .00000038 00000-0 10000-3 0 599
2 15271 62.1163 262.9038 0156917 354.5602 5.2607 2.00603767 79985
Cosmos 1602
1 15331U 84105A 95268.71938296 .00000220 00000-0 22948-4 0 4208
2 15331 82.5337 1.7236 0021831 102.6371 257.7293 14.84666612593586
NOAA 9
1 15427U 84123A 95271.85443154 .00000022 00000-0 35726-4 0 4160
2 15427 98.9878 331.1474 0015143 339.8549 20.2024 14.13732621556565
GPS BI-11
1 16129U 85093A 95269.19925990 -.00000028 00000-0 10000-3 0 6799
2 16129 65.2253 31.3581 0155712 86.3977 275.3790 1.89368087 16905
Mir
1 16609U 86017A 95272.22672283 .00004023 00000-0 60210-4 0 2514
2 16609 51.6488 356.7311 0002715 131.8922 228.2292 15.57536594549143
SPOT 1
1 16613U 86019A 95270.70008544 .00000090 00000-0 62356-4 0 8558
2 16613 98.6419 339.7259 0001195 15.9389 344.1825 14.20070590182911
Cosmos 1766
1 16881U 86055A 95269.48661400 .00000163 00000-0 16717-4 0 3369
2 16881 82.5166 58.8184 0020186 125.1207 235.1900 14.83657949494590
EGP
1 16908U 86061A 95270.82468546 -.00000083 00000-0 10000-3 0 314
2 16908 50.0075 86.6899 0012265 60.8366 299.3695 12.44413071 83612
NOAA 10
1 16969U 86073A 95271.94048151 .00000040 00000-0 35414-4 0 3293
2 16969 98.5153 271.7113 0014227 42.2222 318.0050 14.24956217469250
MOS-1
1 17527U 87018A 95271.21176751 .00000092 00000-0 10000-3 0 2493
2 17527 98.9781 333.6875 0001982 111.5592 248.5778 13.95259578438195
GOES 7
1 17561U 87022A 95271.28892801 .00000075 00000-0 10000-3 0 5601
2 17561 2.5377 71.3706 0001915 319.7590 304.0658 1.00275323 14666
Kvant-1
1 17845U 87030A 95271.84173779 .00018124 00000-0 24738-3 0 3934
2 17845 51.6476 358.6652 0002683 113.7444 246.2818 15.57544693483223
DMSP B5D2-3
```

```
1 18123U 87053A 95271.76619990 .00000048 00000-0 46934-4 0 1555
2 18123 98.7772 101.2952 0013366 287.0319 72.9406 14.15419139427375
RS-10/11
1 18129U 87054A 95271.65469237 .00000035 00000-0 21696-4 0 1191
2 18129 82.9272 342.5904 0011491 156.1031 204.0662 13.72356579414167
Meteor 2-16
1 18312U 87068A 95268.86652630 .00000041 00000-0 23947-4 0 4270
2 18312 82.5586 202.5132 0010441 244.9187 115.0882 13.84062880409470
Meteor 2-17
1 18820U 88005A 95271.02995671 .00000039 00000-0 21706-4 0 7342
2 18820 82.5383 256.4299 0015893 312.0105 47.9697 13.84743780387101
DMSP B5D2-4
1 18822U 88006A 95271.10297833 .00000004 00000-0 20118-4 0 788
2 18822 98.3985 110.5296 0007109 55.0865 305.0981 14.23165466397154
Glonass 34
1 19163U 88043A 95270.80231336 .00000054 00000-0 10000-3 0 198
2 19163 65.1662 94.7106 0007807 151.2028 208.8883 2.13102543 56623
Glonass 36
1 19165U 88043C 95270.85891078 .00000054 00000-0 10000-3 0 4284
2 19165 65.1576 94.6748 0000397 254.1109 105.9341 2.13102133 57240
METEOSAT 3
1 19215U 88051A 95271.21875765 -.00000282 00000-0 10000-3 0 1848
2 19215 2.7159 69.2316 0000557 157.6604 148.9706 1.00280531 14603
AO-13
1 19216U 88051B 95269.10277333 -.00000021 00000-0 33589-4 0 940
2 19216 57.4504 162.4183 7329760 19.7069 358.0549 2.09722128 24280
OKEAN 1
1 19274U 88056A 95270.20402660 .00000200 00000-0 21994-4 0 366
2 19274 82.5158 158.6789 0018135 276.5909 83.3241 14.82387024390264
Meteor 3-2
1 19336U 88064A 95268.26279590 .00000051 00000-0 10000-3 0 4252
2 19336 82.5417 354.5953 0016431 175.9899 184.1355 13.16974873344476
Glonass 39
1 19503U 88085C 95267.13354707 -.00000023 00000-0 10000-3 0 3204
2 19503 65.6687 333.7227 0007227 166.6303 193.4645 2.13101914 54652
NOAA 11
1 19531U 88089A 95271.96607818 .00000031 00000-0 41736-4 0 2252
2 19531 99.1965 278.1221 0010980 258.9131 101.0805 14.13065079361416
TDRS 2
1 19548U 88091B 95272.00572117 -.00000204 00000-0 00000+0 0 1472
2 19548 1.9461 72.9811 0007761 138.9878 242.5949 1.00278262 12908
Glonass 40
1 19749U 89001A 95267.64104009 .00000069 00000-0 10000-3 0 5334
2 19749 65.1122 94.3652 0005574 256.1383 103.8704 2.13101523 52173
Glonass 41
1 19750U 89001B 95270.04277098 .00000056 00000-0 10000-3 0 4428
2 19750 65.1279 94.3561 0004457 234.1430 125.8886 2.13101844 52244
GPS BII-01
1 19802U 89013A 95269.89899744 .00000045 00000-0 10000-3 0 1119
2 19802 55.2458 121.1518 0028952 158.0997 202.1392 2.00556738 48417
```

```
Akebono
1 19822U 89016A 95272.19013830 .00008569 00000-0 42687-3 0 5743
2 19822 75.1060 275.3204 3772283 303.2253 26.1293 7.87746905146003
Meteor 2-18
1 19851U 89018A 95268.67361693 .00000045 00000-0 26765-4 0 4254
2 19851 82.5225 132.7996 0014944 6.5481 353.5865 13.84397129332092
MOP-1
1 19876U 89020B 95271.01999421 .00000056 00000-0 10000-3 0 1413
2 19876 1.4353 72.2624 0002699 128.6959 182.7535 1.00276770 4047
TDRS 3
1 19883U 89021B 95270.33289501 -.00000276 00000-0 00000+0 0 1248
2 19883 0.0627 62.7002 0004894 151.7747 230.0515 1.00269572196475
GPS BII-02
1 20061U 89044A 95270.23786028 -.00000012 00000-0 10000-3 0 1173
2 20061 54.3731 297.2764 0150163 216.2246 142.7952 2.00563098 46160
Nadezhda 1
1 20103U 89050A 95271.81044224 .00000076 00000-0 64447-4 0 5300
2 20103 82.9605 302.1763 0039183 64.9981 295.5241 13.73858277312657
GPS BII-03
1 20185U 89064A 95268.57946464 .00000052 00000-0 10000-3 0 1407
2 20185 55.0188 121.7375 0014039 313.9115 46.0747 2.00567055 44704
GMS 4
1 20217U 89070A 95270.76493677 -.00000375 00000-0 10000-3 0 2463
2 20217 1.2426 75.7006 0000552 324.1742 1.5964 1.00262312 22779
INTERCOSMOS 24
1 20261U 89080A 95270.82321598 .00000090 00000-0 27752-4 0 4426
2 20261 82.5918 78.9456 1241085 280.5378 65.8543 12.47276597273079
GPS BII-04
1 20302U 89085A 95271.11109589 .00000021 00000-0 10000-3 0 1275
2 20302 53.3183 237.2356 0013202 139.8292 220.2964 2.00558951 43559
Meteor 3-3
1 20305U 89086A 95271.57680623 .00000044 00000-0 10000-3 0 4023
2 20305 82.5572 306.1675 0006123 213.4008 146.6780 13.04427800283968
COBE
1 20322U 89089A 95268.03118376 .00000269 00000-0 19981-3 0 1532
2 20322 98.9593 282.5756 0009675 56.0238 304.1842 14.03456125299597
Kvant-2
1 20335U 89093A 95271.84173779 .00018124 00000-0 24738-3 0 3933
2 20335 51.6476 358.6652 0002683 113.7444 246.2818 15.57544693332235
GPS BII-05
1 20361U 89097A 95271.12208074 .00000001 00000-0 10000-3 0 9752
2 20361 55.8314 63.7026 0083895 125.4706 235.3293 2.00563069 33039
COSMOS 2054 (Altair-1)
1 20391U 89101A 95271.17002295 -.00000139 00000-0 10000-3 0 2265
2 20391 3.3319 65.2164 0003878 89.4960 257.2271 1.00273623 21353
SPOT 2
1 20436U 90005A 95270.54713438 .00000169 00000-0 10000-3 0 9795
2 20436 98.7287 343.2874 0000981 61.4826 298.6447 14.20028762294427
UO-14
1 20437U 90005B 95270.24639598 .00000011 00000-0 21346-4 0 1285
```

```
2 20437 98.5640 352.9566 0010295 263.8005 96.1992 14.29897561296338
UO-15
1 20438U 90005C 95268.23321238 -.00000008 00000-0 14083-4 0 9242
2 20438 98.5605 349.3475 0009366 272.9130 87.0977 14.29213987295937
PACSAT
1 20439U 90005D 95271.75369288 .00000002 00000-0 17726-4 0 9274
2 20439 98.5740 356.2478 0010465 256.7937 103.2077 14.29951788296565
DO-17
1 20440U 90005E 95271.17223361 .00000008 00000-0 20055-4 0 9278
2 20440 98.5771 356.1845 0010647 259.2838 100.7147 14.30093174296500
WO-18
1 20441U 90005F 95269.19750678 .00000012 00000-0 21402-4 0 9311
2 20441 98.5765 354.2020 0011215 265.8076 94.1825 14.30064023296226
LO-19
1 20442U 90005G 95270.75220146 -.00000015 00000-0 10981-4 0 9266
2 20442 98.5772 356.1272 0011590 258.8963 101.0915 14.30167846296469
GPS BII-06
1 20452U 90008A 95269.02353353 .00000021 00000-0 10000-3 0 768
2 20452 54.0434 177.5472 0059488 85.2420 275.4819 2.00553050 41497
MOS-1B
1 20478U 90013A 95269.69395335 .00000090 00000-0 10000-3 0 8406
2 20478 99.1411 337.1636 0000588 163.1867 196.9314 13.94865701207680
DEBUT
1 20479U 90013B 95268.73826324 -.00000114 00000-0 -18141-3 0 9266
2 20479 99.0681 338.7838 0541240 5.3487 355.3090 12.83332254263852
FO-20
1 20480U 90013C 95269.68821038 -.00000026 00000-0 16245-4 0 8231
2 20480 99.0683 339.3953 0541074 3.6527 356.8291 12.83230782263966
MOS-1B R/B
1 20491U 90013D 95271.84213132 -.00000546 00000-0 -96462-3 0 1749
2 20491 99.0597 38.0924 0469809 188.6555 170.6224 13.02980702267691
LACE
1 20496U 90015A 95269.18765793 .00001244 00000-0 44369-4 0 5798
2 20496 43.1022 275.2836 0008836 142.8216 217.3253 15.34852268313090
Nadezhda 2
1 20508U 90017A 95271.94721974 .00000021 00000-0 64146-5 0 5297
2 20508 82.9494 76.6276 0045331 17.6308 342.6406 13.73498334279893
OKEAN 2
1 20510U 90018A 95268.55443234 .00000211 00000-0 25664-4 0 4442
2 20510 82.5242 112.6096 0020749 103.6683 256.6870 14.78525100300423
GPS BII-07
1 20533U 90025A 95270.92819669 -.00000013 00000-0 10000-3 0 1016
2 20533 54.7346 297.9214 0046484 78.2051 282.3591 2.00570360 40307
PegSat
1 20546U 90028A 95272.23641099 .00008493 00000-0 17075-3 0 8463
2 20546 94.1212 203.2638 0062018 298.4828 61.0208 15.44564834304536
HST
1 20580U 90037B 95270.04814070 .00000485 00000-0 32878-4 0 7213
2 20580 28.4691 116.2938 0006310 292.0480 67.9432 14.90935171 99124
MACSAT 2
```

```
1 20608U 90043B 95268.21787123 .00000084 00000-0 12082-4 0 1275
2 20608 89.9332 175.6527 0103343 266.4084 92.5310 14.64862592287351
Glonass 44
1 20619U 90045A 95268.47873443 -.00000021 00000-0 10000-3 0 2302
2 20619 65.2625 333.0438 0025776 208.7178 151.2119 2.13102441 41643
Glonass 45
1 20620U 90045B 95269.06673713 -.00000022 00000-0 10000-3 0 2321
2 20620 65.2836 333.0151 0007000 45.6629 314.4732 2.13102530 41698
Glonass 46
1 20621U 90045C 95269.13358719 -.00000022 00000-0 10000-3 0 8254
2 20621 65.2834 333.0702 0011348 188.9726 171.0861 2.13101725 41693
Kristall
1 20635U 90048A 95271.84173779 .00018124 00000-0 24738-3 0 1857
2 20635 51.6476 358.6652 0002683 113.7444 246.2818 15.57544693303067
ROSAT
1 20638U 90049A 95269.48350735 -.00000081 00000-0 13669-4 0 4946
2 20638 52.9916 50.9967 0013571 52.2848 307.9376 15.07248699292396
Meteor 2-19
1 20670U 90057A 95269.33235457 -.00000111 00000-0 -11274-3 0 9251
2 20670 82.5480 198.2221 0014464 283.1661 76.7884 13.84155740265107
CRRES
1 20712U 90065A 95270.36650915 .00000834 00000-0 83045-3 0 1619
2 20712 18.1352 357.7046 7194570 180.2425 179.0043 2.35560587 36892
GPS BII-08
1 20724U 90068A 95270.75117175 .00000037 00000-0 10000-3 0 9450
2 20724 54.8745 119.2363 0121304 175.1622 185.0577 2.00565824 36161
Feng Yun1-2
1 20788U 90081A 95271.92222645 -.00000027 00000-0 10000-4 0 5608
2 20788 98.8121 281.4500 0015704 145.0547 215.1507 14.01298585259368
Meteor 2-20
1 20826U 90086A 95272.13356811 .00000077 00000-0 56055-4 0 9375
2 20826 82.5280 132.8651 0013018 167.6889 192.4589 13.83616195252605
GPS BII-09
1 20830U 90088A 95270.29995102 -.00000002 00000-0 10000-3 0 9568
2 20830 55.7961 61.7030 0066434 100.0939 260.6569 2.00557080 36796
GPS BIIA-10
1 20959U 90103A 95271.70346777 .00000031 00000-0 10000-3 0 9205
2 20959 55.0518 121.2029 0099846 230.2068 128.9706 2.00570831 35417
DMSP B5D2-5
1 20978U 90105A 95271.91139213 .00000104 00000-0 53099-4 0 3511
2 20978 98.6284 339.7454 0078359 223.6348 135.8624 14.32581199252168
Glonass 47
1 21006U 90110A 95268.68939674 .00000063 00000-0 10000-3 0 7993
2 21006 65.0895 93.6669 0057767 188.2732 171.7037 2.13102808 37355
Glonass 48
1 21007U 90110B 95270.75568732 .00000054 00000-0 10000-3 0 9237
2 21007 65.1224 93.6737 0035998 178.5571 181.5018 2.13101200 37380
Glonass 49
1 21008U 90110C 95270.17823587 .00000055 00000-0 00000+0 0 1290
2 21008 65.0798 93.6488 0007864 268.0145 91.9430 2.13099167 37360
```

```
AO-21
1 21087U 91006A 95269.70349009 .00000094 00000-0 82657-4 0 6359
2 21087 82.9425 157.4608 0033496 223.8896 135.9597 13.74559293233672
RS-12/13
1 21089U 91007A 95271.82402582 .00000024 00000-0 10177-4 0 8335
2 21089 82.9206 23.9082 0027474 244.6769 115.1539 13.74060228233001
MOP-2
1 21140U 91015B 95272.04311343 -.00000024 00000-0 10000-3 0 1014
2 21140 0.0695 320.0038 0001404 242.3666 180.0998 1.00269371 18984
Nadezhda 3
1 21152U 91019A 95271.84252994 .00000029 00000-0 14626-4 0 2209
2 21152 82.9307 340.1088 0041941 354.4877 5.5821 13.73522963227736
Glonass 50
1 21216U 91025A 95270.11601918 -.00000025 00000-0 10000-3 0 4413
2 21216 65.0139 332.6196 0007626 199.5666 160.4818 2.13102785 34892
Glonass 51
1 21217U 91025B 95269.24680444 -.00000023 00000-0 10000-3 0 8486
2 21217 64.9643 332.6465 0006942 229.6658 130.3202 2.13101606 34867
Glonass 52
1 21218U 91025C 95269.35831987 -.00000023 00000-0 10000-3 0 3226
2 21218 65.0015 332.6221 0007939 306.4473 53.5861 2.13102755 34873
GRO
1 21225U 91027B 95270.21388652 .00002647 00000-0 52305-4 0 2989
2 21225 28.4608 224.6069 0003513 106.7463 253.3521 15.43042167129107
Meteor 3-4
1 21232U 91030A 95271.86832714 .00000051 00000-0 10000-3 0 8366
2 21232 82.5397 198.2329 0014651 91.7364 268.5424 13.16469041213021
NOAA 12
1 21263U 91032A 95271.93373119 .00000091 00000-0 59855-4 0 6510
2 21263 98.5824 293.3106 0012651 321.8294 38.1987 14.22561119227177
OKEAN 3
1 21397U 91039A 95270.34590847 .00000177 00000-0 22172-4 0 1352
2 21397 82.5225 24.3332 0021804 171.2982 188.8602 14.76404226232433
GPS BIIA-11
1 21552U 91047A 95269.97811310 -.00000005 00000-0 10000-6 0 8966
2 21552 56.0629 59.4327 0065314 242.7465 116.5852 2.00559147 30974
ERS-1
1 21574U 91050A 95270.18678220 .00000035 00000-0 29305-4 0 2063
2 21574 98.5498 343.0474 0001310 80.5145 279.6187 14.32247125219651
UO-22
1 21575U 91050B 95269.73803904 .00000026 00000-0 23252-4 0 6331
2 21575 98.3866 338.5047 0008129 344.2684 15.8250 14.36990994220080
ORBCOMM-X
1 21576U 91050C 95270.21584298 .00000015 00000-0 19658-4 0 7287
2 21576 98.3846 337.2630 0004612 356.8127 3.3026 14.36400525220053
TUBSAT-A
1 21577U 91050D 95271.18026684 .00000005 00000-0 16324-4 0 6279
2 21577 98.3843 338.7477 0006969 345.3175 14.7813 14.36494262220229
SARA
1 21578U 91050E 95269.20605537 .00000184 00000-0 73473-4 0 8278
```

```
2 21578 98.4071 342.9043 0004943 349.3669 10.7409 14.39061962220229
TDRS 4
1 21639U 91054B 95269.16751822 .00000076 00000-0 00000+0 0 9434
2 21639 0.0286 289.4342 0002557 238.0777 83.0606 1.00276934109234
Meteor 3-5
1 21655U 91056A 95272.15543986 .00000051 00000-0 10000-3 0 8344
2 21655 82.5556 145.5407 0014512 101.7979 258.4775 13.16841632198185
UARS
1 21701U 91063B 95269.88109394 .00000010 00000-0 21938-4 0 7056
2 21701 56.9833 89.1352 0005913 103.2256 256.9437 14.96429126220792
DMSP B5D2-6
1 21798U 91082A 95271.78352432 .00000066 00000-0 58806-4 0 34
2 21798 98.9607 283.7623 0011874 253.0816 106.9053 14.13918983197845
Glonass 53
1 21853U 92005A 95270.97787651 .00000053 00000-0 10000-3 0 418
2 21853 65.0328 93.2730 0007245 197.5301 162.4910 2.13102348 28516
Glonass 54
1 21854U 92005B 95270.32844918 .00000054 00000-0 10000-3 0 1926
2 21854 65.0365 93.2982 0015821 22.5459 337.5662 2.13103816 28483
Glonass 55
1 21855U 92005C 95270.39323975 .00000054 00000-0 00000+0 0 1801
2 21855 65.0423 93.2979 0007537 192.3831 167.6480 2.13102403 28470
JERS-1
1 21867U 92007A 95271.13383893 .00000793 00000-0 70945-4 0 6775
2 21867 97.7068 346.8209 0000799 66.3714 293.7592 14.98657186198467
GPS BIIA-12
1 21890U 92009A 95271.93514032 .00000024 00000-0 10000-3 0 7023
2 21890 53.8962 237.4512 0059265 186.8410 173.0707 2.00569411 26386
GPS BIIA-13
1 21930U 92019A 95266.15862335 -.00000070 00000-0 10000-3 0 6862
2 21930 55.7186 359.3511 0037455 178.3100 181.7769 2.00566430 25192
EUVE
1 21987U 92031A 95271.46049799 .00001296 00000-0 50073-4 0 4862
2 21987 28.4320 149.0318 0009881 59.7631 300.3938 15.19436984183672
SAMPEX
1 22012U 92038A 95269.42122851 .00000391 00000-0 32122-4 0 6629
2 22012 81.6695 38.8276 0117599 317.6519 41.5659 14.91442583175769
GPS BIIA-14
1 22014U 92039A 95270.68654361 .00000020 00000-0 00000+0 0 5902
2 22014 54.8437 179.0945 0090818 318.5702 40.7944 2.00567368 17125
Glonass 56
1 22056U 92047A 95271.23106656 -.00000031 00000-0 00000+0 0 940
2 22056 64.8518 332.6795 0006097 260.8367 99.1691 2.13103481 24585
Glonass 57
1 22057U 92047B 95269.18031226 -.00000023 00000-0 00000+0 0 864
2 22057 64.8580 332.7756 0007205 311.1245 48.8921 2.13102809 24513
Glonass 58
1 22058U 92047C 95270.05878931 -.00000026 00000-0 10000-3 0 481
2 22058 64.8513 332.7429 0008807 265.8896 94.0876 2.13103047 24587
TOPEX
```

```
1 22076U 92052A 95270.47998934 -.00000038 00000-0 10000-3 0 9098
2 22076 66.0346 40.3942 0007826 262.1345 97.8779 12.80930871146346
KO-23
1 22077U 92052B 95271.76611560 -.00000037 00000-0 10000-3 0 5241
2 22077 66.0793 18.8976 0001333 154.8672 205.2410 12.86292545147058
S80/T
1 22078U 92052C 95269.80531481 -.00000037 00000-0 10000-3 0 5214
2 22078 66.0754 21.7851 0002021 107.3218 252.8021 12.86576112146886
GPS BIIA-15
1 22108U 92058A 95271.14500682 .00000023 00000-0 10000-3 0 6308
2 22108 54.1162 238.2866 0115560 154.5290 206.0242 2.00551829 22319
FREJA
1 22161U 92064A 95271.81395722 -.00000002 00000-0 42421-4 0 5495
2 22161 62.9882 186.2091 0819433 355.7319 3.6957 13.21850734143740
LAGEOS II
1 22195U 92070B 95269.14198334 -.00000009 00000-0 10000-3 0 4349
2 22195 52.6463 159.1751 0138055 320.9052 38.1602 6.47293879 69111
GPS BIIA-16
1 22231U 92079A 95270.83139480 .00000019 00000-0 10000-3 0 6010
2 22231 54.6512 180.2348 0034729 284.5237 75.1327 2.00560817 20889
GPS BIIA-17
1 22275U 92089A 95269.98720002 .00000022 00000-0 10000-3 0 6237
2 22275 54.6370 177.8033 0050021 37.0287 323.2349 2.00568078 20272
TDRS 5
1 22314U 93003B 95272.22659286 -.00000292 00000-0 10000-3 0 5592
2 22314 2.0814 71.0274 0002470 172.7687 159.6206 1.00277351 9959
GPS BIIA-18
1 22446U 93007A 95271.05054974 -.00000014 00000-0 10000-3 0 6138
2 22446 54.4035 298.1274 0083828 351.4602 8.4523 2.00573181 19283
Glonass 59
1 22512U 93010A 95264.40985380 .00000073 00000-0 10000-3 0 7338
2 22512 65.0441 93.3600 0008652 180.6555 179.4192 2.13102063 19940
Glonass 60
1 22513U 93010B 95268.10293705 .00000065 00000-0 00000+0 0 8116
2 22513 65.0467 93.2397 0007395 183.6915 176.3637 2.13102656 20217
Glonass 61
1 22514U 93010C 95271.68121299 .00000052 00000-0 00000+0 0 8062
2 22514 65.0723 93.1018 0011733 181.0070 179.0307 2.13102242 20290
ASTRO-D
1 22521U 93011A 95270.44068337 .00001001 00000-0 64870-4 0 4383
2 22521 31.1052 306.2564 0056512 71.8113 288.8691 15.02452855142761
UFO F1
1 22563U 93015A 95271.12077684 -.00000222 00000-0 00000+0 0 4536
2 22563 25.8075 292.7195 0009378 255.9236 205.1472 0.99254593 13484
GPS BIIA-19
1 22581U 93017A 95270.19542385 -.00000061 00000-0 10000-3 0 4647
2 22581 55.2027 358.6899 0057105 35.9437 324.4881 2.00570751 18329
ARSENE
1 22654U 93031B 95267.54869578 -.00000089 00000-0 10000-3 0 3318
2 22654 2.7533 81.0553 2887502 220.2252 115.0726 1.42203335 7800
```

```
GPS BIIA-20
1 22657U 93032A 95270.33025066 -.00000062 00000-0 10000-3 0 5255
2 22657 55.1565 358.4577 0072918 216.4243 143.1834 2.00560358 13657
RADCAL
1 22698U 93041A 95269.53457179 .00000054 00000-0 17481-4 0 4333
2 22698 89.5356 285.2365 0093266 107.3554 253.7869 14.21353373116838
GPS BIIA-21
1 22700U 93042A 95269.79690584 .00000018 00000-0 10000-3 0 4558
2 22700 54.2888 239.1411 0041691 345.9642 13.8604 2.00567588 16441
NOAA 13
1 22739U 93050A 95270.90071057 .00000081 00000-0 70151-4 0 8976
2 22739 99.0026 219.9080 0009141 243.8768 116.1459 14.10943606109925
GPS BIIA-22
1 22779U 93054A 95270.88175625 -.00000014 00000-0 10000-3 0 5168
2 22779 54.5148 298.1215 0020096 251.6745 108.1615 2.00550550 15225
Meteor 2-21
1 22782U 93055A 95270.86745005 .00000041 00000-0 24326-4 0 4307
2 22782 82.5520 195.8150 0023167 0.2665 359.8500 13.83038721104733
UFO F2
1 22787U 93056A 95272.11199074 -.00000090 00000-0 10000-3 0 5378
2 22787 4.4041 325.3041 0004078 229.7913 285.2467 1.00279270 6201
SPOT 3
1 22823U 93061A 95268.75599049 -.00000044 00000-0 00000+0 0 4740
2 22823 98.7320 341.5702 0001295 98.5299 261.6025 14.20024865103568
STELLA
1 22824U 93061B 95269.64570512 -.00000046 00000-0 -11061-5 0 4180
2 22824 98.6091 344.2090 0005817 294.7125 65.3451 14.27102212104209
AO-27
1 22825U 93061C 95270.70331612 -.00000014 00000-0 12240-4 0 4213
2 22825 98.6095 345.6380 0008058 287.7100 72.3193 14.27672708104399
IO-26
1 22826U 93061D 95271.21012137 -.00000017 00000-0 10899-4 0 4209
2 22826 98.6111 346.2524 0008782 287.9734 72.0493 14.27780824104473
HEATHSAT
1 22827U 93061E 95270.24099432 .00000013 00000-0 22796-4 0 4816
2 22827 98.6088 345.2262 0008653 277.0804 82.9390 14.27906699104342
ITAMSAT
1 22828U 93061F 95270.20190984 -.00000008 00000-0 14325-4 0 3988
2 22828 98.6071 345.3013 0009503 273.3565 86.6530 14.28112493 72431
PO-28
1 22829U 93061G 95269.72454245 .00000006 00000-0 19950-4 0 4120
2 22829 98.6068 344.8705 0009504 276.5189 83.4905 14.28092796104281
KO-25
1 22830U 93061H 95270.20523862 -.00000033 00000-0 39612-5 0 4319
2 22830 98.5068 337.3808 0010652 246.7792 113.2266 14.28096667104359
GPS BIIA-23
1 22877U 93068A 95270.93280248 -.00000005 00000-0 10000-3 0 3175
2 22877 55.5204 59.6809 0032333 296.5229 63.1498 2.00572159 14114
METEOSAT 6
1 22912U 93073B 95272.11001736 -.00000101 00000-0 10000-3 0 3667
```

```
2 22912 0.6157 278.5805 0001508 302.2453 175.8811 1.00273328 5232
HST Array
1 22920U 90037C 95271.77407424 .00006221 00000-0 45090-3 0 3731
2 22920 28.4646 54.6857 0003381 187.4084 172.6494 15.01992519 99899
Meteor 3-6
1 22969U 94003A 95270.55121157 .00000051 00000-0 10000-3 0 1996
2 22969 82.5550 86.5123 0014668 173.1215 187.0099 13.16731862 80353
TUBSAT-B
1 22970U 94003B 95268.53038198 .00000051 00000-0 10000-3 0 1906
2 22970 82.5564 87.8690 0015526 176.3321 183.7919 13.16826361 80094
GPS BIIA-24
1 23027U 94016A 95270.51605796 -.00000062 00000-0 10000-3 0 2611
2 23027 55.0821 0.5456 0065292 199.6746 160.1209 2.00562758 11414
Glonass 62
1 23043U 94021A 95270.35158661 -.00000027 00000-0 00000+0 0 2628
2 23043 64.7378 333.1085 0006921 194.7314 165.3205 2.13103223 11381
Glonass 63
1 23044U 94021B 95272.11126205 -.00000036 00000-0 00000+0 0 2321
2 23044 64.7268 333.0464 0031116 204.7075 155.2154 2.13103058 11422
Glonass 64
1 23045U 94021C 95268.53360853 -.00000023 00000-0 00000+0 0 2407
2 23045 64.7239 333.1802 0009453 32.0293 328.1035 2.13102634 11340
GOES 8
1 23051U 94022A 95270.70746828 -.00000265 00000-0 10000-3 0 3883
2 23051 0.2333 83.9317 0003694 109.9054 352.5354 1.00276635 12724
MSTI 2
1 23101U 94028A 95270.06459041 .00005344 00000-0 92461-4 0 2379
2 23101 97.0923 101.8745 0011192 216.8062 143.2422 15.51302814 78311
STRV-1A
1 23125U 94034B 95266.32900095 .00005374 00000-0 12484-2 0 1991
2 23125 7.5117 350.8273 7267154 200.0278 100.1562 2.30537614 9910
STRV-1B
1 23126U 94034C 95267.95687105 .00006154 00000-0 12483-2 0 1756
2 23126 7.5401 350.1509 7271674 201.2101 97.3713 2.30215900 9996
Nadezhda 4
1 23179U 94041A 95269.87625192 .00000059 00000-0 44573-4 0 1332
2 23179 82.9420 72.4948 0037015 139.6329 220.7590 13.75672121 60457
Glonass 65
1 23203U 94050A 95271.95601757 .00000034 00000-0 00000+0 0 1956
2 23203 64.7864 212.9252 0006894 155.8696 204.1634 2.13102039 8815
Glonass 66
1 23204U 94050B 95271.72073800 .00000035 00000-0 00000+0 0 2046
2 23204 64.7729 212.9699 0014954 342.6452 17.3051 2.13102380 8808
Glonass 67
1 23205U 94050C 95270.19579554 .00000033 00000-0 00000+0 0 1894
2 23205 64.7869 213.0019 0002171 277.6997 82.2692 2.13102610 8775
DMSP B5D2-7
1 23233U 94057A 95271.87871859 .00000063 00000-0 57582-4 0 5014
2 23233 98.8703 328.9746 0011877 200.8909 159.1781 14.12639828 55793
OKEAN 1-7
```

```
1 23317U 94066A 95270.10048373 .00000203 00000-0 27428-4 0 971
2 23317 82.5439 301.9612 0024096 216.9697 142.9841 14.73961544 51630
ELEKTRO
1 23327U 94069A 95269.77358068 -.00000110 00000-0 10000-3 0 909
2 23327 0.5764 260.5717 0005262 207.5771 251.4733 1.00272342 3349
RESURS 1-3
1 23342U 94074A 95271.16587251 .00000111 00000-0 18746-4 0 3466
2 23342 098.0054 328.9300 0000819 096.1429 264.0444 14.69769295048178
Glonass 68
1 23396U 94076A 95268.63148720 .00000062 00000-0 00000+0 0 1483
2 23396 64.9767 93.2947 0030283 187.5211 172.4871 2.13102734 6581
Glonass 69
1 23397U 94076B 95271.15334122 .00000052 00000-0 00000+0 0 1555
2 23397 64.9705 93.2190 0011204 324.8782 35.0968 2.13102325 6638
Glonass 70
1 23398U 94076C 95270.56757219 .00000053 00000-0 00000+0 0 1636
2 23398 64.9554 93.2166 0001621 271.0666 88.9606 2.13102081 6635
LUCH (Altair-2)
1 23426U 94082A 95270.62155931 -.00000286 00000-0 00000+0 0 1814
2 23426 2.0045 272.1048 0000249 250.2552 162.2443 1.00279905 2861
RS-15
1 23439U 94085A 95268.99241343 -.00000039 00000-0 10000-3 0 800
2 23439 64.8150 91.9574 0166555 244.9326 113.4234 11.27524716 30883
NOAA 14
1 23455U 94089A 95271.87684055 .00000109 00000-0 84569-4 0 3345
2 23455 98.9112 213.6127 0008511 266.6290 93.3909 14.11536199 38441
ODERACS II A
1 23471U 95004C 95270.15904293 .00034398 11526-4 13094-3 0 1966
2 23471 51.6466 322.9595 0010902 125.3214 234.8736 15.88689997 37353
ODERACS II B
1 23472U 95004D 95272.07928241 .04529845 12429-4 27331-3 0 2939
2 23472 51.6216 295.4398 0003647 258.4623 106.9242 16.41476908 37887
Glonass 71
1 23511U 95009A 95270.99710905 -.00000031 00000-0 00000+0 0 993
2 23511 64.7486 333.3503 0007823 217.5600 142.4597 2.13102945 4362
Glonass 72
1 23512U 95009B 95270.64539830 -.00000029 00000-0 00000+0 0 1079
2 23512 64.7413 333.3682 0005724 306.3565 53.6630 2.13102456 4353
Glonass 73
1 23513U 95009C 95269.06164953 -.00000024 00000-0 00000+0 0 1125
2 23513 64.7500 333.4360 0014442 203.4242 156.5858 2.13102864 4326
SFU
1 23521U 95011A 95268.96800971 .00002586 00000-0 81087-4 0 1002
2 23521 28.4561 107.5987 0019601 259.9811 99.8580 15.28876926 29374
GMS 5
1 23522U 95011B 95261.52164098 -.00000302 00000-0 10000-3 0 573
2 23522 0.7405 300.1171 0001357 239.0060 145.3267 1.00260871 1713
DMSP B5D2-8
1 23533U 95015A 95271.95983464 .00000061 00000-0 56280-4 0 2319
2 23533 98.8361 272.9153 0008252 77.0401 283.1694 14.12703539 26600
```

```
Microlab 1
1 23547U 95017C 95268.91735929 .00000144 00000-0 57878-4 0 526
2 23547 69.9815 65.6095 0013782 202.3475 157.7059 14.45412546 25339
OFEQ 3
1 23549U 95018A 95272.11256377 .00011332 00000-0 30920-3 0 1161
2 23549 143.3742 77.5815 0249063 100.9245 261.9612 15.08827983 26665
GFZ-1
1 23558U 86017JE 95271.62415168 .00003445 00000-0 47212-4 0 618
2 23558 51.6512 356.4566 0005329 321.9014 38.1644 15.60490388548983
ERS-2
1 23560U 95021A 95271.74570827 .00000034 00000-0 28835-4 0 1222
2 23560 98.5479 344.5942 0001072 66.5689 293.5607 14.32246413 23008
Spektr
1 23579U 95024A 95271.84173779 .00018124 00000-0 24738-3 0 1441
2 23579 51.6476 358.6652 0002683 113.7444 246.2818 15.57544693 20546
GOES 9
1 23581U 95025A 95271.13461924 -.00000194 00000-0 10000-3 0 635
2 23581 0.3391 269.8189 0002884 325.6873 89.4477 1.00267294 1287
Helios 1A
1 23605U 95033A 95269.34044623 .00000092 00000-0 26634-4 0 901
2 23605 98.0929 204.2130 0001617 49.9421 310.1924 14.63867304 11803
UPM SAT 1
1 23606U 95033B 95269.92920885 .00000031 00000-0 14206-4 0 678
2 23606 98.0752 205.0293 0005766 314.5014 45.5720 14.66892584 11977
CERISE
1 23607U 95033C 95271.89327896 .00000134 00000-0 32475-4 0 291
2 23607 98.0762 206.9944 0006095 307.9685 52.0966 14.67148529 12271
TDRS 6
1 23613U 95035B 95265.52408984 .00000119 00000-0 00000+0 0 557
2 23613 0.1200 89.8774 0001281 117.0698 192.9976 1.00285644 695
Glonass 74
1 23620U 95037A 95268.37682581 .00000022 00000-0 00000+0 0 508
2 23620 64.8439 212.8874 0018291 170.5190 189.5021 2.13103040 1343
Glonass 75
1 23621U 95037B 95271.36876499 .00000035 00000-0 00000+0 0 587
2 23621 64.8522 212.7777 0017822 180.2142 179.7871 2.13101268 1403
Glonass 76
1 23622U 95037C 95269.08105104 .00000027 00000-0 00000+0 0 505
2 23622 64.8449 212.8654 0036691 166.3594 193.7266 2.13102468 1359
Prognoz-M2
1 23632U 95039A 95267.85458420 -.00001343 00000-0 00000+0 0 113
2 23632 64.3430 258.1780 9194267 315.1780 330.9250 0.26355501 135
1995045B
1 23654U 95045B 95246.28682870 .15820329 12759-4 92745-4 0 192
2 23654 51.6410 261.6737 0003545 231.8539 128.2479 16.54149064 574
1995045C
1 23655U 95045C 95243.54236111 .17934734 12422-4 11810-2 0 100
2 23655 51.6305 277.1380 0001561 87.2215 277.1570 16.40807312 123
SICH-1
1 23657U 95046A 95268.80883305 .00000063 00000-0 62293-5 0 180
```

```
2 23657 82.5304 84.8155 0026770 188.8592 171.2159 14.73412989 3750
1995046C
1 23659U 95046C 95271.99464879 .00000021 00000-0 -21075-6 0 142
2 23659 82.5304 81.8703 0026638 179.3508 180.7742 14.73721815 4220
1995045E
1 23660U 95045E 95269.29606024 -.00000000 00000-0 10000-4 0 144
2 23660 47.3961 273.6040 7280272 7.1613 359.2452 2.27046060 598
1995045F
1 23661U 95045F 95267.13741587 .00000341 00000-0 29989-3 0 119
2 23661 47.4725 274.3356 7263468 6.2450 359.4032 2.26618403 549
1995045G
1 23663U 95045G 95249.20627900 -.00003572 11294-4 00000+0 0 43
2 23663 51.6035 247.4465 0162001 98.9000 278.8630 15.93516943 819
1995045H
1 23664U 95045H 95245.30021991 .00005473 10708-4 10000-4 0 45
2 23664 51.6830 269.1703 0261886 93.8534 276.1056 15.66747594 222
Soyuz TM-22
1 23665U 95047A 95271.84173779 .00018124 00000-0 24738-3 0 362
2 23665 51.6476 358.6652 0002683 113.7444 246.2818 15.57544693 3981
1995047B
1 23666U 95047B 95249.18156250 .20145336 12715-4 11758-3 0 164
2 23666 51.6206 111.2938 0007333 232.1815 128.1265 16.53993193 462
1995049A
1 23670U 95049A 95272.23205428 -.00000263 00000-0 00000+0 0 156
2 23670 0.0808 198.6094 0037179 151.9318 9.4132 1.01092814 70
1995049B
1 23671U 95049B 95269.96307195 -.00000155 00000-0 10000-4 0 52
2 23671 7.1506 177.1980 7290196 182.9557 168.0977 2.19438795 66
1995050A
1 23672U 95050A 95272.25032418 .00133574 78268-5 97762-4 0 130
2 23672 82.3241 197.9661 0001539 37.2607 322.8795 16.15660118 454
1995050B
1 23673U 95050B 95272.04140007 .15624522 -12803-5 16689-3 0 206
2 23673 82.3159 198.1915 0014895 62.0452 298.1827 16.49844063 429
1995051A
1 23674U 95051A 95272.24055473 -.00002274 71905-5 00000+0 0 13
2 23674 64.9211 109.4655 0079575 70.5278 290.7840 16.15016429 15
1995051B
1 23675U 95051B 95272.24040595 -.00002294 72535-5 00000+0 0 15
2 23675 64.8814 109.5207 0073514 69.6376 291.1574 16.17410582 12
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

2037. Re: Is AO-13 Mode-S working?

Newsgroup: rec.radio.amateur.space
Date: 1995-09-30 00:00:00 UTC
From: bob@texas.net
Message-ID: <44kjgl$gso@empire.texas.net>
Source record: 24045

In article <44cglb$vv3@newsflash.hol.gr>, Douglas Braun <dbraun@hol.gr> says:
>
>I built a DEM S-band receiver converter (w/ preamp) and a helical antenna a
>couple of weeks ago, and I eagerly pointed it at AO-13 at the appropriate time,
>and heard absolutely nothing. I'm sure that is works OK and has reasonable
>gain, since I can hear the difference between ground and sky noise, and I
>can also receive the UO-11 S-band beacon. But I don't hear even the tiniest
>peep from AO-13!

Doug;
Not to despair. First, with the attitude pointing the S-band antenna into
open space and the already QRPPP sigs, you're gonna have a tough time finding
S-band from AO-13. Also, the S-band beacon only operates in the beacon-ONLY
phases--the beacon is off when the sat is in mode S. Drove me crazy trying
to find the beacon until somebody 'splained it to me...

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

2038. Re: 2m "Turnstile" Antenna for MIR (etc.)

Newsgroup: rec.radio.amateur.space
Date: 1995-09-30 00:00:00 UTC
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Message-ID: <Pine.SOL.3.91.950930205346.19150B-100000@spacelink>
Source record: 24046

Richard: I built the turnstile type antenna pictured in the Handbook,
only mine was modified by an engineer who designed his with two
different impedence lines of coax. The whisker radials are made of
spun up copper wire (to harden it), and they are level with each other.
I have used it to work MIR packet, but haven't used it for voice
transmissions. Apparently, it balloons the radiated signal up into the
sky, with minimal lateral beaming. I found that I could copy MIR much
more readily with this antenna.
Good luck with yours. ANd yes, packing all those wires into the head of
it is a real pain! I wound up sealing mine with a glue gun.
-Dick
On 29 Sep 1995,
Richard Hebel wrote:

> I built the 2m "turnstile" antenna shown in the VHF section of the latest ARRL
> Antenna Handbook. Near as I can tell, I built it correctly! I'm curious if
> anyone else has built this, or had experience with similar antennas.
>
> Specifically, how do you tune the thing? Phasing link and all? Also, how
> critical is it for both dipoles to be in exactly the same plane? And if this
> is critical, how do you handle the connections to, and spacing between, the
> centerfed elements, which seem to create a kind of traffic "jam"?
>
> My main use for this will be for space work, especially MIR.
>
> Thanks for any help!
>
> 73 de KJ7OH "Rich" in Walla Walla, WA
>
>
>

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

2039. Any DSP-2232 users out there???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-01 00:00:00 UTC
From: willhelm@ix.netcom.com
Message-ID: <44mg5n$mao@ixnews3.ix.netcom.com>
Source record: 24047

I am contemplating the purchase of the AEA DSP-2232 multimode TNC. However, i wondered if there was any distinct advantage of the DSP circuitry over the lesser priced PK-900 which isnt DSP but is a fine controller in its own right. The 2232 is rather pricey and for the average ham (who doesnt necessarily plan to use 9600 baud and go through the birds) i think the 900 might be a better choice. the only thing i am thinking about is the DSP capability and its advantage over the analog filtering in the 900. If you have one of the 2232's please give me your opinions on its operation. I heard some scuttlebutt a couple of years ago among 2232 users that AEA had kind of put the research and development of this controller (and its new modes that were supposedly coming out) on the back burner. I assume that happened because not a great deal of these pricey units were sold. Any help on this would be appreciated also. Thanks in advance.....Bill in Las Vegas

2040. Re: Any DSP-2232 users out there???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-01 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0110951146530001@lia-a7.ip.realtime.net>
Source record: 24048

In article <44mg5n$mao@ixnews3.ix.netcom.com>, willhelm@ix.netcom.com (BILL DILLSTROM) wrote:

> I am contemplating the purchase of the AEA DSP-2232 multimode TNC.
> However, i wondered if there was any distinct advantage of the DSP
> circuitry over the lesser priced PK-900 which isnt DSP but is a fine
> controller in its own right. The 2232 is rather pricey and for the
> average ham (who doesnt necessarily plan to use 9600 baud and go
> through the birds) i think the 900 might be a better choice. the only
> thing i am thinking about is the DSP capability and its advantage over
> the analog filtering in the 900. If you have one of the 2232's please
> give me your opinions on its operation. I heard some scuttlebutt a
> couple of years ago among 2232 users that AEA had kind of put the
> research and development of this controller (and its new modes that
> were supposedly coming out) on the back burner. I assume that happened
> because not a great deal of these pricey units were sold. Any help on
> this would be appreciated also. Thanks in advance.....Bill in Las Vegas
>

I use a DSP-2232. My major use is 9600 PacSat and terrestrial packet, although I have used it in most of its modes. There are "rumors" that new development is underway, but I have heard nothing lately. It's a good machine but cost-effective only if you make good use of its many modes.

I wish AEA would truly open up the programming interfaces so independent development could take place.

--
Ron W5RKN

2041. NOAA Polar Satelite Status

Newsgroup: rec.radio.amateur.space
Date: 1995-10-01 00:00:00 UTC
From: bsmando <bsmando@micron.net>
Message-ID: <44mod6$fe3@mis02.micron.net>
Source record: 24049

It seems like NOAA 9 is currently non-operational. I wonder if there is a source that someone could sugest which would give the current status of the NOAA polar satelites? I have tried NOAA WWW sources, but no luck.

Thanks in advence

Pat N7MPS

2042. Need Address Info for DG3GAQ

Newsgroup: rec.radio.amateur.space
Date: 1995-10-01 00:00:00 UTC
From: headshrnkr@aol.com
Message-ID: <44n1eo$jrl@newsbf02.news.aol.com>
Source record: 24050

I seem to be unable to locate the correct address info for this callsign. I worked this gentleman on AO-13 on 10/1/95 and perhaps I copied his call incorrectly as I do not seem to be able to locate it in any database. If anyone has any ideas or suggestions please advise. His first name was Peter, and he was located in grid square JN48GE, or so I copied. Thank you.

email to kb2vkj@amsat.org

73,

Bruce J. Howes
KB2VKJ

"We, the people are the rightful masters of both the congress and the courts - not to overthrow the constitition, but to overthrow men who pervert the constitution" - A. Lincoln

Bruce J. Howes
HeadShrnkr@aol.com

2043. Sat Tracking and Presentation Program for IBM

Newsgroup: rec.radio.amateur.space
Date: 1995-10-01 00:00:00 UTC
From: ian.baxter@tdb.vision.net.au
Message-ID: <331.402.522@tdb.vision.net.au>
Source record: 24051

Hi!

Is there anyone out there who can get a copy of the recently released version
of the American Sat tracking and display program to me? Unfortunately we in
Tassie are not overly well served by BBs's providing AMRAD specialisation.

Regards

BACKO

... Divorce: System("echo y | erase \wife*.*");

Internet: ian.baxter@tdb.vision.net.au (Ian Baxter)
This message was processed by NetXpress from Merlin Systems Inc.

2044. Re: Any DSP-2232 users out there???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-02 00:00:00 UTC
From: bob@texas.net
Message-ID: <44nbme$pp@empire.texas.net>
Source record: 24052

In article <rparsons-0110951146530001@lia-a7.ip.realtime.net>, rparsons@bga.com (Ronald G. Parsons) says:

>In article <44mg5n$mao@ixnews3.ix.netcom.com>, willhelm@ix.netcom.com
>(BILL DILLSTROM) wrote:

>> I am contemplating the purchase of the AEA DSP-2232 multimode TNC.
[snip]

>It's a good
>machine but cost-effective only if you make good use of its many modes.

>I wish AEA would truly open up the programming interfaces so independent
>development could take place.

Amen. So much good potential going to waste in these wonder boxes...

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

2045. Has NE1 got a QSL card from Dr. Thaggard?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-02 00:00:00 UTC
From: wecare@teleport.com
Message-ID: <44nops$p2p@maureen.teleport.com>
Source record: 24053

I'm curious, did anyone have a QSO with the Doctor while he was
onboard the MIR and QSL with him? I had several QSO's with him but
didn't send him my QSL card as I have moved and everything is buried.
Also, can someone please post the address to send him a card?

Thanks and 73's

John Jordan
KB7VZL

2046. Re: Any DSP-2232 users out there???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-02 00:00:00 UTC
From: bsmith@msn.com
Message-ID: <44pesf$pj0@news.internetmci.com>
Source record: 24054

>Amen. So much good potential going to waste in these wonder
boxes...

Problem is that they (DSPX232) are CLOSED systems, now take the
DSP93 from TAPR - wide open, write your own code or enjoy what
everyone else writes!

--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

2047. Re: NOAA Polar Satelite Status

Newsgroup: rec.radio.amateur.space
Date: 1995-10-02 00:00:00 UTC
From: eareckso@netcom.com
Message-ID: <eareckso DFuEoG.JLo@netcom.com>
Source record: 24055

bsmando (bsmando@micron.net) wrote:
: It seems like NOAA 9 is currently non-operational. I wonder
: if there is a source that someone could sugest which would
: give the current status of the NOAA polar satelites? I have
: tried NOAA WWW sources, but no luck.

: Thanks in advence

: Pat N7MPS

Only APT satellites operating currently are NOAA 12,14 and METEOR 3-5.
NOAA9 and NOAA11, NOAA14 are DOA. NOAA14 had a shorted buss within a
couple months of operation and NOAA9 is now over 10 years old and well
exceeded it's design life.

Bill Eareckson
eareckso@netcom.com

2048. * SpaceNews 02-Oct-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-10-02 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <44p8f8$784@pilot.njin.net>
Source record: 24056
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.info

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 02-Oct-95 *
Date: 2 Oct 1995 13:45:12 -0400
Organization: Rutgers University
Message-ID: <44p8f8$784@pilot.njin.net>

SB NEWS @ AMSAT $SPC1002
* SpaceNews 02-Oct-95 *

BID: $SPC1002

=========
SpaceNews
=========

MONDAY OCTOBER 2, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* JOINT ESA/CNES PRESS RELEASE *
================================
Revised Ariane-5 launch timetable

Tests on the Ariane-5 launcher's cryogenic main stage have been under way
in Kourou for a year and were to have ended in the third quarter of 1995
with the subassembly's qualification. Many positive results were obtained
over the summer, but it was not possible to achieve some of the objectives
set for that period and a number of malfunctions disrupted the tests,
mainly as a result of problems encountered with operation of the ground
facilities. In addition, a leak in the oxygen feed line in the upper part
of the stage and a hydrogen leak at thrustframe level made it necessary to
improve the leak-tightness devices in a number of circuits. Lastly, an
incident on 01-September affecting the actuator system in the Vulcain
cryogenic engine led the board set up to analyze the problem to conclude
that the fault lay in the high-pressure oil distribution system, which
was subject to a water-hammer effect. Measures were immediately taken to
reinforce the circuit and repair work on the Vulcain engine was completed.

An overall verification test without a firing will be carried out early in
October to validate the changes made to the stage. It will also provide an
opportunity to check that the test systems are operating properly.

A detailed review of the time schedule has been carried out to take account
of the qualification objectives that have already been met and those that
remain for the launcher as a whole (systems, stages, subassemblies and

ground facilities).

All this work means that the start of the 501 campaign is now planned for early February 1996 with a view to the 501 flight taking place in late April and the 502 flight in September.

The European Space Agency has delegated the management of its Ariane-5 programme to CNES, the French space agency.

[Info via Peter Guelzow, DB2OS, of AMSAT-DL]

* SABLE ISLAND DXPEDITION *
==========
Wayne, VE1CBK; Ken VE1RU; Gary, VE1RGB and Don, VE1AOE will be active as CY0TP from Sable Island October 1 - 10, 1995, weather permitting. Sable Island is located at 60 degrees 2 minutes WEST Long., 43 degrees 56 minutes NORTH Lat with a Maidenhead Locator Square of FN93xw.

The equipment is already on Sable Island and the four operators will be departing Halifax, Nova Scotia by air at 13:00 UTC 30 Sept 1995. Don, VE1AOE will be the principle Satellite Operator and will be active on AO-10 and AO-13 along with most of the LEO analog satellites (including Mode K on RS-12/13.) Operation on the RS (and LEO) series of satellites will probably appear first followed by AO-10 and AO-13 later. Don expects to be very active on the satellites throughout the whole DXpedition period.

All 6-meter, VHF, UHF, satellite, and EME QSLs go to:

Don Roland, VE1AOE
PO Box 1257
Truro, Nova Scotia
Canada B2N 5N2

[Info via Donald Roland, VE1AOE]

* OSCAR STATUS REPORT *
==========
Pacsat AO-16:
Normal BBS.

Dove DO-17:
27th August 1995 12:52 UTC

S Band has been switched OFF.

We will continue to tune the power
budget and bring S Band operation to
you as soon as possible.

[telemetry dwell still 20 secs]

73 Dove Team (VK7ZBX)

Weber WO-18:
*Collecting and Sending WOD

Week2: Variable Ch# 26 27 28 29 2A 2B
Array Currents with 4 second sample rate
*New Images
*Monday, New Spectrum
73, IK3WVJ

Lusat LO-19:
Still in cw telem and bbs mode

Itamsat IO-26:
In MBL mode this week

[Info via Graham Ranft, VK7ZO]

* AMSAT-NA AT SHORE AREA HAMFEST '95 *
=====================================
The seventh annual Shore Area Hamfest will be held from 8:00 AM until
2:00 PM on Sunday 08-Oct-95 at Brookdale Community College in Lincroft,
New Jersey. Brookdale Community College is located in Monmouth County
on Newman Springs Road, about two miles west of Garden State Parkway
exit 109.

This year's Hamfest promises to be the BEST EVER and will feature an ARRL
NJ State Convention, technical seminars, computer and electronics vendors,
door prizes, VE testing sessions, and offer breakfast and lunch in the
College's cafeteria. A representive from AMSAT-NA will also be in
attendance to demonstrate the latest in satellite tracking software,
answer questions, and display a scale model of the Phase III-D satellite.

A World Wide Web page has been established for additional information on
the Shore Area Hamfest. Feel free to visit the page at the following URL:

http://www.njin.net/~magliaco/hamfest.html

I hope to see YOU at the Shore Area Hamfest '95!

* THANKS! *
==========
Thanks to all who sent messages of appreciation to SpaceNews, especially:

VE3VIG KC4LLD KC4YOJ

* FEEDBACK/INPUT WELCOMED *
===========================
Comments and input for SpaceNews should be directed to the editor (John,
KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

2049. Re: Has NE1 got a QSL card from Dr. Thaggard?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-02 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Oct2.173849.14286@ke4zv.atl.ga.us>
Source record: 24057

In article <44nops$p2p@maureen.teleport.com> wecare@teleport.com writes:
>I'm curious, did anyone have a QSO with the Doctor while he was
>onboard the MIR and QSL with him?

The Doctor was on MIR? Which of the 5 Doctors was it? As a fanatic
Whovian, I want to know where he parked the Tardis.

Sorry, couldn't resist. :-)

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

2050. Home brew sat, tracking program.

Newsgroup: rec.radio.amateur.space
Date: 1995-10-03 00:00:00 UTC
From: leslie ferguson <lezf@iol.ie>
Message-ID: <44q11v$aub@barnacle.iol.ie>
Source record: 24058

HI.

I would like to use my old 8 bit computer to track stats,
i.e. C64 .
Or would anybody have a formula to convert the kepps or failing that
any way to track the stats with a simple program formula for a simple
program that could be written for AMSTRAD CPC464 ,TI9948.

Thanks alot
lez ei9ejb.

2051. Re: HELP with RS 12/13 please!

Newsgroup: rec.radio.amateur.space
Date: 1995-10-03 00:00:00 UTC
From: Keith Stein <us011192@pop3.interramp.com>
Message-ID: <44q28p$hg4@usenet2.interramp.com>
Source record: 24059

Hi,

Well I can offer a little help. RS 12/13 transmits on the following:

Beacon: 29.408

Downlink: 29.410 / 29.420 / 29.430 / 29. 440 / 29.450

Robot: 29.454

You need to have your receiver in Single Side Band mode and listen for CW (morse code).

The tracking program I use is called TRAKSAT.

Thats about it. Hope this helps.

--
Keith Stein

Community, Air & Space Report Editor:
http://www.newspace.com/publications/LaunchReport/LaunchReport.html

Satellite Times magazine Editoral Staff Member
http://www.grove.net/hmpgst.html

2052. Re: Is AO-13 Mode-S working?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-03 00:00:00 UTC
From: sem2r@galen.med.Virginia.EDU
Message-ID: <DFvLzr.3u7@murdoch.acc.Virginia.EDU>
Source record: 24060

Dear Doug-
The Mode S works fine on AO-13, the problem is that until the satellite is repositioned at the end of October to its good orientation (ALON 180deg, ALAT 0deg), there is no "pure Mode-S" in the transponder schedule. Mode BS comes on late in the orbit schedule when the satellite is very low in the south. Mode BS is difficult to operate under even ideal circumstances. Are you listening at the proper time in the orbit schedule, not just when the satellite is above the horizon? Even more importantly, the very low power transponder 1.2 watts has a highly directional antenna. If the offpoint (squint) angle is more than about 8-10 deg, forget it, and less than 5 deg is best.

After October 31, at the proper time in the orbit (near apogee) with a low offpoint angle, you should have a lot more luck. I don't even try to hear Mode-S when the satellite is in its current attitude.

I hope this helps. Let me know if I can answer any othe questions. Mode-S is going to be great on P3D!!
--
-73's de WB4QKT
Stacey E. (Chuck) Mills
E-mail: sem2r@galen.med.virginia.edu

2053. Re: Home brew sat, tracking program.

Newsgroup: rec.radio.amateur.space
Date: 1995-10-03 00:00:00 UTC
From: Clifford Buttschardt <cbuttsch@biggulp.callamer.com>
Message-ID: <Pine.OSF.3.91.951003121416.7762B-100000@biggulp.callamer.com>
Source record: 24061

Hi Leslie.....A very good tracking program is still available for the C64 Commodore computer. It is advertised on occasion in QST by Bob Dalleski, W6AMW at box 220, Mount Shasta, Calif. Good luck Cliff W6HDO

On 3 Oct 1995, leslie ferguson wrote:

> HI.
>
> I would like to use my old 8 bit computer to track stats,
> i.e. C64 .
> Or would anybody have a formula to convert the kepps or failing that
> any way to track the stats with a simple program formula for a simple
> program that could be written for AMSTRAD CPC464 ,TI9948.
>
>
> Thanks alot
> lez ei9ejb.
>
>

2054. ARLK053 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-10-03 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk053.1995@ampr.org>
Source record: 24062
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK053
ARLK053 Keplerian data

ZCZC SK78
QST de W1AW
Keplerian Bulletin 53 ARLK053
From ARRL Headquarters
Newington, CT October 3, 1995
To all radio amateurs

SB KEP ARL ARLK053
ARLK053 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-73
1 99973U 99999A 95278.75152068 .00129590 00000-0 21727-3 0 20
2 99973 39.0119 96.1681 0008091 283.6580 76.3455 16.00409931 40
Mir
1 16609U 86017A 95275.11397728 .00002780 00000-0 43658-4 0 03058
2 16609 51.6477 342.2665 0002808 134.5295 225.5942 15.57550281549599
HST
1 20580U 90037B 95275.00181575 .00000544 00000-0 38676-4 0 07398
2 20580 28.4693 84.4615 0006690 346.7376 13.3036 14.90938835099862
AO-10
1 14129U 83058B 95273.14208990 -.00000104 00000-0 10000-3 0 03781
2 14129 26.4628 245.8965 5984525 314.0229 9.9399 2.05881672064496
RS-10/11
1 18129U 87054A 95275.15429532 .00000038 00000-0 25366-4 0 01296
2 18129 82.9272 340.0049 0011817 146.3687 213.8204 13.72356777414643
UO-11
1 14781U 84021B 95275.03107836 .00000150 00000-0 33239-4 0 08429
2 14781 97.7862 272.5781 0011025 195.3361 164.7511 14.69381154619598
RS-12/13
1 21089U 91007A 95274.73675007 .00000033 00000-0 19595-4 0 08458
2 21089 82.9207 21.7484 0027458 236.1801 123.6750 13.74060336233402
AO-13
1 19216U 88051B 95269.10277333 -.00000021 00000-0 33589-4 0 940
2 19216 57.4504 162.4183 7329760 19.7069 358.0549 2.09722128 24280
```

```
UO-14
1 20437U 90005B 95275.07467519 .00000014 00000-0 22231-4 0 01303
2 20437 98.5636 357.7040 0010121 248.3938 111.6158 14.29898053297025
RS-15
1 23439U 94085A 95274.93490135 -.00000039 00000-0 10000-3 0 00907
2 23439 64.8157 82.3466 0166431 243.9983 114.3718 11.27525079031550
AO-16
1 20439U 90005D 95275.11236797 .00000006 00000-0 19224-4 0 09501
2 20439 98.5742 359.5562 0010393 246.6036 113.4055 14.29952126297045
DO-17
1 20440U 90005E 95275.09030026 .00000014 00000-0 22160-4 0 09420
2 20440 98.5768 0.0446 0010520 246.6123 113.3952 14.30093676297068
WO-18
1 20441U 90005F 95275.14469370 .00000008 00000-0 19973-4 0 09392
2 20441 98.5761 0.0607 0011070 246.8427 113.1590 14.30064536297071
LO-19
1 20442U 90005G 95275.08983376 .00000021 00000-0 25037-4 0 09431
2 20442 98.5769 0.4015 0011500 246.1406 113.8564 14.30168660297087
FO-20
1 20480U 90013C 95274.67781260 -.00000006 00000-0 61259-4 0 08297
2 20480 99.0677 343.4535 0540884 352.3708 6.9408 12.83230983264602
AO-21
1 21087U 91006A 95275.09008732 .00000094 00000-0 82657-4 0 06511
2 21087 82.9425 153.4751 0033820 207.7004 152.2352 13.74559596234410
UO-22
1 21575U 91050B 95275.09954897 .00000072 00000-0 38832-4 0 06381
2 21575 98.3859 343.7274 0007929 328.7958 31.2779 14.36992388220852
KO-23
1 22077U 92052B 95274.72063984 -.00000037 00000-0 10000-3 0 05465
2 22077 66.0790 12.7119 0001108 151.9477 208.1599 12.86292514147436
KO-25
1 22828U 93061F 95275.10627560 .00000044 00000-0 35116-4 0 04001
2 22828 98.6065 350.1333 0009354 257.4133 102.6020 14.28113569073137
IO-26
1 22826U 93061D 95275.06444434 .00000040 00000-0 34065-4 0 04368
2 22826 98.6107 350.0498 0008657 277.1185 82.9028 14.27781890105023
AO-27
1 22825U 93061C 95275.11860314 -.00000002 00000-0 16945-4 0 04470
2 22825 98.6095 349.9877 0007892 274.1651 85.8610 14.27673220105027
PO-28
1 22829U 93061G 95275.11942058 -.00000011 00000-0 13166-4 0 04168
2 22829 98.6065 350.1864 0009292 259.8513 100.1620 14.28093226105059

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
October 7, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

2055. Re: NOAA Polar Satelite Status

Newsgroup: rec.radio.amateur.space
Date: 1995-10-03 00:00:00 UTC
From: eareckso@netcom.com
Message-ID: <eareckso DFw8K3.I4o@netcom.com>
Source record: 24063

William A. Eareckson (eareckso@netcom.com) wrote:
: bsmando (bsmando@micron.net) wrote:
: : It seems like NOAA 9 is currently non-operational. I wonder
: : if there is a source that someone could sugest which would
: : give the current status of the NOAA polar satelites? I have
: : tried NOAA WWW sources, but no luck.

: : Thanks in advence

: : Pat N7MPS

: Only APT satellites operating currently are NOAA 12,14 and METEOR 3-5.
: NOAA9 and NOAA11, NOAA14 are DOA. NOAA14 had a shorted buss within a
: couple months of operation and NOAA9 is now over 10 years old and well
: exceeded it's design life.

CORRECTION: My typo regarding NOAA14, NOAA 13 had shorted buss, NOAA14 is doing just fine.

Bill Eareckson
eareckso@netcom.com

2056. Re: What has happened to RS12?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-03 00:00:00 UTC
From: caseycct@ridgecrest.ca.us
Message-ID: <DFvqBI.Jov@ridgecrest.ca.us>
Source record: 24064

Peter A. Klein (pklein@news.seattleu.edu) wrote:
> In article <4472te$enl@homer.alpha.net>, Bill Hazard <kd9xc@execpc.com> wrote:
> >Has RS12 gone off the air? I have not heard it since August 28, 1995.
> >Any input will be appreciated.
>
> It was working fine last weekend--I worked several people on it. Perhaps
> your tracking info is out of date. If you have a WWW browser, you can get
> the latest Keplarian Elements from
>
> http://www.amsat.org/amsat/keps/menu.html
>
> Or generate a pass schedule for your location using
>
> http://www.acs.ncsu.edu/scripts/HamRadio/sattrack.perl

FYI I had a sked yesterday, 10-2 on it at 1330 PST and it was working fine.

--
Erik van Bronkhorst
CW/KotGT DoD#4342585443 AMA#438054
caseycct@owens.ridgecrest.ca.us
ftp://www.ridgecrest.ca.us/pub/users/caseycct/erik.html
kc6uut@wa6ybn.#soca.ca.usa.na

2057. Re: Any DSP-2232 users out there???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-04 00:00:00 UTC
From: stevec@rain.org
Message-ID: <44sumh$nrf@news.rain.org>
Source record: 23965

Hello, folks. I am a long-inactive ham (WB6CSZ) who is always looking for a reason to get back into
hamming again. I have fiddled with hardware and software design at home for years. I stay interested in computers but lost interest in ham radio many years ago when the Japaneese radios
on 2M brought an influx of kids with profanity and idiots jamming repeaters. I've watched packet
radio unfold -but it seems like something I'd get bored with quickly.

any suggestions?

stevec@rain.org

====
bsmith@msn.com (Bob Smith) wrote:
>>Amen. So much good potential going to waste in these wonder
>boxes...
>
>Problem is that they (DSPX232) are CLOSED systems, now take the
>DSP93 from TAPR - wide open, write your own code or enjoy what
>everyone else writes!
>
>
>--
>Bob Smith, Atlanta, GA
>n3ftu@amsat.org
>TAPR 5412 ARRL
>

2058. Do you use technology at your club. Please read

Newsgroup: rec.radio.amateur.space
Date: 1995-10-04 00:00:00 UTC
From: aruss36461@aol.com
Message-ID: <44vkgc$dqo@newsbf02.news.aol.com>
Source record: 23966

I have been asked to research how different amateur radio clubs make innovative use of technology to communicate to, and with their members. I have volunteered to research this issue for the Montgomery Amateur Radio Club in Maryland. My goal is to present a report to the membership on how others are using packet, the internet, BBS services, voice mail, and even programmed repeater announcements to keep the flow of information in front of the members. I feel strongly that the time has come to consider the club newsletter as only one vehicle for the dissemination of information. Your comments are appreciated. If you are a member of a club, please share with me what your club does, or what you wish they did do.

When all responses are compiled I will make the total file available for anyone who wishes to see it.

Thank You.

73

Avery N3TOU

Avery
Compuserve 75105.462@compuserve.com (Alternate Address)

2059. ARLS015 P3D launch set back

Newsgroup: rec.radio.amateur.space
Date: 1995-10-04 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls015.1995@ampr.org>
Source record: 23967
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS015
ARLS015 P3D launch set back

ZCZC AS94
QST de W1AW
Space Bulletin 015 ARLS015
From ARRL Headquarters
Newington, CT October 4, 1995
To all radio amateurs

SB SPACE ARL ARLS015
ARLS015 P3D launch set back

The launch of the Phase 3D Amateur Radio satellite has been set back from May 1996 to September, according to the Radio Amateur Satellite Corporation (AMSAT).

The satellite is manifested on the European Space Agency's Ariane-5 Flight 502. The agency reported that tests on the launcher's cryogenic main stage have been under way in Kourou, French Guyana, and were to have ended shortly, but problems have called for changes that will delay upcoming launches 501 and 502.

AMSAT-North America President Bill Tynan, W3XO, said he was disappointed at the news, but that these things can often be expected in any development program. ''Ariane 5 is a very ambitious development program, but one which I am confident will result in great success for ESA-- both technically and commercially,'' Tynan said.

Tynan also said that the Phase 3D team will use the extra time to good advantage to construct an even better and more thoroughly tested spacecraft.

A story about the P3D satellite appeared in May 1995 QST.
NNNN
/EX

2060. HELP with RS 12/13 please!

Newsgroup: rec.radio.amateur.space
Date: 1995-10-04 00:00:00 UTC
From: clinton.peebles@saloon.bcbbs.net
Message-ID: <9510041402331588@saloon.bcbbs.net>
Source record: 23968

K>Need help getting started on hf sats. Anyone have a source of info on the
K>net that can tell me what I need to do to give this bird a try?

K>Also, can you recommend a good sat tracking program? (pc dos/win)

RS 12/13 is very easy to work. My first, and so far only sat contact
was with that bird. Here's the freqencies for it:

Uplink 21.21 - 21.25 USB/CW
Downlink 29.41 - 29.50 USB/CW
Beacon - 29.408 CW
Mode K

If you hear a signal on say 29.44, you tune your transmitter to 21.24.

I use STSPlus to track.

 QMPro 1.53 NT ..... Newfoundland Time ??

2061. Re: Grid Co-ordinates

Newsgroup: rec.radio.amateur.space
Date: 1995-10-05 00:00:00 UTC
From: kc7dba@primenet.com
Message-ID: <kc7dba.1.02551A7A@primenet.com>
Source record: 23969

In article writes: Can anyone tell me how to obtain an accurate grid co-ordinate for my station? I have two different programs giving me two different co-ordinates. Help Please.

2062. ARLS016 Listen to AMSAT meeting

Newsgroup: rec.radio.amateur.space
Date: 1995-10-05 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls016.1995@ampr.org>
Source record: 23970
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS016
ARLS016 Listen to AMSAT meeting

ZCZC AS95
QST de W1AW
Space Bulletin 016 ARLS016
From ARRL Headquarters
Newington, CT October 5, 1995
To all radio amateurs

SB SPACE ARL ARLS016
ARLS016 Listen to AMSAT meeting

A live feed from the Radio Amateur Satellite Corporation (AMSAT) annual symposium will be available on many local amateur repeaters this weekend, according to AMSAT.

Members of the Houston AMSAT Net will provide the feed from the 13th annual Space Symposium, in Orlando, on Friday, October 6, and Saturday, October 7, from 2230 to 2350 UTC both days, according to Bruce Paige, KK5DO. Paige said that since the meeting's exact schedule was not final, it was not clear what would be on the feeds. The Houston AMSAT members hope to include interviews with AMSAT principals as well as perhaps portions of seminars on the feeds.

''Preliminary equipment looks like a phone patch with a hand-held, a roving HT, and away we go,'' Paige said.

The regular, weekly Houston AMSAT Net is carried live on Tuesdays at 10 PM Central Time, on 147.100 MHz, and also is carried on Telstar 302, Transponder 21, 5.8 MHz audio subcarrier. Video is on the Skyvision Channel. These outlets will be used for the special symposium coverage.

A major feature of the symposium will be Saturday morning's panel presentation on the Phase 3D project. Dr. Karl Meinzer, DJ4ZC, who serves as the project leader for this international effort, will be a member of the panel, an AMSAT spokesman said. Dr Meinzer has agreed to be interviewed on the live feed.

Information on Phase 3D and other AMSAT activities is available on the Internet at AMSAT's World Wide Web site:
http://www.amsat.org/amsat
NNNN
/EX

2063. Re: Grid Co-ordinates

Newsgroup: rec.radio.amateur.space
Date: 1995-10-05 00:00:00 UTC
From: Clifford Buttschardt <cbuttsch@biggulp.callamer.com>
Message-ID: <Pine.OSF.3.91.951005152629.30378H-100000@biggulp.callamer.com>
Source record: 23971

Stephanie. You might first check to be sure that the two programs you are using enter the lat/long in a similar manner. For example the program in the ARRL collection enters latitude West of Greenwitch while the BT program by W9IP enters zero to 360 degrees. Something like this might be fouling you up. The grid square system is very simply based on one by two degree squares and should be similar. 73 Cliff W6HDO

On Thu, 5 Oct 1995, Stephanie Steele wrote:

> In article writes: Can anyone tell me how to obtain an accurate grid
> co-ordinate for my station? I have two different programs giving me two
> different co-ordinates. Help Please.
>
>
>
>

2064. EME on 440

Newsgroup: rec.radio.amateur.space
Date: 1995-10-06 00:00:00 UTC
From: ratcliff.8@osu.edu
Message-ID: <ratcliff.8.174.15371180@osu.edu>
Source record: 23972

I heard that an EME weekend was coming soon.
Is this organized? email lists?

Any info would be appreciated.

greg

Gregory W. Ratcliff
ratcliff.8@osu.edu
Columbus, Ohio ICBM
In the Air N1697X
On the Air NZ8R

2065. Re: AO-10 & 13 Signal Levels

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <454lrd$otb@volcano.jrv.qc.ca>
Source record: 23973

Hello Jim, here is Benoit VE2VB from St-Felix de Valois - Quebec
about 65 miles N-E of Montreal. I am a satellite operator, yesterday I
have worked CY0TX on Sable Island DX pedition.

If you want the best for amateur satellite
go for KLM 22-C Vhf antenna and the KLM 435-40CX for UHF I am using
those, all agree that they are the best antennas, I don't even use a
preamp or amplifier with those, I don't have amps at all.

I have worked into China, Almost all Europe etc...

Best 73 Benoit VE2VB

You can reply to ve2vb@amsat.org

2066. Re: Any DSP-2232 users out there???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <454m8o$otb@volcano.jrv.qc.ca>
Source record: 23974

Hello, my name is Benoit VE2VB from Canada.
I am a DSP-2232 owner and also a Kantronics KAM version 6.0 owner too.
I use the DSP-2232 for satellite work only, I use it on KO-23, KO-25
mainly. To be exact I prefer my KAM for HF mode. The best program for the
DSP-2232 in the HF mode is PC-PAKRATT for windows but I don't like
Windows to do all the jobs, all the time. Also they advertise this
DSP-2232 unit as SSTV ready, but ! no one has got out a software to
enable the function. All that the DSP can do, the KAM can also except
for 9600 bauds G3RUH. I am seriously thinking of getting rid of the
DSP-2232 and get a PK-96 or a KPC-9612 for satellite work and
terrestrial regular packet. I hope this is helping you

Benoit ve2vb@amsat.org

2067. Tracking Interface for G-5400B & Instant Track Help !

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <454moj$otb@volcano.jrv.qc.ca>
Source record: 23975

Hello guys

My name is Benoit VE2VB from St-Felix de Valois / Quebec
about 65 miles N-E of Montreal. I own a amateur satellite station and
I am quite active on AO-13 / AO-10 FO-20 / AO-27 and I got everything
ready for the microsats. DSP-2232 unit.

My station is the following

Kenwood TS-790A
KLM 22-C
KLM 435-40CX
YAESU G5400-B AZ/EL rotor

I am using Instant Track for the tracking, but I do the tracking manualy
I would like to know if there is any diagram for building home tracking
interface compatible with my set-up. If you have any reference to give
please leave me a message. I am a Amsat member

ve2vb@amsat.org

Thank you

2068. Tracking Interface for G-5400B & Instant Track Help !

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <454mqd$otb@volcano.jrv.qc.ca>
Source record: 23976

Hello guys

My name is Benoit VE2VB from St-Felix de Valois / Quebec
about 65 miles N-E of Montreal. I own a amateur satellite station and
I am quite active on AO-13 / AO-10 FO-20 / AO-27 and I got everything
ready for the microsats. DSP-2232 unit.

My station is the following

Kenwood TS-790A
KLM 22-C
KLM 435-40CX
YAESU G5400-B AZ/EL rotor

I am using Instant Track for the tracking, but I do the tracking manualy
I would like to know if there is any diagram for building home tracking
interface compatible with my set-up. If you have any reference to give
please leave me a message. I am a Amsat member

ve2vb@amsat.org

Thank you

2069. Tracking Interface for G-5400B & Instant Track Help !

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <454mqq$otb@volcano.jrv.qc.ca>
Source record: 23977

Hello guys

My name is Benoit VE2VB from St-Felix de Valois / Quebec
about 65 miles N-E of Montreal. I own a amateur satellite station and
I am quite active on AO-13 / AO-10 FO-20 / AO-27 and I got everything
ready for the microsats. DSP-2232 unit.

My station is the following

Kenwood TS-790A
KLM 22-C
KLM 435-40CX
YAESU G5400-B AZ/EL rotor

I am using Instant Track for the tracking, but I do the tracking manualy
I would like to know if there is any diagram for building home tracking
interface compatible with my set-up. If you have any reference to give
please leave me a message. I am a Amsat member

ve2vb@amsat.org

Thank you

2070. Re: Any DSP-2232 users out there???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <454n6g$otb@volcano.jrv.qc.ca>
Source record: 23978

Hello Ron, I also use a DSP-2232 version 7.0
for microsats (not hooked up yet) but later next week will be operational
and I wish someone would enable SSTV function, think of SSTV with DSP
technologies.... someday !

bye Benoit VE2VB@AMSAT.ORG

2071. Re: Any DSP-2232 users out there???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <454naq$otb@volcano.jrv.qc.ca>
Source record: 23979

I own a DSP-2232 and I agree with you for the DSP-93
Let me get rid of this DSP-2232, I will replace it with DSP-93 from
TAPR they have programming going on ! them !

Benoit VE2VB@amsat.org

2072. DL0ART/am - 3rd launch on 10-08-95

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: Oliver Welp <welp@uni-muenster.de>
Message-ID: <454nnh$7d4@majestix.uni-muenster.de>
Source record: 23980

The Nienberge Amateur Radio Group (Germany) plans another
balloon launch on sunday, 07-16-95.

This is our third flight and will be the first one carrying
a transponder. 40 kHz of the 70 cm band will be translated
to 2 m. All hams are invited to use this facility.

Planned ARTOB launch 07-16-95:

Launch: # 3
Launch date: 10-08-95 (Sunday)
Launch time: 1200 UTC
Launch site: Nienberge near Muenster, Germany, JO32SA

Call sign: DL0ART/am
QRG/mod.: (1) Telemetry beacon: 145.200 MHz (F2D & F2A)
(2) 2nd beacon: 144.987 MHz (F1A)
(3) Transponder: (J3E & A1A preferred)
Uplink: 432.570 MHz \ +/-
Downlink: 144.470 MHz / 20 kHz
+ beacon on 144.470 (A1A)
(4) RX for remote control on 70 cm and 10 m

Power: (1) 2 W
(2) 100 mW
(3) 2.5 W

Antennas: (1) groundplane
(2) dipole or groundplane
(3) big wheel - one for 70 cm, one for 2 m
(4) 70 cm: groundplane / 10 m: lamda/2

Diameter ballon: ca. 8 ft

Talk back of DF teams and ground control via repeater Muenster,
DB0PD (R 84). Reports are welcome, please call DL3YBQ or DL9QJ.
Or send QSL to DL9QJ via bureau, via PR or via Internet. Each
report will be confirmed by a special QSL card of the balloon.

Any suggestion or response is always welcome!
Best 73,
Oliver

[Oliver Welp, DL9QJ, N3NSF
Internet: n3nsf@amsat.org or welp@uni-muenster.de
PR: DL9QJ@DB0EA.#NRW.DEU.EU
Tel./Fax: +49-2533-7312]

2073. Re: Amateur Satellite info

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <4568em$3js@volcano.jrv.qc.ca>
Source record: 23981

Hello LLoyd
Name here is Benoit callsign: VE2VB Qth 65 miles N-E of Montreal.

Active on 2m & 70.cm are: AO-10 / AO-13 / FO-20 / AO-27 (FM)
2m UP & 10m Down: RS-10-11 / RS-15

I own the same radio TS-790A
Antennas here are the KLM 22C and 435-40CX the big ones.
Also own a DSP-2232 to get hooked to the microsats soon.

Bye

VE2VB@AMSAT.ORG

2074. NORAD Two-Line Orbital Element Sets (TLE688)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.813025912@dolphin>
Source record: 23982

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #688 -
Alouette 1
1 00424U 62049A 95277.19050587 .00000069 00000-0 71449-4 0 1408
2 00424 80.4673 177.3275 0023519 338.4337 21.5815 13.67851273647207
ATS 1
1 02608U 66110A 95269.88484587 .00000122 00000-0 10000-3 0 9442
2 02608 14.6460 355.6072 0009581 75.0995 285.0626 1.00366013 22211
ATS 3
1 03029U 67111A 95273.30501457 -.00000122 00000-0 10000-3 0 4053
2 03029 14.8666 2.5917 0009362 259.8174 110.5431 1.00272714102155
Cosmos 398
1 04966U 71016A 95279.21353017 .00479987 10232-4 29799-3 0 282
2 04966 51.3782 59.1793 0380240 131.1261 232.2638 15.46511537842041
Starlette
1 07646U 75010A 95274.84416465 -.00000149 00000-0 -30125-5 0 9184
2 07646 49.8276 92.1212 0206006 94.0475 268.3992 13.82189626 43092
LAGEOS
1 08820U 76039A 95277.10760878 .00000036 00000-0 10000-3 0 1401
2 08820 109.8491 297.9407 0044259 183.9719 176.0759 6.38664115197419
ETS-2
1 09852U 77014A 95273.32696014 -.00000168 00000-0 10000-3 0 429
2 09852 12.8915 35.9575 0005115 95.5188 264.5502 0.99999047 15033
GOES 2
1 10061U 77048A 95277.55600819 .00000047 00000-0 10000-3 0 5843
2 10061 11.9881 40.0880 0014380 125.2549 232.8632 1.00260731 11864
IUE
1 10637U 78012A 95274.40301126 -.00000190 00000-0 10000-3 0 1749
2 10637 35.3494 87.2872 1338125 49.8684 340.7115 1.00299607 17332
GPS BI-01
1 10684U 78020A 95276.30357954 -.00000053 00000-0 10000-3 0 3921
2 10684 64.8796 31.5080 0061058 162.5886 197.6267 1.98069524114305
```

```
GPS BI-02
1 10893U 78047A 95274.91484899 .00000045 00000-0 10000-3 0 1889
2 10893 63.2775 269.2955 0224593 14.4349 346.1923 2.01626684127587
GOES 3
1 10953U 78062A 95277.40409279 .00000068 00000-0 10000-3 0 5462
2 10953 10.9635 42.8764 0006597 120.9691 213.5137 1.00363030 16476
SeaSat 1
1 10967U 78064A 95278.17256686 -.00000049 00000-0 28344-4 0 4332
2 10967 107.9986 5.0609 0002690 223.3413 136.7523 14.38057535904641
GPS BI-03
1 11054U 78093A 95272.48360500 .00000045 00000-0 10000-3 0 3547
2 11054 62.9846 267.8746 0045683 180.4236 179.5737 1.93505304123597
Nimbus 7
1 11080U 78098A 95279.17135694 -.00000084 00000-0 -37822-4 0 5345
2 11080 98.9797 148.3058 0008387 297.4599 62.5701 13.83702839855903
GPS BI-04
1 11141U 78112A 95273.56732909 -.00000025 00000-0 10000-3 0 87
2 11141 64.8858 33.5893 0048865 27.6027 332.6733 1.92894967 12853
GPS BI-05
1 11690U 80011A 95278.07769445 -.00000066 00000-0 10000-3 0 9436
2 11690 65.2159 33.0328 0144815 194.9465 164.6371 2.00567792129061
GPS BI-06
1 11783U 80032A 95274.83879726 .00000043 00000-0 10000-3 0 1038
2 11783 62.4262 262.3793 0220429 29.4379 331.7890 2.03456694113554
GOES 5
1 12472U 81049A 95278.31414128 -.00000279 00000-0 10000-3 0 8849
2 12472 7.7287 52.8665 0007152 45.0304 315.0894 1.00235511 10539
Cosmos 1383
1 13301U 82066A 95278.56770420 -.00000076 00000-0 -10624-3 0 4404
2 13301 82.9317 321.2224 0025911 223.4203 136.4900 13.68068338662429
LandSat 4
1 13367U 82072A 95277.69572403 .00000008 00000-0 11605-4 0 7774
2 13367 98.1184 330.8488 0005833 213.1567 146.9266 14.57159956703164
DMSP B5D2-1
1 13736U 82118A 95276.04402619 .00000021 00000-0 27205-4 0 8616
2 13736 98.6291 103.5515 0009604 62.5981 297.6169 14.25754999664288
IRAS
1 13777U 83004A 95278.86906654 -.00000022 00000-0 14747-4 0 1001
2 13777 98.9636 104.7949 0013837 85.7077 274.5671 13.99230625317663
Cosmos 1447
1 13916U 83021A 95278.82487426 .00000040 00000-0 26081-4 0 5368
2 13916 82.9445 19.9108 0038393 141.5970 218.7917 13.74330540628668
TDRS 1
1 13969U 83026B 95279.24087697 .00000071 00000-0 00000+0 0 4747
2 13969 8.5660 46.1876 0003327 160.7222 115.4675 1.00276487 18825
GOES 6
1 14050U 83041A 95278.50444962 -.00000188 00000-0 10000-3 0 4505
2 14050 6.5488 56.1488 0003360 38.3717 5.9004 1.00323630103635
OSCAR 10
1 14129U 83058B 95272.17072602 .00000014 00000-0 10000-3 0 3769
```

```
2 14129 26.4587 246.0580 5984677 313.7559 9.9946 2.05880673 64472
LandSat 5
1 14780U 84021A 95278.76105976 .00000012 00000-0 12527-4 0 3546
2 14780 98.1016 332.2231 0003374 212.2817 147.8168 14.57167422616730
UoSat 2
1 14781U 84021B 95278.02735253 .00000126 00000-0 29145-4 0 8313
2 14781 97.7863 275.4351 0011274 185.6906 174.4175 14.69381857620032
GPS BI-09
1 15039U 84059A 95278.40449563 -.00000080 00000-0 10000-3 0 3683
2 15039 64.5608 27.8192 0082062 18.5602 341.7340 1.92302270 82512
Cosmos 1574
1 15055U 84062A 95277.99824315 -.00000014 00000-0 -31435-4 0 7374
2 15055 82.9540 74.8852 0027591 338.1354 21.8609 13.73626493565816
GPS BI-10
1 15271U 84097A 95276.73871795 .00000024 00000-0 10000-3 0 610
2 15271 62.1142 262.7137 0156990 354.6673 5.1675 2.00604204 80107
Cosmos 1602
1 15331U 84105A 95277.54835467 .00000341 00000-0 37286-4 0 4222
2 15331 82.5344 353.4566 0022241 75.7943 284.5739 14.84671947594893
NOAA 9
1 15427U 84123A 95278.79027238 .00000031 00000-0 40204-4 0 4247
2 15427 98.9870 338.1151 0014636 319.8607 40.1480 14.13734159557549
GPS BI-11
1 16129U 85093A 95274.48002350 -.00000036 00000-0 10000-3 0 6804
2 16129 65.2247 31.2165 0155635 86.3487 275.4308 1.89368068 17002
Mir
1 16609U 86017A 95278.89942252 .00003667 00000-0 55386-4 0 2598
2 16609 51.6482 323.3020 0002995 153.8590 206.2557 15.57581601550218
SPOT 1
1 16613U 86019A 95277.25275998 .00000090 00000-0 62356-4 0 8576
2 16613 98.6407 346.1239 0001240 20.7120 339.4091 14.20071349183844
Cosmos 1766
1 16881U 86055A 95278.86113817 .00000181 00000-0 18855-4 0 3382
2 16881 82.5163 50.0294 0021203 96.7066 263.6564 14.83660753495983
EGP
1 16908U 86061A 95278.85604606 -.00000083 00000-0 10000-3 0 336
2 16908 50.0073 61.9944 0012018 82.5121 277.7078 12.44413000 84611
NOAA 10
1 16969U 86073A 95278.75157530 .00000013 00000-0 23808-4 0 3374
2 16969 98.5154 278.3191 0014071 23.9265 336.2570 14.24956908470225
MOS-1
1 17527U 87018A 95279.24224322 .00000094 00000-0 10000-3 0 2584
2 17527 98.9806 341.5060 0001414 235.8558 124.2430 13.95928152439310
GOES 7
1 17561U 87022A 95278.40786074 .00000060 00000-0 10000-3 0 5712
2 17561 2.5532 71.3376 0001948 310.4842 3.3078 1.00277768 14734
Kvant-1
1 17845U 87030A 95278.96360430 .00004299 00000-0 63769-4 0 4001
2 17845 51.6476 322.9858 0002947 150.6246 209.6306 15.57589401484332
DMSP B5D2-3
```

```
1 18123U 87053A 95278.76451152 .00000029 00000-0 37071-4 0 1636
2 18123 98.7777 108.1841 0013323 266.2349 93.7299 14.15419755428363
RS-10/11
1 18129U 87054A 95278.21644803 .00000036 00000-0 23317-4 0 1221
2 18129 82.9268 337.7409 0012024 138.1004 222.1069 13.72356909415060
Meteor 2-16
1 18312U 87068A 95277.18008734 .00000038 00000-0 20661-4 0 4293
2 18312 82.5588 195.9219 0010611 218.4864 141.5543 13.84063071410620
Meteor 2-17
1 18820U 88005A 95278.90588077 .00000054 00000-0 34885-4 0 7400
2 18820 82.5381 250.1615 0015165 287.9191 72.0328 13.84743975388195
DMSP B5D2-4
1 18822U 88006A 95279.11785455 -.00000016 00000-0 11227-4 0 841
2 18822 98.3980 118.1746 0007094 33.7465 326.4157 14.23166034398295
Glonass 34
1 19163U 88043A 95270.80231336 .00000054 00000-0 10000-3 0 198
2 19163 65.1662 94.7106 0007807 151.2028 208.8883 2.13102543 56623
Glonass 36
1 19165U 88043C 95275.55151357 .00000069 00000-0 10000-3 0 4292
2 19165 65.1599 94.5165 0000333 289.7640 70.2800 2.13102137 57340
METEOSAT 3
1 19215U 88051A 95278.14325610 -.00000296 00000-0 10000-3 0 1896
2 19215 2.7304 69.1754 0000607 161.9481 124.5469 1.00277803 14678
AO-13
1 19216U 88051B 95279.11592432 -.00000260 00000-0 45522-4 0 969
2 19216 57.4212 160.5022 7333704 20.4725 357.9882 2.09724178 24496
OKEAN 1
1 19274U 88056A 95279.11406857 .00000198 00000-0 21803-4 0 384
2 19274 82.5163 150.3443 0017868 244.4034 115.5324 14.82390805391588
Meteor 3-2
1 19336U 88064A 95276.69566957 .00000051 00000-0 10000-3 0 4276
2 19336 82.5409 348.6301 0016852 154.4678 205.7284 13.16974729345586
Glonass 39
1 19503U 88085C 95272.29543419 -.00000036 00000-0 10000-3 0 3212
2 19503 65.6665 333.5480 0007195 167.4098 192.6798 2.13101900 54768
NOAA 11
1 19531U 88089A 95278.76357127 .00000034 00000-0 43335-4 0 2331
2 19531 99.1968 285.1030 0010894 238.0387 121.9721 14.13065987362373
TDRS 2
1 19548U 88091B 95272.00572117 -.00000204 00000-0 00000+0 0 1472
2 19548 1.9461 72.9811 0007761 138.9878 242.5949 1.00278262 12908
Glonass 40
1 19749U 89001A 95278.43402064 .00000064 00000-0 10000-3 0 5352
2 19749 65.1162 94.0001 0005518 256.1647 103.8147 2.13101518 52404
Glonass 41
1 19750U 89001B 95272.38902419 .00000054 00000-0 10000-3 0 4438
2 19750 65.1302 94.2767 0004801 236.8765 123.1244 2.13101877 52291
GPS BII-01
1 19802U 89013A 95277.87648471 .00000050 00000-0 10000-3 0 1144
2 19802 55.2458 120.8360 0029189 158.3724 201.8455 2.00556990 48575
```

```
Akebono
1 19822U 89016A 95278.66488393 .00007179 00000-0 36181-3 0 5794
2 19822 75.1014 271.5790 3771240 298.3925 28.8266 7.87838405146514
Meteor 2-18
1 19851U 89018A 95277.56334013 -.00000016 00000-0 -27196-4 0 4279
2 19851 82.5212 125.7109 0014715 342.3798 17.6857 13.84397224333326
MOP-1
1 19876U 89020B 95278.41412037 .00000043 00000-0 10000-3 0 1424
2 19876 1.4440 72.0558 0003466 126.2079 334.7846 1.00279274 4123
TDRS 3
1 19883U 89021B 95277.53367477 -.00000293 00000-0 00000+0 0 1267
2 19883 0.0771 68.3376 0004877 146.7964 308.6804 1.00267152196540
GPS BII-02
1 20061U 89044A 95278.21518600 -.00000024 00000-0 10000-3 0 1216
2 20061 54.3721 296.9498 0152753 214.7486 144.2689 2.00561065 46329
Nadezhda 1
1 20103U 89050A 95278.72915607 .00000001 00000-0 -14802-4 0 5386
2 20103 82.9603 297.0739 0038729 46.8387 313.5993 13.73857865313607
GPS BII-03
1 20185U 89064A 95276.55661953 .00000041 00000-0 10000-3 0 1432
2 20185 55.0109 121.4127 0012608 308.9610 50.9913 2.00565554 44861
GMS 4
1 20217U 89070A 95276.70616493 -.00000391 00000-0 10000-3 0 2497
2 20217 1.2575 75.8015 0000133 316.7168 353.3978 1.00259024 22835
INTERCOSMOS 24
1 20261U 89080A 95278.84462304 .00000135 00000-0 41734-4 0 4445
2 20261 82.5902 73.8179 1240823 262.2820 83.5991 12.47278672274077
GPS BII-04
1 20302U 89085A 95277.09404869 -.00000028 00000-0 10000-3 0 1310
2 20302 53.3175 236.9859 0013448 138.5919 221.4907 2.00559507 43679
Meteor 3-3
1 20305U 89086A 95278.09645360 .00000044 00000-0 10000-3 0 4048
2 20305 82.5539 301.6573 0006233 200.4465 159.6370 13.04429126284810
COBE
1 20322U 89089A 95275.58812631 -.00000072 00000-0 -18236-4 0 1554
2 20322 98.9588 290.0171 0009504 39.4833 320.7022 14.03455600300654
Kvant-2
1 20335U 89093A 95278.96360430 .00004299 00000-0 63769-4 0 4000
2 20335 51.6476 322.9858 0002947 150.6246 209.6306 15.57589401333344
GPS BII-05
1 20361U 89097A 95276.10791166 .00000000 00000-0 10000-3 0 9764
2 20361 55.8334 63.5060 0083566 125.4787 235.3156 2.00562912 33136
COSMOS 2054 (Altair-1)
1 20391U 89101A 95278.52897778 -.00000152 00000-0 10000-3 0 2286
2 20391 3.3499 65.1745 0003907 93.6658 29.5892 1.00272827 21433
SPOT 2
1 20436U 90005A 95276.74768993 .00000169 00000-0 10000-3 0 9812
2 20436 98.7262 349.3984 0000685 33.6890 326.4330 14.20030150295305
UO-14
1 20437U 90005B 95278.78335304 .00000010 00000-0 20663-4 0 1303
```

```
2 20437 98.5634 1.3509 0010063 235.4480 124.5754 14.29898414297553
UO-15
1 20438U 90005C 95276.77424858 -.00000020 00000-0 91882-5 0 9261
2 20438 98.5602 357.7342 0009191 245.1682 114.8545 14.29214455297157
PACSAT
1 20439U 90005D 95276.16195378 .00000017 00000-0 23381-4 0 9282
2 20439 98.5736 0.5888 0010346 243.3738 116.6386 14.29952381297194
DO-17
1 20440U 90005E 95275.23023122 .00000014 00000-0 22446-4 0 9286
2 20440 98.5769 0.1827 0010522 246.1990 113.8090 14.30093690297088
WO-18
1 20441U 90005F 95277.73346820 .00000019 00000-0 24425-4 0 9337
2 20441 98.5757 2.6103 0011036 238.8691 121.1400 14.30065044297446
LO-19
1 20442U 90005G 95275.15979572 .00000021 00000-0 25093-4 0 9276
2 20442 98.5769 0.4704 0011498 245.9555 114.0424 14.30168670297090
GPS BII-06
1 20452U 90008A 95275.00677583 -.00000027 00000-0 10000-3 0 797
2 20452 54.0207 177.3189 0058836 82.8139 277.9034 2.00553084 41611
MOS-1B
1 20478U 90013A 95278.23013703 .00000090 00000-0 10000-3 0 8457
2 20478 99.1404 345.6145 0002093 144.3551 215.7751 13.94752459208877
DEBUT
1 20479U 90013B 95277.23550114 .00000019 00000-0 11901-3 0 9283
2 20479 99.0668 345.6958 0541179 346.1425 12.5306 12.83333824264943
FO-20
1 20480U 90013C 95278.10816548 -.00000023 00000-0 25193-4 0 8259
2 20480 99.0672 346.2429 0540975 344.6013 13.9167 12.83231239265048
MOS-1B R/B
1 20491U 90013D 95276.14233286 -.00000556 00000-0 -98390-3 0 1753
2 20491 99.0606 41.7113 0470128 178.5856 181.6718 13.02976047268251
LACE
1 20496U 90015A 95277.45223405 .00001921 00000-0 63859-4 0 5827
2 20496 43.1000 228.1670 0009902 197.6161 162.4308 15.34888442314366
Nadezhda 2
1 20508U 90017A 95278.79487661 .00000031 00000-0 16975-4 0 5375
2 20508 82.9499 71.5753 0044989 358.5182 1.5828 13.73498580280835
OKEAN 2
1 20510U 90018A 95277.01399662 .00000176 00000-0 20814-4 0 4462
2 20510 82.5232 104.7480 0020980 77.8512 282.5048 14.78527545301679
GPS BII-07
1 20533U 90025A 95273.91955736 -.00000013 00000-0 10000-3 0 1036
2 20533 54.7303 297.7968 0046406 78.1526 282.3995 2.00570365 40363
PegSat
1 20546U 90028A 95275.79967757 .00006740 00000-0 13558-3 0 8475
2 20546 94.1219 205.2882 0061455 283.9240 75.5013 15.44616116305083
HST
1 20580U 90037B 95276.47453034 .00000444 00000-0 28806-4 0 7238
2 20580 28.4693 74.9978 0006796 1.2466 358.8136 14.90938909100085
MACSAT 2
```

```
1 20608U 90043B 95276.75678642 .00000154 00000-0 24127-4 0 1291
2 20608 89.9332 175.5838 0103262 235.7760 123.3636 14.64865090288604
Glonass 44
1 20619U 90045A 95274.10985733 -.00000044 00000-0 10000-3 0 2311
2 20619 65.2664 332.8548 0025057 210.2945 149.6282 2.13102479 41763
Glonass 45
1 20620U 90045B 95278.45193605 -.00000041 00000-0 10000-3 0 2344
2 20620 65.2637 332.6920 0007027 45.4712 314.6566 2.13102532 41897
Glonass 46
1 20621U 90045C 95274.29546727 -.00000044 00000-0 10000-3 0 8271
2 20621 65.2836 332.8945 0011401 189.9215 170.1366 2.13101740 41805
Kristall
1 20635U 90048A 95278.96360430 .00004299 00000-0 63769-4 0 1923
2 20635 51.6476 322.9858 0002947 150.6246 209.6306 15.57589401304176
ROSAT
1 20638U 90049A 95278.70043401 .00000406 00000-0 45552-4 0 4979
2 20638 52.9912 9.4993 0014013 79.2036 281.0530 15.07260201293781
Meteor 2-19
1 20670U 90057A 95278.15136645 -.00000100 00000-0 -10264-3 0 9278
2 20670 82.5484 191.2204 0014196 256.1485 103.8098 13.84153630266321
CRRES
1 20712U 90065A 95278.40201020 .00000809 00000-0 85888-3 0 1654
2 20712 18.1357 354.4800 7195230 186.2777 153.4577 2.35578935 37085
GPS BII-08
1 20724U 90068A 95278.72838766 .00000051 00000-0 10000-3 0 9491
2 20724 54.8792 118.9172 0121760 174.5968 185.6363 2.00565725 36326
Feng Yun1-2
1 20788U 90081A 95278.91929702 -.00000027 00000-0 10000-4 0 5736
2 20788 98.8116 288.2108 0016432 126.6959 233.5719 14.01356861260343
Meteor 2-20
1 20826U 90086A 95276.54479552 .00000038 00000-0 20801-4 0 9380
2 20826 82.5276 129.3557 0013603 155.0160 205.1666 13.83616009253219
GPS BII-09
1 20830U 90088A 95278.27751171 -.00000023 00000-0 10000-3 0 9608
2 20830 55.7761 61.3917 0066952 99.9159 260.8445 2.00557141 36950
GPS BIIA-10
1 20959U 90103A 95274.69487178 .00000029 00000-0 10000-3 0 9215
2 20959 55.0555 121.0800 0100301 230.4254 128.7744 2.00568255 35474
DMSP B5D2-5
1 20978U 90105A 95278.68630081 .00000182 00000-0 80512-4 0 3595
2 20978 98.6289 346.4895 0078472 203.3620 156.3990 14.32584475253133
Glonass 47
1 21006U 90110A 95277.13603675 .00000070 00000-0 10000-3 0 8014
2 21006 65.1092 93.3911 0059079 186.1092 173.8264 2.13102694 37534
Glonass 48
1 21007U 90110B 95275.44830506 .00000069 00000-0 10000-3 0 9246
2 21007 65.1235 93.5162 0036020 178.6070 181.4510 2.13101208 37480
Glonass 49
1 21008U 90110C 95277.21725708 .00000070 00000-0 00000+0 0 1329
2 21008 65.0918 93.4098 0007960 267.9979 91.9594 2.13098832 37515
```

```
AO-21
1 21087U 91006A 95276.18196518 .00000094 00000-0 82657-4 0 6376
2 21087 82.9424 152.6670 0033789 204.7628 155.1907 13.74559719234564
RS-12/13
1 21089U 91007A 95276.33874857 .00000028 00000-0 13405-4 0 8346
2 21089 82.9209 20.5608 0027453 231.5418 128.3270 13.74060322233625
MOP-2
1 21140U 91015B 95278.52931713 -.00000037 00000-0 10000-3 0 1049
2 21140 0.0596 325.2725 0001270 240.8501 357.7295 1.00270548 19045
Nadezhda 3
1 21152U 91019A 95278.69006339 .00000026 00000-0 11753-4 0 2282
2 21152 82.9294 335.0382 0041607 335.4740 24.4435 13.73523593228673
Glonass 50
1 21216U 91025A 95275.27785669 -.00000045 00000-0 10000-3 0 4446
2 21216 65.0115 332.4414 0005877 198.6730 161.3619 2.13102777 35009
Glonass 51
1 21217U 91025B 95275.34722873 -.00000045 00000-0 10000-3 0 8492
2 21217 64.9626 332.4357 0007136 229.0130 130.9896 2.13101623 34999
Glonass 52
1 21218U 91025C 95278.27424968 -.00000041 00000-0 10000-3 0 3246
2 21218 64.9951 332.3158 0009999 55.4263 304.7314 2.13102668 35061
GRO
1 21225U 91027B 95276.42260690 .00002770 00000-0 54924-4 0 3009
2 21225 28.4598 181.3651 0003228 175.9412 184.1203 15.43076097130060
Meteor 3-4
1 21232U 91030A 95276.20037478 .00000051 00000-0 10000-3 0 8374
2 21232 82.5406 195.1726 0014799 82.1520 278.1288 13.16469167213596
NOAA 12
1 21263U 91032A 95278.75627715 .00000058 00000-0 45192-4 0 6591
2 21263 98.5820 299.9537 0012159 301.1877 58.8110 14.22562584228146
OKEAN 3
1 21397U 91039A 95279.22426721 .00000301 00000-0 39940-4 0 1379
2 21397 82.5232 16.1159 0022892 142.2376 218.0438 14.76409622233743
GPS BIIA-11
1 21552U 91047A 95277.95559634 -.00000024 00000-0 10000-6 0 8984
2 21552 56.0708 59.1237 0065785 242.6117 116.7157 2.00558942 31135
ERS-1
1 21574U 91050A 95276.19477071 .00000035 00000-0 29305-4 0 2083
2 21574 98.5492 348.9685 0001219 73.0925 287.0392 14.32248035220513
UO-22
1 21575U 91050B 95278.72030774 .00000030 00000-0 24495-4 0 6354
2 21575 98.3854 347.2537 0007808 318.5466 41.5124 14.36992699221376
ORBCOMM-X
1 21576U 91050C 95278.71419398 .00000034 00000-0 26059-4 0 7305
2 21576 98.3835 345.5302 0004261 334.5236 25.5739 14.36402185221279
TUBSAT-A
1 21577U 91050D 95275.22020372 -.00000004 00000-0 13106-4 0 6282
2 21577 98.3840 342.6794 0006552 333.5952 26.4900 14.36494636220808
SARA
1 21578U 91050E 95277.68868787 .00000244 00000-0 92834-4 0 8298
```

```
2 21578 98.4064 351.2165 0004640 323.1907 36.8961 14.39067072221443
TDRS 4
1 21639U 91054B 95278.23274244 .00000056 00000-0 00000+0 0 9449
2 21639 0.0400 317.1760 0002664 220.4285 105.2805 1.00271493109326
Meteor 3-5
1 21655U 91056A 95276.63821843 .00000051 00000-0 10000-3 0 8353
2 21655 82.5558 142.3754 0014623 91.8794 268.3969 13.16842025198771
UARS
1 21701U 91063B 95278.16475297 .00000041 00000-0 24658-4 0 7073
2 21701 56.9829 55.9417 0005941 105.8643 254.3072 14.96432982222039
DMSP B5D2-6
1 21798U 91082A 95278.78923773 .00000062 00000-0 56373-4 0 115
2 21798 98.9605 290.7824 0011860 231.4561 128.5549 14.13920230198834
Glonass 53
1 21853U 92005A 95278.01677276 .00000066 00000-0 10000-3 0 427
2 21853 65.0357 93.0356 0007249 197.2714 162.7534 2.13102356 28669
Glonass 54
1 21854U 92005B 95276.89804419 .00000070 00000-0 10000-3 0 1946
2 21854 65.0358 93.0733 0015459 23.0434 337.0716 2.13103656 28626
Glonass 55
1 21855U 92005C 95278.83992185 .00000059 00000-0 00000+0 0 1842
2 21855 65.0457 93.0090 0007769 193.1761 166.8450 2.13101860 28651
JERS-1
1 21867U 92007A 95277.07624554 .00001641 00000-0 14164-3 0 6870
2 21867 97.7103 352.6955 0001878 136.3689 223.7809 14.98630124199354
GPS BIIA-12
1 21890U 92009A 95276.92075370 -.00000024 00000-0 10000-3 0 7047
2 21890 53.8923 237.2467 0058869 186.5290 173.3653 2.00569284 26484
GPS BIIA-13
1 21930U 92019A 95279.12167862 -.00000095 00000-0 10000-3 0 6920
2 21930 55.7076 358.8171 0036643 178.6242 181.3623 2.00560158 25459
EUVE
1 21987U 92031A 95275.79552302 .00001225 00000-0 46792-4 0 4877
2 21987 28.4308 119.9041 0009848 107.2568 252.9101 15.19446334184336
SAMPEX
1 22012U 92038A 95278.81372316 .00000732 00000-0 62186-4 0 6649
2 22012 81.6698 28.9112 0116719 286.6372 72.2056 14.91453622177160
GPS BIIA-14
1 22014U 92039A 95276.66936417 -.00000034 00000-0 00000+0 0 5930
2 22014 54.8451 178.8549 0089659 317.8064 41.5574 2.00566914 17249
Glonass 56
1 22056U 92047A 95278.47744873 -.00000041 00000-0 00000+0 0 987
2 22056 64.8469 332.4276 0006377 261.9702 257.2170 2.13103090 24730
Glonass 57
1 22057U 92047B 95277.62698127 -.00000043 00000-0 00000+0 0 896
2 22057 64.8546 332.4808 0007292 308.6500 51.3495 2.13102312 24694
Glonass 58
1 22058U 92047C 95274.28209382 -.00000045 00000-0 10000-3 0 490
2 22058 64.8514 332.5968 0009009 265.8298 94.1373 2.13103081 24676
TOPEX
```

```
1 22076U 92052A 95274.77416526 -.00000038 00000-0 10000-3 0 9109
2 22076 66.0331 31.4740 0008012 262.3422 97.6680 12.80930709146892
KO-23
1 22077U 92052B 95276.35340280 -.00000037 00000-0 10000-3 0 5250
2 22077 66.0788 9.2925 0001112 148.3086 211.7994 12.86292530147640
S80/T
1 22078U 92052C 95278.66693403 -.00000037 00000-0 10000-3 0 5233
2 22078 66.0756 3.2216 0001932 82.3984 277.7251 12.86576074148026
GPS BIIA-15
1 22108U 92058A 95278.12554994 -.00000038 00000-0 10000-3 0 6338
2 22108 54.1157 237.9987 0117958 152.4730 208.0976 2.00552741 22457
FREJA
1 22161U 92064A 95276.20168693 .00000001 00000-0 43306-4 0 5501
2 22161 62.9931 175.0908 0820420 356.1314 3.3596 13.21850102144326
LAGEOS II
1 22195U 92070B 95277.48287637 -.00000009 00000-0 10000-3 0 4362
2 22195 52.6448 153.9043 0137336 324.3123 34.8323 6.47293592 69652
GPS BIIA-16
1 22231U 92079A 95277.81163004 -.00000032 00000-0 10000-3 0 6043
2 22231 54.6251 179.9414 0020302 290.6292 69.1915 2.00559767 21024
GPS BIIA-17
1 22275U 92089A 95278.96199960 -.00000020 00000-0 10000-3 0 6260
2 22275 54.6281 177.4515 0057126 38.1432 322.4897 2.00568704 20456
TDRS 5
1 22314U 93003B 95273.75230486 -.00000297 00000-0 10000-3 0 5616
2 22314 2.0821 71.0371 0002391 171.8293 351.3487 1.00277008 9973
GPS BIIA-18
1 22446U 93007A 95274.04187252 -.00000014 00000-0 10000-3 0 6158
2 22446 54.4019 298.0014 0083935 351.8204 8.0854 2.00573045 19346
Glonass 59
1 22512U 93010A 95276.61059423 .00000070 00000-0 10000-3 0 7353
2 22512 65.0417 92.9459 0007507 183.0116 177.0352 2.13102060 20208
Glonass 60
1 22513U 93010B 95278.42662542 .00000063 00000-0 00000+0 0 8142
2 22513 65.0450 92.8876 0007719 183.1402 176.8987 2.13102343 20432
Glonass 61
1 22514U 93010C 95275.90454980 .00000070 00000-0 00000+0 0 8089
2 22514 65.0710 92.9633 0011246 180.5204 179.5241 2.13102526 20385
ASTRO-D
1 22521U 93011A 95275.22405198 .00001117 00000-0 72980-4 0 4394
2 22521 31.1048 275.7802 0056538 119.3308 241.2985 15.02463385143482
UFO F1
1 22563U 93015A 95278.03421685 -.00000255 00000-0 00000+0 0 4555
2 22563 25.7933 292.6107 0009170 262.2020 149.2252 0.99252884 13553
GPS BIIA-19
1 22581U 93017A 95270.19542385 -.00000061 00000-0 10000-3 0 4647
2 22581 55.2027 358.6899 0057105 35.9437 324.4881 2.00570751 18329
ARSENE
1 22654U 93031B 95267.54869578 -.00000089 00000-0 10000-3 0 3318
2 22654 2.7533 81.0553 2887502 220.2252 115.0726 1.42203335 7800
```

```
GPS BIIA-20
1 22657U 93032A 95276.31322345 -.00000092 00000-0 10000-3 0 5263
2 22657 55.1554 358.2092 0073479 216.5356 142.9941 2.00560061 13774
RADCAL
1 22698U 93041A 95278.05301189 .00000048 00000-0 15056-4 0 4350
2 22698 89.5355 284.7876 0093738 80.4396 280.7371 14.21353974118047
GPS BIIA-21
1 22700U 93042A 95273.28693657 .00000022 00000-0 10000-3 0 4567
2 22700 54.2865 238.9981 0041078 345.8951 13.9793 2.00567539 16510
NOAA 13
1 22739U 93050A 95278.84306727 .00000061 00000-0 59161-4 0 9025
2 22739 99.0037 227.8690 0009265 220.4693 139.5819 14.10943931111043
GPS BIIA-22
1 22779U 93054A 95277.86223864 -.00000022 00000-0 10000-3 0 5206
2 22779 54.4981 297.8523 0020744 251.4357 108.3727 2.00551683 15363
Meteor 2-21
1 22782U 93055A 95275.20815416 .00000060 00000-0 41842-4 0 4318
2 22782 82.5525 192.3771 0022810 348.4752 11.5886 13.83039176105338
UFO F2
1 22787U 93056A 95278.82880664 -.00000105 00000-0 10000-3 0 5393
2 22787 4.3972 325.2444 0004194 230.0059 189.8121 1.00276118 6275
SPOT 3
1 22823U 93061A 95277.21129879 -.00000044 00000-0 00000+0 0 4763
2 22823 98.7286 349.9059 0001284 71.2203 288.9115 14.20026076104768
STELLA
1 22824U 93061B 95278.19936081 -.00000041 00000-0 12655-5 0 4204
2 22824 98.6085 352.6267 0005627 268.1091 91.9439 14.27102421105425
AO-27
1 22825U 93061C 95275.18868741 .00000003 00000-0 18917-4 0 4223
2 22825 98.6095 350.0569 0007906 274.0254 86.0030 14.27673273105030
IO-26
1 22826U 93061D 95275.69515165 .00000026 00000-0 28245-4 0 4218
2 22826 98.6107 350.6713 0008636 275.2214 84.7979 14.27781836105113
HEATHSAT
1 22827U 93061E 95279.21026710 .00000022 00000-0 26589-4 0 4837
2 22827 98.6076 354.0603 0008402 247.2149 112.8136 14.27908287105627
ITAMSAT
1 22828U 93061F 95279.16989151 .00000045 00000-0 35612-4 0 4000
2 22828 98.6060 354.1361 0009346 245.4467 114.5735 14.28114301 73719
PO-28
1 22829U 93061G 95278.27227028 .00000020 00000-0 25481-4 0 4141
2 22829 98.6063 353.2933 0009190 249.4625 110.5557 14.28093828105506
KO-25
1 22830U 93061H 95279.17334154 -.00000023 00000-0 78349-5 0 4339
2 22830 98.5056 346.1124 0010725 217.7930 142.2501 14.28097569105636
GPS BIIA-23
1 22877U 93068A 95274.92128560 -.00000003 00000-0 10000-3 0 3185
2 22877 55.5252 59.5238 0032951 296.5486 63.0902 2.00571608 14198
METEOSAT 6
1 22912U 93073B 95274.67389468 -.00000109 00000-0 10000-3 0 3681
```

```
2 22912 0.6065 278.7408 0001458 304.6494 18.8485 1.00273317 5259
HST Array
1 22920U 90037C 95277.35548280 .00006297 00000-0 45559-3 0 3774
2 22920 28.4653 18.1932 0004081 247.1860 112.8207 15.02068635100738
Meteor 3-6
1 22969U 94003A 95278.98563618 .00000051 00000-0 10000-3 0 2017
2 22969 82.5536 80.5576 0014996 151.5608 208.6333 13.16731871 81467
TUBSAT-B
1 22970U 94003B 95276.88822684 .00000051 00000-0 10000-3 0 1926
2 22970 82.5550 81.9671 0016207 154.8414 205.3510 13.16826051 81190
GPS BIIA-24
1 23027U 94016A 95275.50186983 -.00000088 00000-0 10000-3 0 2626
2 23027 55.0852 0.3418 0065404 199.5162 160.2709 2.00562747 11515
Glonass 62
1 23043U 94021A 95277.85972340 -.00000043 00000-0 00000+0 0 2659
2 23043 64.7347 332.8472 0007626 199.3377 160.7003 2.13103050 11547
Glonass 63
1 23044U 94021B 95275.39605690 -.00000047 00000-0 00000+0 0 2337
2 23044 64.7306 332.9337 0031393 204.8483 155.0633 2.13103129 11499
Glonass 64
1 23045U 94021C 95278.57486826 -.00000042 00000-0 00000+0 0 2446
2 23045 64.7166 332.8318 0009692 32.9462 110.4994 2.13102659 11555
GOES 8
1 23051U 94022A 95279.17229845 -.00000281 00000-0 10000-3 0 3932
2 23051 0.2513 83.7908 0003708 111.1650 167.1763 1.00273504 12817
MSTI 2
1 23101U 94028A 95278.51441794 .00006325 00000-0 10873-3 0 2403
2 23101 97.0922 110.2090 0011296 184.9759 175.1534 15.51407430 79623
STRV-1A
1 23125U 94034B 95271.51878489 .00005790 00000-0 10604-2 0 2006
2 23125 7.5105 348.6743 7269554 204.4152 87.8547 2.30598972 10032
STRV-1B
1 23126U 94034C 95277.91708238 .00007417 00000-0 14099-2 0 1763
2 23126 7.5443 345.9624 7271682 209.5119 75.2219 2.30384142 10220
Nadezhda 4
1 23179U 94041A 95277.87687850 -.00000006 00000-0 -22495-4 0 1355
2 23179 82.9426 66.5630 0037349 117.2784 243.2197 13.75671658 61551
Glonass 65
1 23203U 94050A 95278.05639095 -.00000037 00000-0 00000+0 0 1987
2 23203 64.7778 212.7221 0006816 154.7308 205.2911 2.13101708 8941
Glonass 66
1 23204U 94050B 95278.29037439 -.00000037 00000-0 00000+0 0 2080
2 23204 64.7688 212.7451 0015267 344.0891 15.8541 2.13102136 8948
Glonass 67
1 23205U 94050C 95279.11172795 -.00000038 00000-0 00000+0 0 1921
2 23205 64.7758 212.7036 0002519 294.2544 65.7083 2.13102197 8967
DMSP B5D2-7
1 23233U 94057A 95278.60746583 .00000086 00000-0 70301-4 0 5094
2 23233 98.8689 335.6317 0012189 181.3187 178.7953 14.12642185 56747
OKEAN 1-7
```

```
1 23317U 94066A 95278.65413622 .00000128 00000-0 16061-4 0 991
2 23317 82.5428 294.0903 0025288 187.7532 172.3290 14.73962479 52892
ELEKTRO
1 23327U 94069A 95275.82730936 -.00000125 00000-0 00000+0 0 923
2 23327 0.5621 259.8949 0004461 210.5063 274.4834 1.00270772 3417
RESURS 1-3
1 23342U 94074A 95278.92684286 .00000083 00000-0 21941-4 0 3495
2 23342 98.0043 336.5398 0001804 74.9384 285.2021 14.69772148 49311
Glonass 68
1 23396U 94076A 95277.54739605 .00000068 00000-0 00000+0 0 1511
2 23396 64.9825 92.9878 0030682 187.8905 172.1053 2.13102559 6776
Glonass 69
1 23397U 94076B 95278.62943808 .00000061 00000-0 00000+0 0 1584
2 23397 64.9765 92.9625 0011179 324.1471 11.2338 2.13102357 6780
Glonass 70
1 23398U 94076C 95276.62736116 .00000070 00000-0 00000+0 0 1653
2 23398 64.9577 93.0151 0001654 268.2674 60.6244 2.13102157 6757
LUCH (Altair-2)
1 23426U 94082A 95278.21006220 -.00000304 00000-0 00000+0 0 1836
2 23426 1.9810 272.0073 0000391 264.6348 7.4783 1.00277114 2931
RS-15
1 23439U 94085A 95278.21657403 -.00000039 00000-0 10000-3 0 826
2 23439 64.8151 77.0379 0166617 243.3653 115.0135 11.27525063 31927
NOAA 14
1 23455U 94089A 95278.82349098 .00000090 00000-0 73881-4 0 3425
2 23455 98.9120 220.5117 0008433 243.8632 116.1693 14.11537437 39425
ODERACS II A
1 23471U 95004C 95278.20868055 .00055491 12243-4 19648-3 0 2028
2 23471 51.6426 280.6903 0010346 156.0636 204.0834 15.89430183 38635
ODERACS II B
1 23472U 95004D 95272.32172989 .06795146 12641-4 14643-3 0 2947
2 23472 51.6455 294.0490 0004927 317.5101 44.3762 16.46511812 37926
Glonass 71
1 23511U 95009A 95278.50524687 -.00000042 00000-0 00000+0 0 1036
2 23511 64.7464 333.0927 0008367 213.2134 146.8058 2.13103102 4528
Glonass 72
1 23512U 95009B 95278.62282721 -.00000042 00000-0 00000+0 0 1108
2 23512 64.7334 333.0905 0005540 302.5450 57.4697 2.13102226 4526
Glonass 73
1 23513U 95009C 95276.10053472 -.00000047 00000-0 00000+0 0 1159
2 23513 64.7462 333.1923 0014478 204.6521 155.3407 2.13102470 4473
SFU
1 23521U 95011A 95277.58430676 .00002933 00000-0 92926-4 0 1023
2 23521 28.4546 48.8537 0019603 356.8872 3.1577 15.28927181 30692
GMS 5
1 23522U 95011B 95275.33201762 -.00000307 00000-0 10000-3 0 617
2 23522 0.7182 301.7880 0002072 183.6666 144.6999 1.00279144 1852
DMSP B5D2-8
1 23533U 95015A 95278.75910323 .00000053 00000-0 52179-4 0 2390
2 23533 98.8367 279.6228 0008316 60.3296 299.8703 14.12704458 27563
```

```
Microlab 1
1 23547U 95017C 95277.84455449 .00000205 00000-0 75312-4 0 547
2 23547 69.9799 44.8955 0013541 190.6771 169.4076 14.45417122 26622
OFEQ 3
1 23549U 95018A 95278.53091091 .00014438 00000-0 39990-3 0 1192
2 23549 143.3737 116.3138 0248333 154.5233 206.7996 15.08989386 27636
GFZ-1
1 23558U 86017JE 95275.53053252 .00003171 00000-0 43905-4 0 637
2 23558 51.6524 336.8007 0006040 337.9043 22.1688 15.60523728549592
ERS-2
1 23560U 95021A 95277.82356101 .00000034 00000-0 28835-4 0 1246
2 23560 98.5480 350.5845 0001180 73.4451 286.6844 14.32247188 23874
Spektr
1 23579U 95024A 95278.96360430 .00004299 00000-0 63769-4 0 1517
2 23579 51.6476 322.9858 0002947 150.6246 209.6306 15.57589401 21655
GOES 9
1 23581U 95025A 95277.16320260 -.00000209 00000-0 10000-3 0 683
2 23581 0.3269 269.7459 0002955 322.0296 109.2956 1.00266192 1345
Helios 1A
1 23605U 95033A 95279.18342994 .00194122 00000-0 36075-1 0 978
2 23605 98.0948 213.8851 0001500 66.0911 294.0436 14.63882006 13249
UPM SAT 1
1 23606U 95033B 95276.40935455 .00000178 00000-0 40382-4 0 696
2 23606 98.0753 211.4103 0005324 290.4337 69.6296 14.66895648 12924
CERISE
1 23607U 95033C 95276.18988642 .00000319 00000-0 65233-4 0 305
2 23607 98.0765 211.2286 0005764 293.8447 66.2155 14.67152596 12909
TDRS 6
1 23613U 95035B 95278.43521226 .00000103 00000-0 00000+0 0 593
2 23613 0.1470 85.4018 0001853 150.2062 144.4504 1.00261727 826
Glonass 74
1 23620U 95037A 95275.41571080 -.00000007 00000-0 00000+0 0 528
2 23620 64.8392 212.6569 0018253 170.6086 189.4253 2.13103055 1491
Glonass 75
1 23621U 95037B 95277.93837912 -.00000036 00000-0 00000+0 0 619
2 23621 64.8461 212.5587 0017755 180.8911 179.0966 2.13101926 1541
Glonass 76
1 23622U 95037C 95276.11995026 -.00000017 00000-0 00000+0 0 529
2 23622 64.8414 212.6307 0036722 166.2258 193.8713 2.13102442 1502
Prognoz-M2
1 23632U 95039A 95267.85458420 -.00001343 00000-0 00000+0 0 113
2 23632 64.3430 258.1780 9194267 315.1780 330.9250 0.26355501 135
SICH-1
1 23657U 95046A 95277.16192892 .00000189 00000-0 25527-4 0 203
2 23657 82.5301 77.1242 0027918 160.6258 199.6023 14.73415589 4980
Soyuz TM-22
1 23665U 95047A 95278.96360430 .00004299 00000-0 63769-4 0 438
2 23665 51.6476 322.9858 0002947 150.6246 209.6306 15.57589401 5091
TELSTAR 402R
1 23670U 95049A 95279.10450547 -.00000214 00000-0 10000-4 0 234
```

```
2 23670 0.2017 214.9885 0009442 130.9341 336.9336 1.00271659 90
1995049B
1 23671U 95049B 95276.31658481 -.00000268 00000-0 10000-4 0 84
2 23671 7.1459 174.8310 7289688 187.6772 147.2199 2.19440464 206
RESURS-F
1 23672U 95050A 95279.24910760 .00147495 99786-5 10263-3 0 316
2 23672 82.3249 189.7587 0005138 77.1021 283.0832 16.16342011 1585
1995050B
1 23673U 95050B 95272.04140007 .15624522 -12803-5 16689-3 0 206
2 23673 82.3159 198.1915 0014895 62.0452 298.1827 16.49844063 429
Cosmos 2320
1 23674U 95051A 95278.87469980 .00125392 13634-4 19270-3 0 237
2 23674 64.9127 85.1937 0044447 79.2193 33.6831 16.02176017 1073
1995051B
1 23675U 95051B 95275.94497615 .20175346 78196-5 24199-3 0 236
2 23675 64.9241 95.4652 0012263 76.2787 28.2541 16.49089160 548
1995052A
1 23676U 95052A 95279.27691025 .00701249 99232-4 42900-2 0 12
2 23676 82.9433 93.1198 0394316 86.0899 344.3289 15.15298146 18
1995052B
1 23677U 95052B 95279.34490529 .00711575 10139-3 42900-2 0 18
2 23677 82.9365 93.0596 0402576 85.8812 354.4864 15.13781639 28
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

2075. MIR QSL INFORMATION

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: hamdan@ix.netcom.com
Message-ID: <456i01$ac2@ixnews4.ix.netcom.com>
Source record: 23983

Last night (Oct. 7th, 6:10 UTC) I had the pleasure of working R0MIR (Crew 20, Sergey and Yuri) on the space station MIR on packet (keyboard to keyboard). I would like to obtain a QSL for this QSO, but the only QSL info I have concerns the EUROMIR operation. If anyone has the QSL info for R0MIR, I would appreciate it if you could send it to me.
Thanks and 73's de Bernie, KF0QS. hamdan@ix.netcom.com.

2076. Re: Satellite Antenna Questions

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: andrewd@ozemail.com.au
Message-ID: <455qtr$h70@oznet03.ozemail.com.au>
Source record: 23984

kory@avatar.com (Kory Hamzeh) wrote:

>I`m trying to put together a sat station. I can't afford a al/ez rotor, so
>I'm researching into what fixed antennas I can build myself. I've narrowed
>it down to two types: an eggbeater or a TR array (turnstile-reflector). I
>know I can't work AO-10 or A0-13 with either of these antennas, but I
>expect to be able to work the LEO birds.
Either of these two would be a handy reference antenna. And when the
bird is strong you will hear it on these antennas, despite the
"requirement" for extra gain. The experience of using simple antennas
is very educational. And linear modes like SSB/CW are remarkably
forgiving, unlike FM where the detector gives up the ghost very
quickly once the signal is down in the noise.

>This brings up a bunch of questions that I hope some of you sat/antenna
>gurus can help me with:

> 1. Which one would you choose and why?
WHichever was easiest to build, as a reference point.

> 2. Both antennas require phasing (delay lines). To calculate
> the length of the coax, you need to know the velocity
> factor for that particular coax. How does one figure
> that out? Do I need to call the manufacturer of the
> coax for this?
Most solid dielectric coax cables have velocity factors of 0.66.
However, foam and other types are higher. Check the tables in the
ARRL Handbook or Antenna Handbook for your cable type.

Andrew Davis --VK1DA--Canberra, Australia---Information Technology
Consultant * User Documentation * Windows Help design
Acceptance Testing * Software Reviews * Strategic Planning *

2077. ARLK054 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk054.1995@ampr.org>
Source record: 23985
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK054
ARLK054 Keplerian data

ZCZC SK79
QST de W1AW
Keplerian Bulletin 54 ARLK054
From ARRL Headquarters
Newington, CT October 7, 1995
To all radio amateurs

SB KEP ARL ARLK054
ARLK054 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-73
1 99973U 99999A 95280.75221512 .00129590 00000-0 21727-3 0 46
2 99973 39.0119 98.3909 0008091 283.6580 76.3455 16.00409931 47
Mir
1 16609U 86017A 95279.22021483 .00003320 00000-0 50756-4 0 02738
2 16609 51.6478 321.7007 0002748 153.0519 207.0604 15.57591502550267
AO-10
1 14129U 83058B 95273.14208990 -.00000104 00000-0 10000-3 0 03781
2 14129 26.4628 245.8965 5984525 314.0229 9.9399 2.05881672064496
RS-10/11
1 18129U 87054A 95279.16425680 .00000048 00000-0 35491-4 0 01281
2 18129 82.9266 337.0400 0012130 135.5981 224.6147 13.72357062415194
UO-11
1 14781U 84021B 95279.04880798 .00000174 00000-0 37273-4 0 08382
2 14781 97.7861 276.4087 0011370 182.3424 177.7722 14.69382684620182
RS-12/13
1 21089U 91007A 95279.25147356 .00000045 00000-0 32388-4 0 08482
2 21089 82.9211 18.4013 0027469 222.8636 137.0382 13.74060631234025
AO-13
1 19216U 88051B 95279.11592432 -.00000260 00000-0 45522-4 0 969
2 19216 57.4212 160.5022 7333704 20.4725 357.9882 2.09724178 24496
UO-14
1 20437U 90005B 95279.20320294 .00000026 00000-0 26909-4 0 01321
2 20437 98.5634 1.7638 0010007 234.8169 125.2066 14.29898627297612
```

```
RS-15
1 23439U 94085A 95279.19220601 -.00000039 00000-0 10000-3 0 00875
2 23439 64.8149 75.4599 0166663 243.1665 115.2128 11.27525037032030
AO-16
1 20439U 90005D 95279.17076572 .00000033 00000-0 29708-4 0 09434
2 20439 98.5736 3.5514 0010301 233.3627 126.6609 14.29953000297626
DO-17
1 20440U 90005E 95279.07833172 .00000026 00000-0 27118-4 0 09459
2 20440 98.5766 3.9736 0010483 233.7091 126.3124 14.30094298297638
WO-18
1 20441U 90005F 95279.20277337 .00000004 00000-0 18485-4 0 09396
2 20441 98.5760 4.0587 0011005 233.9148 126.1018 14.30065030297659
LO-19
1 20442U 90005G 95279.14761860 .00000038 00000-0 31620-4 0 09459
2 20442 98.5769 4.4003 0011375 233.7673 126.2464 14.30169383297660
FO-20
1 20480U 90013C 95279.19964386 -.00000080 00000-0 -10140-3 0 08319
2 20480 99.0672 347.1305 0540961 342.1281 16.1418 12.83230651265182
AO-21
1 21087U 91006A 95279.16643321 .00000094 00000-0 82657-4 0 06578
2 21087 82.9421 150.4578 0033799 196.1570 163.8511 13.74559826234976
UO-22
1 21575U 91050B 95279.20771794 .00000004 00000-0 15748-4 0 06398
2 21575 98.3855 347.7289 0007734 317.0684 42.9891 14.36992486221448
KO-23
1 22077U 92052B 95278.68592148 -.00000037 00000-0 10000-3 0 05384
2 22077 66.0788 4.4092 0000944 141.6536 218.4546 12.86292586147941
KO-25
1 22828U 93061F 95279.16989151 .00000045 00000-0 35612-4 0 4000
2 22828 98.6060 354.1361 0009346 245.4467 114.5735 14.28114301 73719
IO-26
1 22826U 93061D 95279.19908234 -.00000001 00000-0 17417-4 0 04381
2 22826 98.6103 354.1229 0008422 263.3371 96.6853 14.27781980105613
AO-27
1 22825U 93061C 95279.18347001 .00000030 00000-0 30057-4 0 04407
2 22825 98.6091 353.9910 0007857 262.2576 97.7707 14.27673997105605
PO-28
1 22829U 93061G 95279.18309329 .00000046 00000-0 35950-4 0 04192
2 22829 98.6063 354.1912 0009187 246.3005 113.7212 14.28094187105633

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
October 10, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

2078. Satellite Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: headshrnkr@aol.com
Message-ID: <456v0v$kln@newsbf02.news.aol.com>
Source record: 23986

Why are Yagis used in working the Oscar satellites not mounted in a true 90 degree plane? Why are they mounted at a 45 degree angle? What effect if any would be had be mouting them at 90 as opposed to 45 degrees? The reason I ask this is I, unaware of this 45 degree mounting, mounted my antennas at 90, not 45 degrees. I can work FO-20, AO-13 fine, will I see am improvment by changing to a 45 degree mount? In other words is it worth a trip back to the roof?

How would this affect working stations on the ground? One last question, what are the vertical/horz polarity switchs used for on the KLM Oscar antennas, does this create RHCP or LHCP? Thanks for the input!

73,
Bruce KB2VKJ

"We, the people are the rightful masters of both the congress and the courts - not to overthrow the constitition, but to overthrow men who pervert the constitution" - A. Lincoln

Bruce J. Howes
HeadShrnkr@aol.com

2079. How to Get Free Cable Premium TV .. LEGIT

Newsgroup: rec.radio.amateur.space
Date: 1995-10-07 00:00:00 UTC
From: md@goodnet.com
Message-ID: <DG2vI9.3wG@goodnet.com>
Source record: 23987

First I want to say I am sorry that this has nothing
to do with the topic of this group. You may see this
message in other newsgroups, the reason is I am subscribed
to those too so please don't flame me. I have been posting
and reading to this group for a while. I just wanted to
let you people out know there is a way to get Cable TV for
FREE. I recieve this letter in the mail from a friend
that had told me it works. I gave this to one of my friends
and he had free cable in his house within 20 mins. I have not
tried this method yet but may soon try if my cable goes up in
price. If anyone would like a copy send the following to the
address below.

Address Envelope to:

FreeStuff
9393 N. 90th St.
Suite 102-289
Scottsdale, AZ 85258

Enclose in the envelope:

Send...

$1.00 U.S MONEY *** NO COINS *** NO CHECKS ***
inside a sheet of carbon paper or construction paper,
and send a *self-addressed*,*stamped* envelope to the
address above.

Thanxs,
Just think if you pay 30$ + a month. 1$ will save
you 359 + dollars a year.

2080. 8052AH tracking code available

Newsgroup: rec.radio.amateur.space
Date: 1995-10-08 00:00:00 UTC
From: jlbarber@wolfenet.com
Message-ID: <458lp2$4ld@news1.wolfe.net>
Source record: 23988

Greetings, all.

Having a rather severe computer noise problem here, I dug
an old 8052AH board out of the closet, and ported my cheezy
tracking program to it. Although it it written around the
interface hardware I have (LCD display and clock chip) it
could be modified easily. I also have code to download
the kep set for the desired bird from a PC to the 8052,
set the clock, and get it going. After which, you simply
turn the "big machine" off, and enjoy quiet operation.

The code is in Intel 8052AH BASIC, and is free to anyone
that can make use of it.

73,
Jim Barber, N7CXI
jlbarber@wolfenet.com

2081. Re: MIR QSL INFORMATION

Newsgroup: rec.radio.amateur.space
Date: 1995-10-08 00:00:00 UTC
From: Keith Stein <us011192@pop3.interramp.com>
Message-ID: <458n3k$6n6@usenet1.interramp.com>
Source record: 23989

Hi Bernie,

Hey I just read your message about contacting Mir. I'm sorry but I don't have the QSL information.

I wanted to know if I could use your report in a new column I'm writing for Satellite Times magazine. It consist of a satellite log of reception reports from hobbyist like yourself. One thing you didn't provide was your location, and what frequency this contact was on???? Write back when you can.

--
Keith Stein

Community, Air & Space Report Editor:
http://www.newspace.com/publications/LaunchReport/LaunchReport.html

Satellite Times magazine Editoral Staff Member
http://www.grove.net/hmpgst.html

2082. ???10M-70cm XVERTERS???

Newsgroup: rec.radio.amateur.space
Date: 1995-10-08 00:00:00 UTC
From: tom.alldread@minfox.com
Message-ID: <9510081511363822@minfox.com>
Source record: 23990

Greetings All:

I am looking for a low cost 10 metre to 70 cm transverter. I
wonder if anyone knows of a modern kit or homebrew project for a low
cost transverter? Also I would be interested in any recommendations on
this subject.

73 de VE7TMA

---
* QMPro 1.53 * Very Best Regards, tom.alldread@minfox.com

2083. Re: Amateur Satellite info

Newsgroup: rec.radio.amateur.space
Date: 1995-10-08 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Oct8.114008.14330@ke4zv.atl.ga.us>
Source record: 23991

In article <4568em$3js@volcano.jrv.qc.ca> sylvestre <sylvestre@pandore.qc.ca> writes:
>
>I own the same radio TS-790A
>Antennas here are the KLM 22C and 435-40CX the big ones.
>Also own a DSP-2232 to get hooked to the microsats soon.

You have good antennas, but you have my sympathy on the TS-790A.
Have you already discovered you can't use the narrow filters on
the subband? You know, the one you *listen* on? Sheesh! I'd also
suggest you limit transmission time sharply on 435 MHz. The PA
brick in the radio gets very hot very quickly, and doesn't have
adequate thermal sinking or protection. And the SAT track tuning
is a joke. I dumped mine and got a FT-736R. A bit long in the
tooth perhaps, but at least it was designed with the satellite
operator's *real* needs in mind.

I don't really want to rain on your parade, just wanted to let
people know that there are problems with the TS-790A for satellite
operation, especially digital satellite operation, where good narrow
filters can make an enormous difference.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

2084. Ham Radio Today

Newsgroup: rec.radio.amateur.space
Date: 1995-10-09 00:00:00 UTC
From: Steve Lorek <slorek@tcp.co.uk>
Message-ID: <30799899.3270@tcp.co.uk>
Source record: 23992

Does anyone here read Ham Radio Today magazine? Well, I've just stumbled accross the WWW version - called Ham Radio today On-Line at:

http://www.tcp.co.uk/~slorek

Although it says it's not finished yet, it's already looking very interesting....

2085. AO-27 question

Newsgroup: rec.radio.amateur.space
Date: 1995-10-09 00:00:00 UTC
From: brunel@hugo.rz.fh-ulm.de
Message-ID: <brunel.45.00106E03@hugo.rz.fh-ulm.de>
Source record: 23993

Hello all...
Can anyone tell me some dates (uplink, downlink, beacon, modes, etc.) of
AO- 27 ??? I couldn't find it in the german ham- magazine (cq- DL).
Many thanks
73 Roman (DL2SFE)

2086. Re: Satellite Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-10-09 00:00:00 UTC
From: Tom Williams <williamt@ccmail.orst.edu>
Message-ID: <45bpur$ov7@news.orst.edu>
Source record: 23994

My reasons for 45 deg mounting on fixed antennas: Fewer birds sit on the antenna that way.
Tom

--
Thomas E Williams, Transmission Systems Engineer
Network Services / Oregon State University
williamt@ccmail.orst.edu 503.737.3822
http://www.nero.net/neropeople/williamt

2087. KR4FC - Trust him at your own Risk!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-10-09 00:00:00 UTC
From: Somebody@here.com
Message-ID: <Somebody.34.0037106A@here.com>
Source record: 23995

KR4FC who lives in Georgia is a liar, and an asshole. Watchout for him and for God sake don't trust him to do anything or know any thing. He is a dumb ass!

2088. Re: Grid Co-ordinates

Newsgroup: rec.radio.amateur.space
Date: 1995-10-10 00:00:00 UTC
From: seeler@UPEI.CA
Message-ID: <seeler.230.813322482@UPEI.CA>
Source record: 23996

In article <kc7dba.1.02551A7A@primenet.com> kc7dba@primenet.com (Stephanie Steele) writes:
>From: kc7dba@primenet.com (Stephanie Steele)
>Subject: Re: Grid Co-ordinates
>Date: Thu, 5 Oct 1995 10:47:19 MST
>Keywords: Grid Locator
>In article writes: Can anyone tell me how to obtain an accurate grid
>co-ordinate for my station? I have two different programs giving me two
>different co-ordinates. Help Please.
>
>

Hi - one thing I did was to get the numbers off the surveyor's stake closest to the shack (or the deed) and call the land registry off to get the true co-ordinates(long and lat) and then used one of the programs available from the arrl. Watch how the data is entered as some programmes expect different data and the surveyors office told me that the LAT and LONG convention as used by surveyors changed in '86 (at least in Canada as to how the surveyors numbers on the stakes are connverted).

73 Dave , VY2DCS

2089. Re: AO-27 question

Newsgroup: rec.radio.amateur.space
Date: 1995-10-10 00:00:00 UTC
From: Ed@Ed
Message-ID: <DG7I1o.tCL@bocanews.bocaraton.ibm.com>
Source record: 23997

In <brunel.45.00106E03@hugo.rz.fh-ulm.de>, brunel@hugo.rz.fh-ulm.de (PE Roman Brunel) writes:
>Hello all...
>Can anyone tell me some dates (uplink, downlink, beacon, modes, etc.) of
>AO- 27 ??? I couldn4 t find it in the german ham- magazine (cq- DL).
>73 Roman (DL2SFE)

Roman. Frequencies are 145.850 uplink and 436.800 downlink, FM only. Usually operates during local daylight hours and during weekends only. I have heard it active during the week but not very often.
73 Ed

2090. ARLS017 Phase 3-D details set

Newsgroup: rec.radio.amateur.space
Date: 1995-10-10 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls017.1995@ampr.org>
Source record: 23998
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS017
ARLS017 Phase 3-D details set

ZCZC AS96
QST de W1AW
Space Bulletin 017 ARLS017
From ARRL Headquarters
Newington, CT October 10, 1995
To all radio amateurs

SB SPACE ARL ARLS017
ARLS017 Phase 3-D details set

All major contractual issues are now complete for the launch of the Phase 3-D Amateur Radio satellite, scheduled for September 1996. Phase 3-D International Satellite Project Leader Dr Karl Meinzer, DJ4ZC, made the announcement at the annual Radio Amateur Satellite Corporation (AMSAT) meeting held the weekend of October 7 in Orlando, Florida.

The final arrangements establish a firm cost, schedule and technical baseline for the launch, Meinzer said. The contract includes a launch price of about 1 million dollars; contributions so far from individuals and organizations around the world will cover the ''first installment'' of the launch bill, about 800,000 dollars, which is due November 1, 1995.

AMSAT-NA President Bill Tynan, W3XO, said that in addition to the additional 200,000 dollars needed for launch, another 200,000 dollars is still needed to complete final assembly, check-out, and testing of the satellite.

The contract with ESA specifies that if, for some reason, launch is not possible on the Ariane 502 rocket launch in September, 1996, the space agency will exercise its ''best efforts'' to launch P3-D on an (older) Ariane 4 booster, no later than mid-1997. Meinzer said that the P3-D design team has built the satellite and its carrying structure to be compatible with both the Ariane 4 and 5 boosters.

Meinzer led negotiations with the European Space Agency (ESA) the previous weekend, in Evry, France. Also present at those meetings were AMSAT-North America Executive Vice President Keith Baker, KB1SF, and AMSAT-NA Vice President for Engineering Dick Jansson, WD4FAB.

A story about the P3-D satellite appeared in May 1995 QST.
NNNN
/EX

2091. InstantTrack & Win95

Newsgroup: rec.radio.amateur.space
Date: 1995-10-10 00:00:00 UTC
From: tmnichol@nps.navy.mil
Message-ID: <45f5jo$lbb@sagan.nps.navy.mil>
Source record: 23999

I am trying to get InstantTrack to work with Win95. All is working fine, with the exception of the NBS time update function. I am using a PCMCIA modem and Win95 has assigned it an IRQ of 15. When I attempt to update the time, the Modem dials and seems to connect (the speaker turns off), but no data is exchanged, ie., the text normally associated with time update is displayed. I am using com3 and have chanded the NBSCOM.INI file to port = 2. I manually changed the modem IRQ = 4 and was able to update t
he time properly, but other conflicts poped-up on my system and I was forced to set the IRQ back to 15. Any suggestions would be much appriciated. Also, does anyone have the email address for N6NKF? I have his Compuserve ID number, but do not know how to send him mail with it.

2092. InstantTrack & Win95

Newsgroup: rec.radio.amateur.space
Date: 1995-10-10 00:00:00 UTC
From: tmnichol@nps.navy.mil
Message-ID: <45faft$lm4@sagan.nps.navy.mil>
Source record: 24000

I am trying to get InstantTrack to work with Win95. All is working fine, with the exception of the NBS time update function. I am using a PCMCIA modem and Win95 has assigned it an IRQ of 15. When I attempt to update the time, the Modem dials and seems to connect (the speaker turns off), but no data is exchanged, ie., the text normally associated with the time update is not displayed. I am using com3 and have chanded the NBSCOM.INI file to port = 2. I manually changed the modem IRQ = 4 and was able to update the time properly, but other conflicts poped-up on my system and I was forced to set the IRQ back to 15. Any suggestions would be much appriciated. Also, does anyone have the email address for N6NKF? I have his Compuserve ID number, but do not know how to send him mail with it.

2093. re: help with ft736r/trakbox ver.3.01b

Newsgroup: rec.radio.amateur.space
Date: 1995-10-11 00:00:00 UTC
From: Gary Newman <n5xpd@ballistic.com>
Message-ID: <45h09t$no0@giga.bga.com>
Source record: 24001

will any one running a ft 736r and trakbox ver.3.01.b help me get my doppler-shift working. have yaesu g-5400b e/a rotor that tracks perfect from the trakbox. all cables ok (i think). HELPPPPPPPPPP!

2094. re:help with ft736r/trakbox ver.3.01b

Newsgroup: rec.radio.amateur.space
Date: 1995-10-11 00:00:00 UTC
From: Gary Newman <n5xpd@ballistic.com>
Message-ID: <45h16l$no0@giga.bga.com>
Source record: 24002

I would like any one running a ft736r/trakbox ver.3.01b to help me get my doppler-shift going. I run a yaesu g5400b from the trakbox and it tracks perfect. Have checked cables and came up with nothing wrong, Where do I go now? Helpppppppppppp!

2095. re:help with ft736r/trakbox ver.3.01b

Newsgroup: rec.radio.amateur.space
Date: 1995-10-11 00:00:00 UTC
From: Gary Newman <n5xpd@ballistic.com>
Message-ID: <45h184$no0@giga.bga.com>
Source record: 24003

I would like any one running a ft736r/trakbox ver.3.01b to help me get my doppler-shift going. I run a yaesu g5400b from the trakbox and it tracks perfect. Have checked cables and came up with nothing wrong, Where do I go now? Helpppppppppppp!

2096. re:help with ft736r/trakbox ver.3.01b

Newsgroup: rec.radio.amateur.space
Date: 1995-10-11 00:00:00 UTC
From: Gary Newman <n5xpd@ballistic.com>
Message-ID: <45h1bj$no0@giga.bga.com>
Source record: 24004

I would like any one running a ft736r/trakbox ver.3.01b to help me get my doppler-shift going. I run a yaesu g5400b from the trakbox and it tracks perfect. Have checked cables and came up with nothing wrong, Where do I go now? Helpppppppppppp!

2097. Re: Discone ant

Newsgroup: rec.radio.amateur.space
Date: 1995-10-11 00:00:00 UTC
From: tfugate@pop.uky.edu
Message-ID: <45gbfn$o9d@service2.uky.edu>
Source record: 24005

In article <45fpva$8q4@ixnews3.ix.netcom.com>, mikehob@ix.netcom.com (Mike Hoblinski) says:
>
>I live in an apartment and am going to try using a discone antenna. Has
>anybody had any expierance, with this antenna? I am going to try using
>my Yaesue ft290II and ft790II radios with a duplxer on Mir and to
>listen to dove.
A diskcone generally has some "wierd" nulls in its' overhead response.
I used one for about two months to recieve the NOAA birds. It worked..
but there were bad gaps in the signal. While I used the Radio shack
diskcone, I have tried several others at friends shacks and they all
have pretty much the same overhead response. A turnstill(?sp?) is
MUCH better. The hiegth above the ground plane makes a BIG difference
in the overhead response. Check out one the older ARRL antenna books
or specialize coms books. There was some discusion several mnts ago
on this ng about the "eagbeater" antenna. From the reports and comments,
it looks to be a good space com contender. All of this ng is archived..
but I don't know where or how to retrive them. If you want I might
still have most of the thread(I only throw away things right before
I need them), just drop me an email and if I have them I will try to
email them back.
.....
Terry Fugate
UKTV
University of Kentucky
"The opinions expressed herein are mine, and soley mine. They do not
represent the official view of the University of Kentucky,
the State of Kentucky, or any agency of any government.
If you do not like my opinion, just get on with your life.
I will not change your mind and you damn sure can not change mine."

2098. Re: Satellite Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-10-11 00:00:00 UTC
From: moritz@ipers1.e-technik.uni-stuttgart.de
Message-ID: <45g9p7$1kgo@info4.rus.uni-stuttgart.de>
Source record: 24006

A metal support through the boom will affect will degrade the pattern
of a circularly polarized antenna no matter if it is mounted in + or x
configuration. I should like to know if someone has actually tested,
if there was a difference.

73, Moritz DL5UH

2099. * SpaceNews 09-Oct-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-10-11 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <45hkvn$l2@pilot.njin.net>
Source record: 24007
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.info

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 09-Oct-95 *
Date: 11 Oct 1995 19:45:59 -0400
Organization: Rutgers University
Message-ID: <45hkvn$l2@pilot.njin.net>

SB NEWS @ AMSAT $SPC1009
* SpaceNews 09-Oct-95 *

BID: $SPC1009

=========
SpaceNews
=========

MONDAY OCTOBER 9, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* COMET HEADED FOR BRIGHT ENCOUNTER *
====================================
A very unusual comet was discovered on 23-Jul-95, on its way from the outer
reaches of the solar system towards the Sun. Although it is still situated
beyond the orbit of Jupiter, it is so bright that it can be observed in even
small telescopes. It has been named `Hale-Bopp' after the discoverers and
is already of great interest to cometary astronomers.

The comet is expected to pass about 120 million kilometres from Jupiter in
April 1996, and it will approach the Sun to about 140 million kilometres
when it passes perihelion in early April 1997. At the time of perihelion,
the comet's geocentric distance will be about 200 million kilometres, the
angular distance (`elongation') in the sky from the Sun about 45 degrees
and it will be located in the northern sky at declination +45 degrees.
It will actually by `circumpolar' in Northern Europe and therefore well
observable all night from there.

One possible cause for the unusual brightness of Comet Hale-Bopp at its
present location, more than 200 million kilometres outside the orbit of
Jupiter, is that it possesses a very large nucleus, that is the `dirty
snowball' of dust and ice at the centre of a comet. The larger the
diameter of the nucleus, the more sunlight will be reflected from its
surface and the brighter will it appear. A corresponding estimate
indicates that the diameter of its nucleus would be nearly 100
kilometres, as compared to about 10 kilometres for Comet Halley.

If the orbital period is near 3000 years, the brightness near perihelion in April 1997 could reach magnitude -1.5. This means that Comet Hale-Bopp would become almost as bright as Jupiter which will also be visible in the night sky at that time.

What is even more exciting, the comet would stay this bright during several weeks and be visible from the Northern hemisphere during many hours each night. It will even be above the horizon all night for observers located north of geographic latitude 45 degrees. Thus, in addition to providing a wonderful opportunity to astronomers for learning more about comets, Hale-Bopp may become an object of great public interest. This is especially so, because it is now almost 20 years since a comet has been this bright. The last one (Comet 1976 VI - which was discovered at ESO) attained this magnitude during a few days in early March 1976.

At the present time, Comet Hale-Bopp is located in the southern constellation of Sagittarius and it is very well placed for observations from southern observatories. Irrespective of its performance later on, the unusual brightness at the present heliocentric distance already makes it a very interesting object for astronomers.

Because of its unusual brightness, and in order to follow the future evolution of Comet Hale-Bopp, coordinated observations at La Silla are now being planned for the next several months. Thereafter, the comet will move behind the Sun as seen from the Earth and observations with the large telescopes will only become possible again in March 1996. There is no doubt, however, that from then on, its further development will be followed with great care by the observers. Better predictions for its brightness near perihelion will also become available.

[Info via Dick Harris, KW8B]

* IMAX IMAGES AVAILABLE *
==========
Several dramatic new images highlighting the historic docking of the Space Shuttle Atlantis and the Mir space station are available via the Internet. The high resolution images show crew activities and views of Atlantis taken from Mir. The images were recorded using the 70-mm IMAX camera system.

The IMAX images are part of a larger photo gallery that includes images from the STS-71 docking mission and from STS-63, a mission flown earlier this year in which the Shuttle Discovery performed a rendezvous with the Mir that served as a dress rehearsal for the docking mission. Links to the collection can be found on the "Today at NASA Home Page" at URL:

http://www.hq.nasa.gov/office/pao/NewsRoom/today.html

[Info via NASA]

* INFOESPACE ARCHIVES AVAILABLE *
==========
Archives of the French translation of SpaceNews, InfoEspace, are now available in the C:\INFOESP subdirectory of the Laval-Laurentides ARC

BBS, VE2CRL.#MTL.PQ.CAN.NOAM. To request a copy of a back issue of
InfoEspace, send a private message to the REQFIL server of VE2CRL.
The server will automatically send the requested file to you. Use
the following procedure to request a file from the server:

SP REQFIL @ VE2CRL <ENTER>
Subject: C:\INFOESP\ESPmmdd.yy @ homebbs <ENTER>
Body of msg: CTRL-Z or /EX <ENTER>

The files are named according to their date of issue, which is always a
Monday. In ESPmmdd.yy, mm represents the month (e.g. 05 for May), dd
is the date, and yy is the last two digits of the year (e.g. 94 or 95).
Don't forget to specify your home BBS! All issues of InfoEspace since
20-June-1994 (ESP0620.94) are in the subdirectory. All files are in
IBM-ASCII, with accents. For obtaining non-accented files, send a
message to VE2TRV @ VE2CRL.#MTL.PQ.CAN.NOAM.

InfoEspace is translated by Mike Detaille, VE2TRV, of Sainte-Therese,
Quebec, Canada.

[Info via Mike VE2TRV]

* THANKS! *
===========
Thanks to all who sent messages of appreciation to SpaceNews, especially:

VE2TRV K8LIX N9UIK

* FEEDBACK/INPUT WELCOMED *
==========================
Comments and input for SpaceNews should be directed to the editor (John,
KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

2100. DL0ART/am - 3rd launch

Newsgroup: rec.radio.amateur.space
Date: 1995-10-12 00:00:00 UTC
From: Oliver Welp <welp@uni-muenster.de>
Message-ID: <45hm85$1doe@majestix.uni-muenster.de>
Source record: 24008

DL0ART/am -
The Nienberge Amateur Radio Group (Germany) performed its third
balloon launch on sunday, 08-Oct-95.

This time, Murphy really hit us...
We announced a transponder (70 cm -> 2 m) would be part of the
payload. We thought so till some hours before launch, but had to
find out what the deepest meaning of the word intermodulation is. We
mainly blame the telemetry transmitter for that, but we decided that
having that one aboard is a bit more important than a transponder...
So we have to appoligize if anyone looked desperately for the signal
and didn't find it - folks, your equipment is fine (get it out of
the garbage can again!) - the signal simply wasn't there.

We hope having the payload (including tha transponder) working
flawlessly till the next launch (whenever that will be).

Links to reports about the first two launches can be found at URL:
http://www.usa.net/~rickvg/othgrp/othnews.htm

ARTOB launch 08-Oct-95:

Launch: # 3
Launch date: 08-Oct-95
Launch time: 1211 UTC
Launch site: Nienberge near Muenster, NW Germany, JO32SA

Payload DL0ART/am:
QRG/mod.: (1) Telemetry beacon: 145,200 MHz F2D & F2A
(2) 2nd beacon: 144.991 MHz F1A (call & info text)
(3) Transponder cancelled - sorry!
(4) RX for remote control on 70 cm and 10 m (not used)
Power: (1) 2 W
(2) 100 mW
(3) ---
Antennas: (1) groundplane
(2) turnstile
(3) big wheel for 2 m used to attach the parachute /
70 cm cancelled
(4) 70 cm: groundplane / 10 m: lambda/2 vertical
Power supply: (1) & (4): 5 D cells LiSO2 in series (=14.4 V, 6 Ah)
(2) 1 D cell LiSO2 (3 V) and step-up to 9 V
Diameter ballon: ca. 8.5 ft
Gas: hydrogen
Parachute: ca. 6 ft
Weight: 4005 g (over all)

Lift rate: ca. 300 g

Talk back of DF teams via repeater Muenster, DB0PD (R84).

(UTC)
10:30 ARTOB team meets at Armin's QTH
11:20 arrival of launch site
11:30 filling the balloon
11.55 phone call to DFS (= German FAA)
12:00 airport Muenster-Osnabrueck (FMO) called; in case we happen
to get into their inner control zone we're allowed to pass at
a minimum altitude of 30,000 ft (!)
12:05 final testing of gaz valve
12:11 LAUNCH
The balloon lifts steadily and drifts to N/NE (35 deg)
12:22 altitude 4,500 ft, rate of ascend (ROA) 475 ft/min.
12:28 altitude 7,575 ft,
first opening of gaz valve (1 min.);
ROA 215 ft/min thereafter
12:30 second opening of gaz valve (1 min.); ROA 180 ft/min.
12:35 third opening of gaz valve; when trying to close it this does
not. The volve remains opened till the end of the flight.
12:38 max. altitude: 10,050 ft
12:54 altitude 6,175 ft, rate of descend (ROD) 300 ft/min.
13:10 Touchdown of balloon. Some DF teams lose signal
13:40 balloon found by Oliver, DL9QJ, and Ludger, DL3YBO.

Tochdown site: "Kattenvenner Moor" (JO32WC), 10 miles E of Greven
Touchdown distance: 13.5 miles

max min
Altitude: 240 ft 10,050 ft
Temp. (outside) 3.1° C 24.7° C
Temp. (inside) 26.9° C 31.5° C
Voltage 14.29 V 14.35 V

The positive thing was that (after we found the signal again) the
DFing was easy: simply go straight ahead as long as signal on the HT
(vertical car antenna) increases; when it's strong enough, just hit
the brakes and find yourself in a distance o 5 ft from the balloon!
Indeed, it was attached to a fence next to a small rural road -
never forget the confused cows on the other side of the fence...

We had many responses (reports) via PR (someone put us into the DX
cluster) - and obviously, the beacons could even be heard in the UK
(grid JO02)!

We were not too delighted that again (just like the first flight)
the balloon came down too early because of a malfunction of the
valve (and not even being the same flaw). We'll anyway redesign the
valve till the next launch.

The DF coordinating has to be improved - we also found that giving bearings every 10 min. is to much for the teams - you simply do not make enough miles in case the balloon would be faster. We scheduled "must" bearings for xx:00, xx:20 and xx:40 h - and many teams dropped the (voluntarily) ones at xx:10, xx:30 and xx:50 h. But only one or two bearings would help the coordinating team - so we'll probably change to a xx:00 / xx:15 / xx:30 / xx:45 h schedule.
The driving directions of the control team were poor - yes, this time, they had to do everything manually - no help of the PC program (because not enough notebooks available).

If you heard our sigs, pse send QSL via PR / Internet / buro - all will be answered with our DL0ART/am QSL cards! Any suggestion or response is always welcome!

Oliver Welp, DL9QJ, N3NSF
[Internet: n3nsf@amsat.org, welp@uni-muenster.de
PR: DL9QJ @ DB0EA.#NRW.DEU.EU
Tel./Fax: +49-2533-7312]

2101. Re: Ham Radio today on-line

Newsgroup: rec.radio.amateur.space
Date: 1995-10-12 00:00:00 UTC
From: 0005018901@mcimail.COM
Message-ID: <50951012061305.0005018901PK4EM@MCIMAIL.COM>
Source record: 24009

I "stumbled" across this also, after reading your other posts to the
various newsgroups.
I found it to be pretty lame. No real information available, only
directions on how to subscribe. One would have to describe it as just
another 'I'net ad". Of course, if it really is in developement then maybe
in the future it really would contain useful information. Presently tho it
has little to offer...

2102. subscribe

Newsgroup: rec.radio.amateur.space
Date: 1995-10-12 00:00:00 UTC
From: anserlon@embratel.NET.BR
Message-ID: <199510120020.VAA04624@rjo04.embratel.net.br>
Source record: 24010

[No readable article body recovered]

2103. Scanners and radio astronomy

Newsgroup: rec.radio.amateur.space
Date: 1995-10-13 00:00:00 UTC
From: Nick Gleeson <ng@shannon.tellabs.com>
Message-ID: <1995Oct13.081039.19847@tellab5.tellabs.com>
Source record: 24011

Hi folks,
I have a wide band scanner 500khz to 1.3Ghz am nfm and wfm, and I was wondering if I could do any radio astronomy with this gadget, I am thinking of buying a Discone antenna, as I am using a magnetic whip at the moment. What freqs are suitable for listening to meteor pings?, what frequencies can Jupiter be heard on? Can I listen in to any satellites? I have a PC with a sound card, so I presume that I can use this to record signal levels etc.

Any help here would be much appreciated, Thanks in advance.

--

Nick Gleeson
==========
Tellabs Limited,
Shannon Industrial Estate,
Shannon,
County Clare,
Ireland.
Phone: +353 61 471 433
Fax: +353 61 471 000
Department: R&D
e-mail: ng@shannon.tellabs.com

2104. Re: jota !help!!!! - jott.txt (1/1)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-13 00:00:00 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <45losr$gt6@kocrsv08.delcoelect.com>
Source record: 24012

Bobc@woodhill.demon.co.uk (Bob Carter) writes:
[translated as a public service for the uuencode-impaired]
>
>
> Can anyone please help me?
>
> On the weekend of October 21st the Scout movement is involved
> in the Jamboree On The Air (JOTA). We at the Phoenix Venture
> Unit (Kenton & Kingsbury District) had arranged for a licenced
> radio operater an a few of his collegues to use our Unit Den as
> a base for a radio station. We have made all the arrangements
> for masts and wires to be strung for aerials telephone lines
> etc. but he has just been given the completion date for moving
> house and it is that weekend, therefore we are without a
> licence operator. Is there anybody or a radio group that would
> like a change of venue with opportunities for new contacts that
> would be willing to help us out, time is of the essence with
> regard to arrangements and licences etc. If you can help or
> require any further details please reply asap.
>
> Bobc@woodhill.demon.co.uk
> Bobc@roverden.demon.co.uk
> Robert.Carter@dos.us-state.gov

2105. Re: Ham Radio today on-line

Newsgroup: rec.radio.amateur.space
Date: 1995-10-13 00:00:00 UTC
From: Steve Lorek <slorek@tcp.co.uk>
Message-ID: <307ED490.2272@tcp.co.uk>
Source record: 24013

My sentiments exactly. Ham radio today On-Line hasn't officially been released, so what is there now is just a temporary fill-in. I have been given the task of editor of this absolutely BRILLIANT site. Yes, I know that at the moment it may not be at all impressive. But that's going to change on November 3rd - the onsale date of Ham Radio Today magazine - I'm going to release the most amazing new-look site (it's just got to be seen to be beleived!) which I'm working on now. It will contain loads of articles and the latest news and be generally MUCH BETTER!!! Same URL)(http://www.tcp.co.uk/~slorek) but incredible features. Remember that date: November 3rd!!! I would also add that since October 1994 I have been running the software offer (details at Ham Radio Today On-Line) and still going! Bye!

P.S. Remember, November 3rd!

Steven Lorek

slorek@tcp.co.uk

http://www.tcp.co.uk/~slorek

PPS. NOVEMBER 3RD!!!!!

Advertisement over.

NOVEMBER 3RD!!!!!!!

2106. Re: KR4FC - Trust him at your own Risk!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-10-13 00:00:00 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <45mm2k$kqr@kocrsv08.delcoelect.com>
Source record: 24014

In <Somebody.34.0037106A@here.com>, Somebody@here.com writes:
>KR4FC who lives in Georgia is a liar, and an asshole. Watchout for him and
>for God sake don't trust him to do anything or know any thing. He is a dumb
>ass!

In a fit of circular reasoning, I deduce that this anonymous post was
perhaps made by KR4FC, or at least by someone who fits his description.

In the unlikely event that this "Somebody.34.0037106A@here.com" is in
earnest, a short description of what he has done or said to evoke this
opinion would permit the rest of us to judge for ourselves whether or
not the opinion is warranted. I fear that this is just a severe case
of slanderous net.noise, alas.

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson # Ignorance can be fixed, but stupidity is permanent.
(I do not speak for Delco Electronics, and DE does not speak for me.)

2107. THE SMALLEST FM RADIO IN THE WORLD

Newsgroup: rec.radio.amateur.space
Date: 1995-10-14 00:00:00 UTC
From: rrcom@netvision.net.il
Message-ID: <NEWTNews.22594.813693086.rrcom@rrcom.netvision.net.il>
Source record: 23916
Cross-posted to: rec.video.satellite.europe,rec.radio.amateur.space,alt.satellite.tv.forsale,alt.satellite.tv.europe,alt.business.misc,alt.business.import-export

We are looking for distributors world wide for:
THE SMALLEST FM WALKMAN RADIO IN THE WORLD

Specifications

Frequency range : FM 88 - 108 Mhz
Worldwide system: USA - EUROPE - ASIA
AFRICA - AUSTRALIA
South AMERICA
Power source : 1 x 3 Volt
Button cell battery
CR-2032 or equivalent
Antenna : Earphone cables antenna
Dimensions : 37 x 27 x 10 mm.
1 2/5" x 1 1/8" x 2/5"
Weight : 23 gram. 1/20 Lib.
Warranty : 3 Months World wide

Distributor Prices List

Quantity Price per Unit
--- ---
1 20 $ USA.
2 - 9 16 $ USA.
10 - 99 12 $ USA.
100 - 999 10 $ USA.
1000 - UP 9 $ USA.

SPECIAL SAMPLES OFFER

Before you decide to become our product distributor
please order a sample of
"THE SMALLEST FM RADIO WALKMAN IN THE WORLD"
for a special offer of 16 $ USA. for one unit
or 28 $ USA. for two units

We are 100% sure that if you get the offer
you will become our product distributor.

ORDER FORM

To:
RRCOM ADVANCED TECHNOLOGY LTD.
49-51 Haatzmauth St.
Beer-Sheva 84200
ISRAEL
Tel: ++972-7-277012
Fax: ++972-7-271427
E-Mail: rrcom@netvision.net.il

Please send us:
Quantity Item Price
-------- ----- -----

The smallest fm radio
------- walkman in the world ------ $ USA

Insurance Shipping and Handling 10% ------ $ USA.

Total ------ $ USA.

Charge our Credit Card
VISA / MASTER CARD / AMERICAN EXPRESS / DINERS

Card Number :

Exp. Date :

Name on Card:

Signature : Date:
----------------- ----------

Shipping Address

Name:

Address:

City: Postal Code:
------------------- --------
Country:

Phone: Fax:
--------------------- -------------

2108. commercial sat freq's

Newsgroup: rec.radio.amateur.space
Date: 1995-10-14 00:00:00 UTC
From: Fred <peerenbf@dmapub.dma.org>
Message-ID: <Pine.SV4.3.91.951014161340.20457A-100000@dmapub.dma.org>
Source record: 23917

Can anybody post a listing of the commercial and government type satellite frequencies? I have been asked by several "bird watchers" if this was available from some source.

thanks in advance
Fred ke8tq

2109. Re: Discone ant

Newsgroup: rec.radio.amateur.space
Date: 1995-10-14 00:00:00 UTC
From: kc7gnm@primenet.com
Message-ID: <45p1vv$99f@nnrp3.news.primenet.com>
Source record: 23918

tfugate@pop.uky.edu (Terry Fugate) wrote:

>In article <45fpva$8q4@ixnews3.ix.netcom.com>, mikehob@ix.netcom.com (Mike Hoblinski)
says:
>>
>>I live in an apartment and am going to try using a discone antenna. Has
>>anybody had any expierance, with this antenna? I am going to try using
>>my Yaesue ft290II and ft790II radios with a duplxer on Mir and to
>>listen to dove.
>A diskcone generally has some "wierd" nulls in its' overhead response.
>I used one for about two months to recieve the NOAA birds. It worked..
>but there were bad gaps in the signal. While I used the Radio shack
>diskcone, I have tried several others at friends shacks and they all
>have pretty much the same overhead response. A turnstill(?sp?) is
>MUCH better. The hiegth above the ground plane makes a BIG difference
>in the overhead response. Check out one the older ARRL antenna books
>or specialize coms books. There was some discusion several mnts ago
>on this ng about the "eagbeater" antenna. From the reports and comments,
>it looks to be a good space com contender. All of this ng is archived..
>but I don't know where or how to retrive them. If you want I might
>still have most of the thread(I only throw away things right before
>I need them), just drop me an email and if I have them I will try to
>email them back.
>.....
>Terry Fugate
>UKTV
>University of Kentucky
>"The opinions expressed herein are mine, and soley mine. They do not
>represent the official view of the University of Kentucky,
>the State of Kentucky, or any agency of any government.
>If you do not like my opinion, just get on with your life.
>I will not change your mind and you damn sure can not change mine."

I use the radio shack discone for contacting MIR and have had no
problems at all. In fact I am running both a 440 rig and 2m rig using
a duplexer and have had no problems connecting to MIR. Now living in
an apartment is a different story. My antenna is 20 feet in the air
outside so I get a good shot at MIR.

73 de KC7GNM
Greg

2110. Radio Meteor Obs. Bull. Sept 1995

Newsgroup: rec.radio.amateur.space
Date: 1995-10-14 00:00:00 UTC
From: steyaert@vvs.innet.be
Message-ID: <steyaert.17.30802B5E@vvs.innet.be>
Source record: 23919

Radio Meteor Observation Bulletin No. 26 Oct 1995

1. FORWARD SCATTER METEOR OBSERVATIONS

Observer: Thomas Ashcraft
Location: Santa Fe, New Mexico, USA (35 42' N, 105 57' W)
Frequencies: 98.1 MHz, 94.7 MHz, 89.5 MHz, 91.9 MHz, 91.1 MHz
Transmitters: Multiple transmitters received.
Receivers: Sangean ATS-803A, Technics SA-160, Sony HP-160,
Hallicrafters SX-62B
Antennas: Using four separate six element directional FM Yagi's
Ant. Elev: Experimenting with different elevations
Obs. method: Listening and counting in real time or during audio tape
playback. I make a second by second count and also note duration
of each reflection and any significant qualities.
WWV universal time is also recorded on the audio tapes.

August/September 1995

Day	31--01 02
UT 7h	96 99 83
8h	94 109 110
9h	96 133 116
10h	102 125
11h	140
Day	31--01 02

Notes:

. I have been doing many meteor reception experiments the past weeks. I am
attempting to audio record forward scatter 24 hours a day to detect any
anomalous meteor activity, fireballs, atmospheric phenomena, re-entering
space debris, etc. A problem still to resolve is adequate chart recording.
Until I acquire funds for a good chart recorder I will try to maintain raw
audio tapes two weeks ahead. If anyone notes any special meteor activity
please contact me and I may be able to verify with my tapes. After two
weeks I must then recycle these tapes.

. I have audio tape and VHS recordings for the periods of the Alpha Aurigid
and Sextantid meteor showers. Days before and after. All recordings
include second by second WWV universal time stamp. If there is a meteor
scientist interested in plotting these tapes, they may be available. Please
feel free to contact me at 72632.1427@compuserve.com

. September 18, 1995 Space Shuttle STS-69 re-entry reception experiment:

On Sept. 18, I attempted to receive forward scatter reflections from the re-entering space shuttle Endeavor. It re-entered the earth's atmosphere within forward scatter radio range over Waco, Texas --1300 kilometers distant from Santa Fe-- Results: negative, no reflections observed.

. Mountain Daylight Time is -6 hours universal time.
Local midnight is 06:00 UT. Local noon is 18:00 UT.

. If anyone in the western half of North America is interested in engaging in some joint radio meteor observing experiments, please feel free to contact me.

Thomas Ashcraft

Observer: Maurice De Meyere
Location: Deurle, Belgium (3 37' E, 51 00' N)
Frequency: 66.51 MHz
Transmitter locations (all stations of more than 10 kW - from WRTH95, looked up by Jeroen Van Wassenhove):
Siedlce Poland, 66.41 MHz, 25 kW
Pardubice Czech Rep 66.44 MHz, 30 kW
Hradec Kralove Czech Rep 66.44 MHz, 30 kW
Sibiu Romania 66.44 MHz, 40 kW
Poznan Poland 66.56 MHz, 38 kW
Baia Mare Romania 66.56 MHz, 35 kW
Budapest Hungary 66.62 MHz, 100 kW

Antenna: crossed Yagi, 4 elements, astronomical azimuth 270 o (= East), elevation 27 o
Antenna amplifier: 25 dB max level 90 dBmuV
Receiver: commercial, Progresson 447A, TESLA, Bratislava
The receiver was calibrated with a Marconi TF2008 signal generator. Sensitivity: 5 muV (modulation frequency 1000 Hz, frequency sweep 38 kHz) at (S+N)/N = 20 dB

Observing method: automated setup, 150 samples/second, 8 bit resolution. [Time and details of all individual meteor reflections are stored on file in the University of Ghent format (Prometeos), and are available for further analysis. Reduction software for DOS and Windows available].

Sept 1995

Raw counts of reflections with a duration of at least 0.027 s during one hour interval starting at UT:

Sept	UT										
1995	20h	21	22	23	00	01	02	03	04	05	06	07
1- 2	-	-	-	-	-	-	-	-	-	-	-
2- 3	-	-	-	-	-	-	-	-	-	-	-
3- 4	23	37	56	49	103	100	124	99	128	96	69	-
4- 5	37	56	60	79	107	118	115	109	130	113	70	-

```
5- 6 | 31 43 73 93 107 90 119 * 117 130 81 -
6- 7 | 38 58 67 91 95 87 136 108 129 169 60 -
7- 8 | 21 79 48 55 74 82 87 90 84 54 67 -
8- 9 | 25 39 67 66 97 84 105 82 75 79 125 -
9-10 | 34 72 62 89 55 76 90 94 77 77 72 -
10-11 | 29 36 48 64 62 69 63 74 85 68 73 -
11-12 | 31 50 49 82 70 66 112 77 84 75 42 -
12-13 | 47 55 61 70 88 91 137 132 127 100 96 -
13-14 | - - - - - - - - - - - -
14-15 | - - - - - - - - - - - -
15-16 | 26 54 56 56 72 64 92 83 79 72 97 -
16-17 | 26 28 51 70 70 71 81 80 64 67 71 -
17-18 | 33 46 56 56 72 73 73 59 66 84 52 -
18-19 | 26 43 58 90 81 77 78 85 86 78 96 -
19-20 | 36 46 48 54 62 74 107 161 85 114 87 -
20-21 | 42 52 75 67 90 83 112 94 74 105 95 -
21-22 | 34 49 60 90 75 68 87 78 93 106 74 -
22-23 | 33 44 64 79 72 70 80 74 73 113 78 -
23-24 | 33 55 60 69 76 67 86 76 90 87 84 76
24-25 | 34 52 80 67 78 83 97 82 88 86 87 59
25-26 | - - - - - - - - - - - -
26-27 | - 31 75 71 94 98 109 132 112 124 118 124
27-28 | - 30 84 71 78 109 89 107 158 117 145 126
28-29 | - 42 66 95 87 102 115 - - - - -
29-30 | - 35 57 - - - - - - - - -
30-01 | - 35 43 50 89 63 66 64 77 80 99 87
------|------------------------------------------------------------
1995 | 20h 21 22 23 00 01 02 03 04 05 06 07
Sept | UT
```

Notes:

. Some transmitters are not broadcasting between 2h-5h local time
(Sat-Sun 3h-6h local time) or sometimes longer. (When summer hour is
in use: local time = UT + 2h).
Changed to winter hour on Sept 24

. * sporadic-E
? possibly sporadic-E, to be checked

. trouble with A/D convertor on Sep 25, 28, and 29.

Maurice De Meyere / Chris Steyaert

Observer: W.T. Zanstra
Location: Jura-Observatory, Switzerland (7 degr 23' E, 47 degr 14' N)
Frequency: 72.11 MHz
Transmitter location: Wroclaw, Poland, 120 kW, distance 840 km
(16 degr 43' E, 50 degr 52' N)
Antenna: Yagi, 5 elements, geographical azimuth 55 degr (NE),
elevation 25 degrees

Receiver: Bearcat UBC 177 XLT Scanning Radio, sensitivity 0.3 uV
Observing method: listening

Forward Scatter observations of Perseids and sporadic meteors

July - August 1995

Raw counts of reflections during one hour intervals starting at:

| July August
UT | 20 21 22 23 24 25 26 01 02 03 04 05 06 07 08 09 10 11 12 13 16 17
---+---
08 | 37
09 | 32 26 60 36
10 | 15 42 39 20
11 | 18 23 30 28 24 25 28 27 35 37 44 49 48 31 24
12 | 22 39 25
13 | 14 46 23
14 | 19 36 20
15 | 24 26
16 | 26 30
17 | 30
18 | 33
19 | 31 29 37
20 | 35
21 | 43

UT | 20 21 22 23 24 25 26 01 02 03 04 05 06 07 08 09 10 11 12 13 16 17
| July August

Notes:

. Counts are corrected for deadtime.
. Location was not perfect because of a mountain partially in front of
the antenna. For this reason the antenna elevation was increased to
25 degrees instead of the 12 degrees normally used in Appingedam,
Netherlands.
. In Appingedam I am counting typically 2.5 times more sporadic meteors
with the same equipment.

2. BOOK OFFER

Artech House Books, Portland House, Stag Place, London, SW1E XA, U.K.
(bookco@artech.demon.co.uk) offers "Meteor Burst Communications" (hardcover
167 p. 1990, ISBN 0-89006-445-8) by J. Schanker for the price of 10.00 GBP.
Two optional IBM PC-compatible diskettes cost also 10.00 GBP.
Another publication which might be of interest is "Troposcatter Radio Links"
(hardcover 250 p. 1988, ISBN 0-89006-293-5), also available for 10.00 GBP.

3. ABOUT THE RMOB

The RMOB is an independent initiative of some workers in the field of radio
meteor scatter observations and data reduction. It started in August 1993

in order to spread rapidly the Perseid results via E-mail. Since then, it has appeared monthly, and has gradually been expanded.

Typically it contains: summaries of recent observations, first results of stream activity by radio methods, relations between radio and optical meteors, references to other publications in the field of meteor astronomy and radio scatter techniques, announcements of meetings, short questions and answers, non-commercial (second hand) sale of radio equipment, available software.

Contributors are mentioned, and interested persons are asked to contact them directly.

RMOB can be copied freely in unabridged and unmodified form. Extracts should indicate the source (Radio Meteor Obs Bulletin, month and year).

If you want to subscribe (or unsubscribe) to the E-mail distribution list, please send a message to C. Steyaert.
Those not having access to E-mail can obtain a printed copy free of charge from J. Van Wassenhove (current or back-issues).

4. CONTRIBUTORS / USEFUL ADDRESSES

Thomas Ashcraft
Radio Fireball Observatory
Santa Fe, New Mexico
E-mail: 72632.1427@compuserve.com

Maurice De Meyere
Hullekensstraat 24, B 9831 Deurle, Belgium
tel: +32 (9) 282 35 26
Call: ON4NU, packet: ON4NU@ON4AWP
E-mail: via Chris Steyaert

Chris Steyaert, VVS
Kruisven 66, B 2400 Mol, Belgium
tel: +32 (14) 31 51 04
E-mail: steyaert@vvs.innet.be
Compuserve: 72650,3513

Jeroen Van Wassenhove, VVS
's Gravenstraat 66, B 9810 Nazareth, Belgium
tel: +32 (9) 385 61 09
E-mail: 100101.734@compuserve.com

Paul Vauterin, University of Ghent, Astronomical Observatory
E-mail: paul@izar.rug.ac.be

W.T. Zanstra
Spijkerlaan 13, NL 9903 BB Appingedam, Netherlands
tel: +31-(0)596-625617
E-mail: via tonsch@ksw.rug.nl

--
Christian Steyaert (RMOB9510) 14 Oct 1995
--

2111. Re: Satellite Antennas

Newsgroup: rec.radio.amateur.space
Date: 1995-10-14 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Oct14.122331.16987@ke4zv.atl.ga.us>
Source record: 23920

In article <45g9p7$1kgo@info4.rus.uni-stuttgart.de>
moritz@ipers1.e-technik.uni-stuttgart.de () writes:
>A metal support through the boom will affect will degrade the pattern
>of a circularly polarized antenna no matter if it is mounted in + or x
>configuration. I should like to know if someone has actually tested,
>if there was a difference.

When AO-10 was first launched, I used the AOP-1 package from Cushcraft
(shudder) with a metal crossboom. Changing the orientation of the elements
with respect to the crossboom did make an audible difference in the
spin modulation on the 2 meter beacon, x orientation being better. It
also changed the shift in pattern center off the antenna boresight axis.
Neither orientation resulted in a boresight pattern, but the + orientation
was worse than the x orientation. Of course I found out that even with a
fiberglass crossboom the pattern was off boresight, but at least rotating
orientation of the elements no longer caused the off-axis pointing error
to vary in magnitude.

A better antenna might make all this much more noticable. My KLM-22C
has a pretty clean circular pattern, and it's on boresight. I haven't
tried it on a metal crossboom, but I'd expect the effects of the
metal crossboom to be much more apparent with it than with an antenna
that was already so screwed up that the crossboom only had a secondary
effect on it.

I did try another antenna set, two pairs of Cushcraft long boomers,
32-19s and 424Bs (pretty decent antennas), spaced 2 wavelengths on
vertical metal crossbooms tied to the elevation crossboom, IE an H
stack, and used with phasing harnesses for RHCP. There, setting the
beams canted at 45 degrees with respect to the boom made a substantial
difference in circularity. A picture may help, if laid on its side,
each half of the H looked like this /-\ when circularity was best,
and like this |-- when circularity was worst. Obviously, having one
antenna's elements share the same plane as the metal boom is a bad idea.

This latter setup had good gain, but the circularity went to hell
with the slightest off-pointing. I find the KLM-22C more tolerant
of slight pointing errors in respect to circularity while delivering
almost the same amount of usable forward gain. The big H had a lot
of windloading and torque loading too. The 22C and 40CX are the better
compromise.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary

534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

2112. Re: Ham-Space Digest V95 #282

Newsgroup: rec.radio.amateur.space
Date: 1995-10-14 00:00:00 UTC
From: jwb65654@pegasus.cc.ucf.EDU
Message-ID: <Pine.SOL.3.91.951014015922.25344A-100000@Pegasus>
Source record: 23921

Unsubscribe ham-space@uscd.edu from jwb65654@pegasus.cc.ucf.edu

2113. NEW ELECTRONIC PRODUCT FOR DISTRIBUTION

Newsgroup: rec.radio.amateur.space
Date: 1995-10-15 00:00:00 UTC
From: rrcom@netvision.net.il
Message-ID: <NEWTNews.7650.813712189.rrcom@rrcom.netvision.net.il>
Source record: 23922
Cross-posted to: t.tv.animaniacs,t.sport.lacrosse,t.music.stone-temple,rec.video.satellite.europe,rec.radio.amateur.space,music.ween,music.van-halen,lt.music.tool,lt.music.ska,alt.videos.bootlegs,alt.video.laserdisc,alt.tv.xuxa,alt.tv.x-files.creative,alt.tv.wiseguy,alt.tv.wings,alt.tv.vr5,alt.tv.twin-peaks,alt.tv.tv-nation

We are looking for distributors world wide for:
THE SMALLEST FM WALKMAN RADIO IN THE WORLD

Specifications

Frequency range : FM 88 - 108 Mhz
Worldwide system: USA - EUROPE - ASIA
AFRICA - AUSTRALIA
South AMERICA
Power source : 1 x 3 Volt
Button cell battery
CR-2032 or equivalent
Antenna : Earphone cables antenna
Dimensions : 37 x 27 x 10 mm.
1 2/5" x 1 1/8" x 2/5"
Weight : 23 gram. 1/20 Lib.
Warranty : 3 Months World wide

Distributor Prices List

Quantity Price per Unit
-------- --------------
1 20 $ USA.
2 - 9 16 $ USA.
10 - 99 12 $ USA.
100 - 999 10 $ USA.
1000 - UP 9 $ USA.

SPECIAL SAMPLES OFFER

Before you decide to become our product distributor
please order a sample of
"THE SMALLEST FM RADIO WALKMAN IN THE WORLD"
for a special offer of 16 $ USA. for one unit
or 28 $ USA. for two units

We are 100% sure that if you get the offer
you will become our product distributor.

ORDER FORM

To:
RRCOM ADVANCED TECHNOLOGY LTD.
49-51 Haatzmauth St.
Beer-Sheva 84200
ISRAEL
Tel: ++972-7-277012
Fax: ++972-7-271427
E-Mail: rrcom@netvision.net.il

Please send us:
Quantity Item Price
-------- ----- -----

The smallest fm radio
------- walkman in the world ------ $ USA

Insurance Shipping and Handling 10% ------ $ USA.

Total ------ $ USA.

Charge our Credit Card
VISA / MASTER CARD / AMERICAN EXPRESS / DINERS

Card Number :

Exp. Date :

Name on Card:

Signature : Date:
---------- ----------

Shipping Address

Name:

Address:

City: Postal Code:
---------- --------
Country:

Phone: Fax:
---------- ----------

2114. Re: NEW ELECTRONIC PRODUCT FOR DISTRIBUTION

Newsgroup: rec.radio.amateur.space
Date: 1995-10-15 00:00:00 UTC
From: HelperGoddessOffice@innet.be
Message-ID: <HelperGoddessOffice-1510950835290001@pool011-4.innet.be>
Source record: 23923
Cross-posted to: t.tv.animaniacs,t.sport.lacrosse,t.music.stone-temple,rec.video.satellite.europe,rec.radio.amateur.space,music.ween,music.van-halen,lt.music.tool,lt.music.ska,alt.videos.bootlegs,alt.video.laserdisc,alt.tv.xuxa,alt.tv.x-files.creative,alt.tv.wiseguy,alt.tv.wings,alt.tv.vr5,alt.tv.twin-peaks,alt.tv.tv-nation

In article <NEWTNews.7650.813712189.rrcom@rrcom.netvision.net.il>,
rrcom@netvision.net.il wrote:

> We are looking for distributors world wide for:
> THE SMALLEST FM WALKMAN RADIO IN THE WORLD
> Dimensions : 37 x 27 x 10 mm.

Balony. The smallest FM walkman radio can be plugged in your ear. It's no bigger than the earphones of yours. It's available here in Europe (Asian import) for around $40.

Get this noise of groups like alt.video.laserdisc!

Jeroen

2115. weather satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-10-15 00:00:00 UTC
From: lopes@hp_1.dee.uc.pt
Message-ID: <45rrmv$sba@gnu.mat.uc.pt>
Source record: 23924

[No readable article body recovered]

2116. Comment 10/15/95 9:33am

Newsgroup: rec.radio.amateur.space
Date: 1995-10-15 00:00:00 UTC
From: Joseph.Isbell@227.woodybbs.com
Message-ID: <9c5_9510160717@woodybbs.com>
Source record: 23925

```
-> Joe -
->
-> Regarding Bulletin #11 (VE Sessions) Larkfield ARC is also an ARRL
-> VEC team.
->
-> Ken

Thanks

Joe
--
| Fidonet: Joseph Isbell 1:2619/227
| Internet: Joseph.Isbell@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.
```

2117. MIR freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-16 00:00:00 UTC
From: "Billy W. Dunn" <billydunn@delphi.com>
Message-ID: <5bJHAuF.billydunn@delphi.com>
Source record: 23926

Can someone please verify my uplink freqs to the MIR. I have it as 144.49. I can't seem to find it in my books anymore thanks.

73 de BilDun

billydunn@delphi.com

2118. Re: MIR freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-16 00:00:00 UTC
From: Ed@Ed
Message-ID: <DGJH2x.HCw@bocanews.bocaraton.ibm.com>
Source record: 23927

In <5bJHAuF.billydunn@delphi.com>, Billy W. Dunn <billydunn@delphi.com> writes:
>Can someone please verify my uplink freqs to the MIR. I have it as 144.49. I
>can't seem to find it in my books anymore thanks.
>
>73 de BilDun
>
>billydunn@delphi.com

Bill. As far as I know MIR is simplex on 145.550 unless it has changed.

73 Ed

2119. Re: NEW ELECTRONIC PRODUCT FOR DISTRIBUTION

Newsgroup: rec.radio.amateur.space
Date: 1995-10-16 00:00:00 UTC
From: geeknet@ix.netcom.com
Message-ID: <45u2dp$3m2@ixnews5.ix.netcom.com>
Source record: 23928
Cross-posted to: rec.video.satellite.europe,rec.radio.amateur.space,alt.tv.tv-nation

rrcom@netvision.net.il wrote:
>
> We are looking for distributors world wide for:
> THE SMALLEST FM WALKMAN RADIO IN THE WORLD

Isn't "Walkman" a registered trademark of the Sony Corporation?

> Warranty : 3 Months World wide

If you're flush with cash, try the 4 month warranty. It costs an extra $39,
but it's worth it!

> Charge our Credit Card
> VISA / MASTER CARD / AMERICAN EXPRESS / DINERS

Yeah, that's what.

> Signature : Date:
> ----------------- ----------

Do you mean handwritten signature, or .sig file?

2120. Scanners and radio astronomy

Newsgroup: rec.radio.amateur.space
Date: 1995-10-16 00:00:00 UTC
From: pve@dg13.cec.BE
Message-ID: <30825C8B@smtp>
Source record: 23929

Hi Nick,

it's great you have a scanner and antennas available for scanning and listening to the heavens.

Firstly you may be interested in being part of the Seti project that has been taken over from Nasa by the SETI league. Send a message to info@setileague.org or send me a message and I will supply additional information.

There is a web site with plenty of information on listening to the heavens, pre-amps, receivers and more: http://set1.setileague.org

Hope it helps you,

Peter Vekinis, EI4GV/KC1QF
pve@dg13.cec.be

2121. Re: MIR freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-16 00:00:00 UTC
From: "Billy W. Dunn" <billydunn@delphi.com>
Message-ID: <RXMHwCT.billydunn@delphi.com>
Source record: 23930

According to 74537.1100 @ compuserve.com I discovered that ever since Norman Thagard left the Mir is not using the same old
setup. He says that he has heard or read packet simplex on 145.55, as well as voice, and voice on 145.8 down with 145.2 up.

2122. Solar Flare affects on Radio signals????

Newsgroup: rec.radio.amateur.space
Date: 1995-10-16 00:00:00 UTC
From: robert@dione.jpl.nasa.gov
Message-ID: <45ukmj$3cr@netline-fddi.jpl.nasa.gov>
Source record: 23931

Radio folks,
Anyone know if solar flares affect radio communications???

-robert

2123. NORAD Two-Line Orbital Element Sets (TLE691)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.813902318@dolphin>
Source record: 23932

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #691 -
Alouette 1
1 00424U 62049A 95285.74851899 .00000097 00000-0 10450-3 0 1420
2 00424 80.4659 168.8850 0022924 315.9267 44.0039 13.67852333648371
ATS 1
1 02608U 66110A 95269.88484587 .00000122 00000-0 10000-3 0 9442
2 02608 14.6460 355.6072 0009581 75.0995 285.0626 1.00366013 22211
ATS 3
1 03029U 67111A 95288.61166741 -.00000113 00000-0 10000-3 0 4078
2 03029 14.8649 2.4896 0008817 264.3847 231.5486 1.00272609102307
Cosmos 398
1 04966U 71016A 95289.26245179 .00525044 10285-4 29579-3 0 489
2 04966 51.3809 8.8869 0340193 168.9234 191.9223 15.56499110843604
Starlette
1 07646U 75010A 95288.50889915 -.00000178 00000-0 -26695-4 0 9218
2 07646 49.8275 38.1936 0206239 139.1312 222.5233 13.82189258 44983
LAGEOS
1 08820U 76039A 95285.25036087 .00000016 00000-0 10000-3 0 1424
2 08820 109.8500 300.7298 0043684 183.0412 177.0079 6.38663936197936
ETS-2
1 09852U 77014A 95281.32667067 -.00000123 00000-0 10000-3 0 436
2 09852 12.9028 35.8613 0005087 96.5285 263.5205 0.99998004 15118
GOES 2
1 10061U 77048A 95288.49082664 .00000061 00000-0 10000-3 0 5880
2 10061 12.0072 39.9445 0014255 125.3714 219.8338 1.00264652 11974
IUE
1 10637U 78012A 95285.45500404 -.00000206 00000-0 10000-3 0 1777
2 10637 35.3748 87.0984 1339139 50.1902 11.1591 1.00296718 17449
GPS BI-01
1 10684U 78020A 95287.41085950 -.00000051 00000-0 10000-3 0 3949
2 10684 64.8862 31.1785 0060839 162.6898 197.5298 1.98069497114523
```

```
GPS BI-02
1 10893U 78047A 95285.82603297 .00000003 00000-0 10000-3 0 1903
2 10893 63.2806 268.9494 0224842 14.3923 346.2106 2.01626769127780
GOES 3
1 10953U 78062A 95287.23622639 .00000068 00000-0 10000-3 0 5494
2 10953 10.9768 42.7688 0006307 132.9300 154.1733 1.00366664 16575
SeaSat 1
1 10967U 78064A 95286.24173079 .00000007 00000-0 46966-4 0 4358
2 10967 107.9978 21.7524 0002381 230.4254 129.6692 14.38060206905808
GPS BI-03
1 11054U 78093A 95287.98696701 .00000019 00000-0 10000-3 0 3566
2 11054 62.9771 267.4145 0045661 180.6635 179.3053 1.93505279123897
Nimbus 7
1 11080U 78098A 95288.13766134 -.00000078 00000-0 -32472-4 0 5361
2 11080 98.9802 156.8700 0008223 271.7545 88.2664 13.83701905857147
GPS BI-04
1 11141U 78112A 95280.82515771 -.00000078 00000-0 10000-3 0 99
2 11141 64.8856 33.3854 0049085 27.5289 332.7027 1.92894740 12991
GPS BI-05
1 11690U 80011A 95281.56778345 -.00000073 00000-0 10000-3 0 9442
2 11690 65.2298 32.9200 0147936 193.6748 165.8667 2.00567347129134
GPS BI-06
1 11783U 80032A 95286.14333488 .00000006 00000-0 10000-3 0 1056
2 11783 62.4120 261.9944 0220678 29.3876 331.8226 2.03456700113784
GOES 5
1 12472U 81049A 95285.29730235 -.00000265 00000-0 10000-3 0 8861
2 12472 7.7422 52.7829 0006892 46.7710 313.2887 1.00233196 10607
Cosmos 1383
1 13301U 82066A 95286.61275909 .00000080 00000-0 75994-4 0 4428
2 13301 82.9313 315.3241 0026522 199.8544 160.1578 13.68068981663522
LandSat 4
1 13367U 82072A 95287.58382435 .00000053 00000-0 21722-4 0 7802
2 13367 98.1167 340.4812 0006479 178.1697 181.9523 14.57161886704604
DMSP B5D2-1
1 13736U 82118A 95288.04446648 .00000006 00000-0 20931-4 0 8677
2 13736 98.6266 115.3608 0009225 32.7682 327.4060 14.25757092665998
IRAS
1 13777U 83004A 95289.02302996 .00000317 00000-0 24815-3 0 1103
2 13777 98.9645 114.7307 0013802 57.9601 302.2910 13.99238396319084
Cosmos 1447
1 13916U 83021A 95287.19732169 .00000041 00000-0 26548-4 0 5386
2 13916 82.9457 13.7208 0038830 118.5215 241.9861 13.74331081629811
TDRS 1
1 13969U 83026B 95288.32320792 .00000085 00000-0 00000+0 0 4804
2 13969 8.5812 46.0987 0003914 171.6966 143.3608 1.00279938 18914
GOES 6
1 14050U 83041A 95289.23990938 -.00000181 00000-0 10000-3 0 4554
2 14050 6.5703 55.9916 0003623 42.6341 279.1153 1.00322310103736
OSCAR 10
1 14129U 83058B 95287.22679695 .00000146 00000-0 10000-3 0 3784
```

```
2 14129 26.4582 243.6447 5983732 317.8205 9.0183 2.05877619 64780
LandSat 5
1 14780U 84021A 95288.16843722 .00000081 00000-0 27785-4 0 3570
2 14780 98.1007 341.3705 0004425 178.7809 181.3401 14.57169741618104
UoSat 2
1 14781U 84021B 95286.53948036 .00000098 00000-0 24431-4 0 8336
2 14781 97.7866 283.5521 0011936 157.8907 202.2816 14.69384950621288
GPS BI-09
1 15039U 84059A 95285.16473699 -.00000062 00000-0 10000-3 0 3692
2 15039 64.5598 27.6285 0082087 18.6230 341.6897 1.92302267 82642
Cosmos 1574
1 15055U 84062A 95286.44777418 .00000013 00000-0 -18135-5 0 7398
2 15055 82.9537 68.6505 0026794 314.3195 45.5759 13.73627008566971
GPS BI-10
1 15271U 84097A 95288.70249158 .00000018 00000-0 10000-3 0 660
2 15271 62.1128 262.3266 0156920 354.7705 5.0875 2.00604871 80347
Cosmos 1602
1 15331U 84105A 95286.17509745 .00000310 00000-0 33583-4 0 4242
2 15331 82.5349 345.3786 0022139 49.4553 310.8574 14.84676614596172
NOAA 9
1 15427U 84123A 95288.91093312 .00000078 00000-0 65347-4 0 4378
2 15427 98.9852 348.2795 0014213 290.3864 69.5782 14.13736541558979
GPS BI-11
1 16129U 85093A 95285.56961032 -.00000057 00000-0 10000-3 0 6821
2 16129 65.2285 30.9227 0155886 86.2738 275.5195 1.89368104 17214
Mir
1 16609U 86017A 95288.52305973 .00002262 00000-0 36624-4 0 2710
2 16609 51.6467 275.0824 0003176 187.7598 172.3490 15.57660259551714
SPOT 1
1 16613U 86019A 95287.18745394 .00000090 00000-0 62356-4 0 8605
2 16613 98.6391 355.8227 0001031 35.7655 324.3590 14.20072591185251
Cosmos 1766
1 16881U 86055A 95287.83097244 .00000225 00000-0 24219-4 0 3407
2 16881 82.5172 41.6240 0021287 69.2380 291.1114 14.83664671497315
EGP
1 16908U 86061A 95287.44959594 -.00000083 00000-0 10000-3 0 352
2 16908 50.0085 35.5764 0011515 105.7135 254.4970 12.44413011 85688
NOAA 10
1 16969U 86073A 95288.93309467 .00000025 00000-0 28891-4 0 3519
2 16969 98.5153 288.1966 0013592 355.5919 4.5134 14.24958638471673
MOS-1
1 17527U 87018A 95289.05845253 -.00000043 00000-0 00000+0 0 2801
2 17527 98.9732 351.0755 0006997 240.8308 119.3737 13.97111080440688
GOES 7
1 17561U 87022A 95287.29626462 .00000075 00000-0 10000-3 0 5843
2 17561 2.5716 71.3272 0001806 304.6993 337.9034 1.00280648 14827
Kvant-1
1 17845U 87030A 95288.07398963 -.00007298 00000-0 -90216-4 0 4108
2 17845 51.6467 277.3399 0002356 191.0966 169.1241 15.57646421485758
DMSP B5D2-3
```

```
1 18123U 87053A 95288.94387423 -.00000011 00000-0 16587-4 0 1772
2 18123 98.7774 118.2026 0013185 234.3180 125.6770 14.15420567429804
RS-10/11
1 18129U 87054A 95286.52800038 .00000054 00000-0 42962-4 0 1247
2 18129 82.9268 331.5995 0012695 116.5743 243.6718 13.72357554416209
Meteor 2-16
1 18312U 87068A 95285.78281553 .00000030 00000-0 13997-4 0 4319
2 18312 82.5582 189.1005 0010984 192.4222 167.6662 13.84063404411817
Meteor 2-17
1 18820U 88005A 95288.87723698 .00000021 00000-0 56345-5 0 7496
2 18820 82.5388 242.2282 0014966 258.4211 101.5266 13.84744351389579
DMSP B5D2-4
1 18822U 88006A 95289.24189878 -.00000020 00000-0 96311-5 0 925
2 18822 98.3908 127.8242 0007002 7.7663 352.3623 14.23167335399734
Glonass 34
1 19163U 88043A 95285.34934193 .00000025 00000-0 10000-3 0 215
2 19163 65.1761 94.2207 0007771 146.5623 213.5131 2.13102550 56939
Glonass 36
1 19165U 88043C 95286.34445587 .00000033 00000-0 10000-3 0 4327
2 19165 65.1615 94.1570 0000389 292.5956 67.4242 2.13102185 57574
METEOSAT 3
1 19215U 88051A 95288.78477531 -.00000278 00000-0 10000-3 0 1976
2 19215 2.7516 69.0887 0000661 170.4057 357.7482 1.00273863 14782
AO-13
1 19216U 88051B 95287.69866028 -.00000564 00000-0 59624-4 0 994
2 19216 57.4393 158.8883 7334651 21.2988 357.9360 2.09728059 24676
OKEAN 1
1 19274U 88056A 95288.09159824 .00000261 00000-0 29584-4 0 408
2 19274 82.5158 141.9440 0018210 210.9450 149.0692 14.82395097392913
Meteor 3-2
1 19336U 88064A 95285.20451226 .00000051 00000-0 10000-3 0 4297
2 19336 82.5405 342.6112 0017223 133.2507 227.0061 13.16974574346708
Glonass 39
1 19503U 88085C 95288.25036904 -.00000046 00000-0 10000-3 0 3245
2 19503 65.6650 333.0084 0007819 168.4769 191.6122 2.13101858 55107
NOAA 11
1 19531U 88089A 95288.95980699 .00000017 00000-0 34210-4 0 2488
2 19531 99.1977 295.5766 0010870 207.5325 152.5265 14.13067307363812
TDRS 2
1 19548U 88091B 95282.87960253 -.00000209 00000-0 00000+0 0 1486
2 19548 1.9636 72.9059 0007989 139.6294 207.5689 1.00276414 13009
Glonass 40
1 19749U 89001A 95287.34996743 .00000044 00000-0 10000-3 0 5385
2 19749 65.0976 93.7053 0004680 279.8216 80.1365 2.13101579 52598
Glonass 41
1 19750U 89001B 95285.99755529 .00000030 00000-0 10000-3 0 4464
2 19750 65.1328 93.8163 0005019 233.3198 126.6636 2.13101902 52582
GPS BII-01
1 19802U 89013A 95287.84816712 .00000029 00000-0 10000-3 0 1211
2 19802 55.2915 120.3933 0028205 166.1864 193.9665 2.00557684 48771
```

```
Akebono
1 19822U 89016A 95288.94677799 .00006740 00000-0 34206-3 0 5863
2 19822 75.0980 265.6484 3770074 290.6973 33.4193 7.87994482147320
Meteor 2-18
1 19851U 89018A 95286.01941629 .00000069 00000-0 48754-4 0 4297
2 19851 82.5198 118.9660 0013899 318.4521 41.5589 13.84398382334498
MOP-1
1 19876U 89020B 95288.10980903 .00000060 00000-0 10000-3 0 1444
2 19876 1.4494 73.0192 0006067 138.5843 221.5631 1.00276354 4224
TDRS 3
1 19883U 89021B 95288.18331312 -.00000275 00000-0 10000-3 0 1297
2 19883 0.1019 75.4968 0005349 147.2135 185.5424 1.00271408 2818
GPS BII-02
1 20061U 89044A 95287.18948766 -.00000035 00000-0 10000-3 0 1270
2 20061 54.3844 296.5737 0151376 216.6667 142.2927 2.00563081 46502
Nadezhda 1
1 20103U 89050A 95288.92513880 .00000057 00000-0 44321-4 0 5486
2 20103 82.9558 289.5464 0038311 18.8752 341.3817 13.73858733315004
GPS BII-03
1 20185U 89064A 95287.52521491 .00000025 00000-0 10000-3 0 1468
2 20185 55.0187 120.9726 0011381 320.6816 39.2805 2.00566771 45089
GMS 4
1 20217U 89070A 95288.15258102 -.00000373 00000-0 10000-3 0 2544
2 20217 1.2932 76.2026 0001807 349.5638 132.4326 1.00281001 22950
INTERCOSMOS 24
1 20261U 89080A 95286.86633732 .00000160 00000-0 48891-4 0 4462
2 20261 82.5898 68.6892 1240960 244.0004 102.8243 12.47281317275075
GPS BII-04
1 20302U 89085A 95287.06574516 -.00000013 00000-0 10000-3 0 1386
2 20302 53.3155 236.5675 0012393 150.2644 209.8490 2.00559346 43873
Meteor 3-3
1 20305U 89086A 95289.06494456 .00000044 00000-0 10000-3 0 4135
2 20305 82.5434 294.0520 0006950 175.8273 184.2860 13.04413971286247
COBE
1 20322U 89089A 95288.49200144 -.00000268 00000-0 -14340-3 0 1589
2 20322 98.9581 302.7263 0009646 5.1649 354.9619 14.03448094302463
Kvant-2
1 20335U 89093A 95288.07398963 -.00007298 00000-0 -90216-4 0 4084
2 20335 51.6467 277.3399 0002356 191.0966 169.1241 15.57646421334760
GPS BII-05
1 20361U 89097A 95288.57247980 -.00000010 00000-0 10000-3 0 9805
2 20361 55.8502 63.0145 0082536 124.5421 236.2414 2.00562313 33382
COSMOS 2054 (Altair-1)
1 20391U 89101A 95286.28785332 -.00000139 00000-0 10000-3 0 2331
2 20391 3.3684 65.1265 0003643 107.3603 296.7996 1.00271933 21515
SPOT 2
1 20436U 90005A 95288.79648838 .00000169 00000-0 10000-3 0 9859
2 20436 98.7241 1.2759 0001538 342.6308 17.4807 14.20032318297015
UO-14
1 20437U 90005B 95287.25033360 .00000010 00000-0 20903-4 0 1321
```

```
2 20437 98.5632 9.6771 0010101 207.4794 152.5850 14.29899209298768
UO-15
1 20438U 90005C 95285.24527559 .00000004 00000-0 18738-4 0 9286
2 20438 98.5597 6.0513 0009157 217.9444 142.1091 14.29215334298360
PACSAT
1 20439U 90005D 95288.75698032 .00000044 00000-0 34031-4 0 9313
2 20439 98.5734 12.9912 0010416 202.9950 157.0764 14.29954110298992
DO-17
1 20440U 90005E 95288.24380645 .00000043 00000-0 33464-4 0 9315
2 20440 98.5762 13.0037 0010632 203.2222 156.8478 14.30095481298944
WO-18
1 20441U 90005F 95286.26942892 .00000031 00000-0 28856-4 0 9354
2 20441 98.5757 11.0199 0010908 211.9085 148.1432 14.30065949298664
LO-19
1 20442U 90005G 95287.75291972 .00000019 00000-0 24141-4 0 9300
2 20442 98.5769 12.8807 0011298 206.0376 154.0241 14.30170218298899
GPS BII-06
1 20452U 90008A 95287.97046164 -.00000016 00000-0 10000-3 0 823
2 20452 54.0242 176.7907 0060089 84.8250 275.9341 2.00553850 41878
MOS-1B
1 20478U 90013A 95289.20520351 .00000090 00000-0 10000-3 0 8515
2 20478 99.1386 356.4828 0001816 120.1309 240.0032 13.94859686210404
DEBUT
1 20479U 90013B 95285.73277358 -.00000035 00000-0 14925-5 0 9306
2 20479 99.0662 352.6085 0540793 326.9343 29.8999 12.83333280266039
FO-20
1 20480U 90013C 95286.21630488 -.00000003 00000-0 73486-4 0 8275
2 20480 99.0663 352.8366 0540618 326.2618 30.5142 12.83230882266088
MOS-1B R/B
1 20491U 90013D 95287.35357159 -.00000012 00000-0 36885-4 0 1785
2 20491 99.0621 51.1456 0470337 152.3331 210.3682 13.02975105269719
LACE
1 20496U 90015A 95287.86401460 .00002261 00000-0 73550-4 0 5863
2 20496 43.0996 168.7854 0010547 264.7693 95.2065 15.34937058315963
Nadezhda 2
1 20508U 90017A 95288.92066782 .00000021 00000-0 70220-5 0 5472
2 20508 82.9512 64.1039 0044138 330.2760 29.5889 13.73498885282221
OKEAN 2
1 20510U 90018A 95285.87959020 .00000265 00000-0 32998-4 0 4482
2 20510 82.5224 96.5090 0020979 51.4187 308.8904 14.78531661302981
GPS BII-07
1 20533U 90025A 95284.38932472 -.00000051 00000-0 10000-3 0 1055
2 20533 54.7200 297.3587 0046511 78.2577 282.2930 2.00570715 40576
PegSat
1 20546U 90028A 95286.81271225 .00006998 00000-0 14004-3 0 8504
2 20546 94.1239 211.5531 0061187 239.7290 119.7898 15.44777336306784
HST
1 20580U 90037B 95289.26029314 .00000400 00000-0 24399-4 0 7278
2 20580 28.4699 352.8311 0006393 125.0283 235.0897 14.90947552101990
MACSAT 2
```

```
1 20608U 90043B 95285.22742847 .00000161 00000-0 25132-4 0 1310
2 20608 89.9335 175.5162 0103944 205.4222 154.1860 14.64867442289842
Glonass 44
1 20619U 90045A 95288.18767921 -.00000046 00000-0 10000-3 0 2346
2 20619 65.2586 332.3733 0025098 213.5527 146.3519 2.13102467 42062
Glonass 45
1 20620U 90045B 95288.30640766 -.00000045 00000-0 10000-3 0 2360
2 20620 65.2591 332.3564 0006998 44.0870 316.0336 2.13102519 42104
Glonass 46
1 20621U 90045C 95288.37326744 -.00000045 00000-0 10000-3 0 8316
2 20621 65.2797 332.4117 0011035 193.5960 166.4129 2.13101846 42105
Kristall
1 20635U 90048A 95288.07398963 -.00007298 00000-0 -90216-4 0 2009
2 20635 51.6467 277.3399 0002356 191.0966 169.1241 15.57646421305592
ROSAT
1 20638U 90049A 95286.59113491 .00000269 00000-0 36553-4 0 4992
2 20638 52.9915 333.9719 0014376 99.6990 260.5622 15.07268400294977
Meteor 2-19
1 20670U 90057A 95286.24752668 -.00000119 00000-0 -11987-3 0 9291
2 20670 82.5488 184.7934 0014250 229.8545 130.1368 13.84151360267442
CRRES
1 20712U 90065A 95287.28483362 .00000873 00000-0 80573-3 0 1704
2 20712 18.1190 350.9478 7197713 192.9615 127.0774 2.35598981 37297
GPS BII-08
1 20724U 90068A 95285.70830915 .00000013 00000-0 10000-3 0 9549
2 20724 54.8896 118.6375 0122280 175.6479 184.5295 2.00565644 36467
Feng Yun1-2
1 20788U 90081A 95288.91512688 -.00000027 00000-0 10000-4 0 5895
2 20788 98.8100 297.8590 0016435 100.3418 259.9645 14.01358686261741
Meteor 2-20
1 20826U 90086A 95285.07798351 .00000036 00000-0 19269-4 0 9406
2 20826 82.5251 122.5631 0014023 131.5905 228.6458 13.83616462254395
GPS BII-09
1 20830U 90088A 95288.24942955 -.00000016 00000-0 10000-3 0 9644
2 20830 55.7955 61.0037 0067690 100.0772 260.6875 2.00557664 37158
GPS BIIA-10
1 20959U 90103A 95287.65737841 .00000026 00000-0 10000-3 0 9273
2 20959 55.0777 120.5782 0101302 230.3746 128.7747 2.00570477 35731
DMSP B5D2-5
1 20978U 90105A 95288.88358303 .00000153 00000-0 70144-4 0 3725
2 20978 98.6287 356.6398 0078952 173.1532 187.0747 14.32587634254593
Glonass 47
1 21006U 90110A 95286.99048098 .00000039 00000-0 10000-3 0 8037
2 21006 65.1093 93.0571 0058840 186.5849 173.3569 2.13102689 37743
Glonass 48
1 21007U 90110B 95285.77203464 .00000027 00000-0 10000-3 0 9266
2 21007 65.1283 93.1698 0036376 178.5859 181.4312 2.13101170 37704
Glonass 49
1 21008U 90110C 95288.01037699 .00000051 00000-0 00000+0 0 1378
2 21008 65.0940 93.0528 0008141 267.4823 92.4566 2.13099139 37740
```

```
AO-21
1 21087U 91006A 95286.59120612 .00000094 00000-0 82657-4 0 6408
2 21087 82.9417 144.9644 0034595 174.3918 185.7632 13.74560069235993
RS-12/13
1 21089U 91007A 95288.71783561 .00000041 00000-0 27267-4 0 8371
2 21089 82.9222 11.3847 0028003 194.7685 165.2662 13.74060801235327
MOP-2
1 21140U 91015B 95288.85580715 -.00000018 00000-0 10000-3 0 1081
2 21140 0.0792 353.6575 0000744 222.1968 115.6986 1.00272307 19140
Nadezhda 3
1 21152U 91019A 95288.96137058 .00000064 00000-0 52982-4 0 2388
2 21152 82.9276 327.4312 0040931 306.3571 53.3816 13.73524355230088
Glonass 50
1 21216U 91025A 95287.00935011 -.00000052 00000-0 10000-3 0 4468
2 21216 65.0096 332.0354 0005846 198.0748 161.9712 2.13102806 35255
Glonass 51
1 21217U 91025B 95288.48659573 -.00000044 00000-0 10000-3 0 8520
2 21217 64.9617 331.9832 0007435 235.5093 124.4813 2.13101561 35273
Glonass 52
1 21218U 91025C 95287.19020858 -.00000051 00000-0 10000-3 0 3271
2 21218 64.9910 332.0061 0009292 359.3403 0.7186 2.13102545 35259
GRO
1 21225U 91027B 95289.03367591 .00002844 00000-0 56434-4 0 3031
2 21225 28.4593 93.5325 0002699 327.6102 32.4312 15.43142722132012
Meteor 3-4
1 21232U 91030A 95288.74050229 .00000051 00000-0 10000-3 0 8409
2 21232 82.5417 186.3117 0014824 54.6247 305.6256 13.16469506215245
NOAA 12
1 21263U 91032A 95288.95491689 .00000094 00000-0 61295-4 0 6731
2 21263 98.5806 309.8806 0011867 269.5812 90.4007 14.22565654229599
OKEAN 3
1 21397U 91039A 95287.69595368 .00000274 00000-0 35911-4 0 1398
2 21397 82.5242 8.2769 0023756 115.1115 245.2547 14.76413563234993
GPS BIIA-11
1 21552U 91047A 95288.42610094 -.00000018 00000-0 10000-6 0 9014
2 21552 56.0760 58.7080 0066420 242.5953 116.7302 2.00558203 31343
ERS-1
1 21574U 91050A 95288.56004818 .00000083 00000-0 46958-4 0 2112
2 21574 98.5491 1.1565 0001086 87.9923 272.1389 14.32248428222284
UO-22
1 21575U 91050B 95287.21516232 .00000069 00000-0 37543-4 0 6378
2 21575 98.3845 355.5278 0007277 292.2884 67.7525 14.36994115222597
ORBCOMM-X
1 21576U 91050C 95287.21253805 .00000041 00000-0 28515-4 0 7328
2 21576 98.3827 353.7974 0003643 309.7701 50.3161 14.36403633222499
TUBSAT-A
1 21577U 91050D 95288.17585851 .00000022 00000-0 22110-4 0 6316
2 21577 98.3822 355.2840 0005822 292.5754 67.4832 14.36496321222661
SARA
1 21578U 91050E 95285.75411541 .00000257 00000-0 96984-4 0 8314
```

```
2 21578 98.4056 359.1185 0004246 296.9463 63.1291 14.39072023222609
TDRS 4
1 21639U 91054B 95288.72019588 .00000075 00000-0 00000+0 0 9511
2 21639 0.0312 356.0954 0002349 192.9433 279.7200 1.00275310109433
Meteor 3-5
1 21655U 91056A 95289.09882944 .00000051 00000-0 10000-3 0 8389
2 21655 82.5549 133.5753 0014623 62.6967 297.5640 13.16842007200415
UARS
1 21701U 91063B 95286.71560002 .00000063 00000-0 26622-4 0 7091
2 21701 56.9846 21.6783 0005781 105.8301 254.3372 14.96437877223310
DMSP B5D2-6
1 21798U 91082A 95288.97936046 .00000021 00000-0 34848-4 0 246
2 21798 98.9600 300.9923 0012027 200.4933 159.5758 14.13921778200274
Glonass 53
1 21853U 92005A 95287.40194392 .00000043 00000-0 10000-3 0 440
2 21853 65.0398 92.7192 0007539 196.5764 163.4166 2.13102299 28864
Glonass 54
1 21854U 92005B 95288.16015160 .00000052 00000-0 10000-3 0 1991
2 21854 65.0404 92.6868 0015929 22.9664 337.1229 2.13103905 28860
Glonass 55
1 21855U 92005C 95287.28658657 .00000042 00000-0 00000+0 0 1879
2 21855 65.0385 92.7254 0007739 191.6641 168.3355 2.13101894 28834
JERS-1
1 21867U 92007A 95288.56044327 .00000654 00000-0 59308-4 0 6918
2 21867 97.7106 4.0472 0001610 111.4373 248.7025 14.98651467201070
GPS BIIA-12
1 21890U 92009A 95287.39072372 -.00000012 00000-0 10000-3 0 7103
2 21890 53.8824 236.8091 0058704 185.2938 174.6338 2.00567403 26693
GPS BIIA-13
1 21930U 92019A 95287.09922938 -.00000089 00000-0 10000-3 0 6954
2 21930 55.7093 358.4944 0034978 178.4383 181.6279 2.00560448 25615
EUVE
1 21987U 92031A 95286.56726005 .00000777 00000-0 26217-4 0 4902
2 21987 28.4306 47.5107 0009785 219.8601 140.1263 15.19464720185978
SAMPEX
1 22012U 92038A 95287.26695334 .00000825 00000-0 70281-4 0 6666
2 22012 81.6714 19.9905 0116651 258.6889 100.1201 14.91467113178429
GPS BIIA-14
1 22014U 92039A 95288.13652968 -.00000016 00000-0 00000+0 0 5964
2 22014 54.8381 178.4002 0090014 317.6745 41.7075 2.00566600 17477
Glonass 56
1 22056U 92047A 95287.18584846 -.00000052 00000-0 00000+0 0 1025
2 22056 64.8475 332.1202 0006785 263.0918 96.8955 2.13103128 24929
Glonass 57
1 22057U 92047B 95286.54292886 -.00000054 00000-0 00000+0 0 925
2 22057 64.8560 332.1755 0007831 309.0817 50.9137 2.13102400 24880
Glonass 58
1 22058U 92047C 95285.07505209 -.00000054 00000-0 10000-3 0 519
2 22058 64.8489 332.2206 0009197 266.3656 93.5980 2.13103075 24907
TOPEX
```

```
1 22076U 92052A 95288.20322661 -.00000038 00000-0 10000-3 0 9131
2 22076 66.0307 3.5781 0007836 262.9175 97.0943 12.80930415148616
KO-23
1 22077U 92052B 95285.21697411 -.00000037 00000-0 10000-3 0 5278
2 22077 66.0793 350.7364 0000608 110.1371 249.9716 12.86292718148789
S80/T
1 22078U 92052C 95287.60628516 -.00000037 00000-0 10000-3 0 5252
2 22078 66.0762 344.4966 0001971 69.9030 290.2193 12.86576096149177
GPS BIIA-15
1 22108U 92058A 95287.10047963 -.00000011 00000-0 10000-3 0 6408
2 22108 54.1093 237.6315 0118648 152.3135 208.3128 2.00553281 22635
FREJA
1 22161U 92064A 95289.06224598 .00000057 00000-0 64431-4 0 5532
2 22161 62.9900 142.5041 0821094 357.2410 2.4213 13.21853004146025
LAGEOS II
1 22195U 92070B 95285.66930589 -.00000009 00000-0 10000-3 0 4384
2 22195 52.6445 148.7325 0137324 328.0384 31.1909 6.47293931 70188
GPS BIIA-16
1 22231U 92079A 95287.78343379 -.00000016 00000-0 10000-3 0 6070
2 22231 54.6645 179.5972 0022106 294.8121 65.0392 2.00560542 21226
GPS BIIA-17
1 22275U 92089A 95287.93395719 -.00000015 00000-0 10000-3 0 6317
2 22275 54.6308 177.0784 0018535 260.1790 99.7290 2.00568550 20635
TDRS 5
1 22314U 93003B 95289.22707476 -.00000285 00000-0 10000-3 0 5687
2 22314 2.1174 70.8942 0002691 169.0956 180.4580 1.00270703 10123
GPS BIIA-18
1 22446U 93007A 95287.50292990 -.00000033 00000-0 10000-3 0 6206
2 22446 54.3721 297.4209 0083728 354.9734 4.9764 2.00572559 19610
Glonass 59
1 22512U 93010A 95288.81131745 .00000059 00000-0 10000-3 0 7386
2 22512 65.0365 92.5298 0008852 184.0142 175.9990 2.13102039 20460
Glonass 60
1 22513U 93010B 95287.81178944 .00000048 00000-0 00000+0 0 8180
2 22513 65.0506 92.5741 0007532 182.1883 177.8288 2.13102361 20634
Glonass 61
1 22514U 93010C 95288.10526808 .00000051 00000-0 00000+0 0 8139
2 22514 65.0743 92.5485 0011453 179.5455 180.4757 2.13102515 20648
ASTRO-D
1 22521U 93011A 95288.84300251 .00001406 00000-0 93287-4 0 4428
2 22521 31.1053 189.0019 0056711 254.2465 105.1973 15.02494022145536
UFO F1
1 22563U 93015A 95289.13075353 -.00000092 00000-0 00000+0 0 4611
2 22563 25.7779 292.4890 0009170 269.8982 146.5066 0.99249524 13660
GPS BIIA-19
1 22581U 93017A 95283.15809589 -.00000091 00000-0 10000-3 0 4686
2 22581 55.1767 358.1574 0057220 34.8635 325.5610 2.00570212 18582
ARSENE
1 22654U 93031B 95288.64049825 -.00000106 00000-0 10000-3 0 3339
2 22654 2.7945 80.4935 2886223 221.6079 112.4701 1.42203878 8105
```

```
GPS BIIA-20
1 22657U 93032A 95288.27942189 -.00000088 00000-0 10000-3 0 5338
2 22657 55.1874 357.7623 0071637 208.8458 150.7959 2.00559627 14014
RADCAL
1 22698U 93041A 95286.50100301 .00000070 00000-0 24875-4 0 4378
2 22698 89.5353 284.3423 0093991 53.2971 307.6812 14.21355054119240
GPS BIIA-21
1 22700U 93042A 95285.25250896 -.00000015 00000-0 10000-3 0 4586
2 22700 54.2857 238.5208 0039194 344.3908 15.4739 2.00567482 16751
NOAA 13
1 22739U 93050A 95288.41643825 .00000011 00000-0 31357-4 0 9091
2 22739 99.0053 237.4668 0009811 190.9203 169.1757 14.10944353112396
GPS BIIA-22
1 22779U 93054A 95286.83714946 -.00000038 00000-0 10000-3 0 5239
2 22779 54.5161 297.4669 0020928 251.2337 108.5658 2.00551966 15540
Meteor 2-21
1 22782U 93055A 95288.15791746 .00000067 00000-0 47600-4 0 4343
2 22782 82.5524 182.1190 0021621 311.6496 48.2818 13.83040605107125
UFO F2
1 22787U 93056A 95289.00434606 -.00000084 00000-0 10000-3 0 5471
2 22787 4.3956 325.0653 0004140 215.0070 278.1879 1.00270043 6378
SPOT 3
1 22823U 93061A 95285.38475673 -.00000044 00000-0 00000+0 0 4788
2 22823 98.7278 357.9678 0001091 87.8945 272.2356 14.20027139105920
STELLA
1 22824U 93061B 95287.24380337 -.00000046 00000-0 -11065-5 0 4229
2 22824 98.6079 1.5297 0005470 237.0043 123.0611 14.27102280106714
AO-27
1 22825U 93061C 95288.22429533 .00000000 00000-0 17812-4 0 4257
2 22825 98.6084 2.8954 0007598 231.8350 128.2148 14.27674457106892
IO-26
1 22826U 93061D 95288.23922134 .00000015 00000-0 23958-4 0 4247
2 22826 98.6096 3.0290 0008259 233.0558 126.9866 14.27782924106904
HEATHSAT
1 22827U 93061E 95287.75910267 .00000024 00000-0 27479-4 0 4857
2 22827 98.6068 2.4808 0008363 219.7413 140.3157 14.27909380106842
ITAMSAT
1 22828U 93061F 95287.71749954 .00000025 00000-0 27451-4 0 4027
2 22828 98.6054 2.5573 0009367 216.1073 143.9475 14.28114869 74933
PO-28
1 22829U 93061G 95287.24037363 .00000045 00000-0 35488-4 0 4166
2 22829 98.6056 2.1291 0009142 221.6780 138.3702 14.28095514106781
KO-25
1 22830U 93061H 95288.14144413 .00000016 00000-0 23546-4 0 4354
2 22830 98.5045 354.8435 0011095 189.9647 170.1318 14.28098388106919
GPS BIIA-23
1 22877U 93068A 95287.88407159 -.00000022 00000-0 10000-3 0 3268
2 22877 55.5043 58.9975 0012531 336.2792 23.7139 2.00570268 14456
METEOSAT 6
1 22912U 93073B 95288.90660426 -.00000095 00000-0 10000-3 0 3716
```

```
2 22912 0.5745 279.6423 0001912 317.5716 102.8826 1.00273198 5390
HST Array
1 22920U 90037C 95287.25518134 .00006906 00000-0 49903-3 0 3807
2 22920 28.4629 313.4422 0002955 10.8766 349.1848 15.02207303102223
Meteor 3-6
1 22969U 94003A 95287.87597152 .00000051 00000-0 10000-3 0 2037
2 22969 82.5536 74.2821 0015576 129.0180 231.2307 13.16732019 82638
TUBSAT-B
1 22970U 94003B 95284.94214593 .00000051 00000-0 10000-3 0 1948
2 22970 82.5546 76.2807 0016337 134.5487 225.6971 13.16826040 82254
GPS BIIA-24
1 23027U 94016A 95287.46779805 -.00000090 00000-0 10000-3 0 2662
2 23027 55.0805 359.8507 0069236 196.8137 163.0045 2.00563987 11750
Glonass 62
1 23043U 94021A 95288.18342247 -.00000047 00000-0 00000+0 0 2692
2 23043 64.7330 332.4855 0007409 200.3488 159.6862 2.13102974 11763
Glonass 63
1 23044U 94021B 95287.59679398 -.00000051 00000-0 00000+0 0 2399
2 23044 64.7213 332.5023 0031100 205.6936 154.2213 2.13103071 11752
Glonass 64
1 23045U 94021C 95289.18102364 -.00000041 00000-0 00000+0 0 2479
2 23045 64.7135 332.4596 0009590 30.8645 329.2558 2.13102609 11788
GOES 8
1 23051U 94022A 95287.32210332 -.00000264 00000-0 10000-3 0 3985
2 23051 0.2665 84.1030 0003806 116.5111 223.4755 1.00270690 12894
MSTI 2
1 23101U 94028A 95287.60859026 .00006945 00000-0 11865-3 0 2437
2 23101 97.0913 119.1777 0011927 149.3116 210.8831 15.51532311 81038
STRV-1A
1 23125U 94034B 95285.78886466 .00436660 00000-0 79065-1 0 2025
2 23125 7.4821 343.0418 7267309 215.8521 60.9203 2.30868122 10360
STRV-1B
1 23126U 94034C 95287.44140026 -.00142591 00000-0 -21499-1 0 1785
2 23126 7.5463 342.3231 7273373 217.0726 58.1751 2.30507822 10441
Nadezhda 4
1 23179U 94041A 95285.87748957 .00000017 00000-0 11450-5 0 1372
2 23179 82.9430 60.6315 0037898 95.9732 264.5748 13.75672222 62653
Glonass 65
1 23203U 94050A 95287.91090407 -.00000004 00000-0 00000+0 0 2020
2 23203 64.7823 212.3842 0006979 152.0853 207.9773 2.13101847 9156
Glonass 66
1 23204U 94050B 95289.08339453 -.00000011 00000-0 00000+0 0 2116
2 23204 64.7721 212.3788 0015183 345.5587 14.4222 2.13102063 9176
Glonass 67
1 23205U 94050C 95287.08917739 .00000000 00000-0 00000+0 0 1963
2 23205 64.7735 212.4316 0002307 298.0407 61.9596 2.13102394 9131
DMSP B5D2-7
1 23233U 94057A 95288.87764391 .00000085 00000-0 69708-4 0 5224
2 23233 98.8677 345.7932 0012725 151.9257 208.2605 14.12645022 58193
OKEAN 1-7
```

```
1 23317U 94066A 95287.00412115 .00000206 00000-0 27865-4 0 1011
2 23317 82.5420 286.4074 0026286 160.3973 199.8255 14.73965038 54120
ELEKTRO
1 23327U 94069A 95283.86095486 -.00000115 00000-0 00000+0 0 941
2 23327 0.5445 259.4250 0004173 211.2215 294.2478 1.00271021 3499
RESURS 1-3
1 23342U 94074A 95289.07055373 .00000012 00000-0 10000-4 0 3634
2 23342 98.0013 346.4862 0001817 74.4648 285.6749 14.69775612 50802
Glonass 68
1 23396U 94076A 95287.87108289 .00000049 00000-0 00000+0 0 1571
2 23396 64.9913 92.6378 0030489 187.8089 172.1630 2.13102378 6998
Glonass 69
1 23397U 94076B 95288.98518200 .00000060 00000-0 00000+0 0 1611
2 23397 64.9757 92.6169 0010964 323.6408 36.3061 2.13102391 7012
Glonass 70
1 23398U 94076C 95288.86869568 .00000059 00000-0 00000+0 0 1714
2 23398 64.9606 92.6033 0001639 272.8012 87.2001 2.13101956 7027
LUCH (Altair-2)
1 23426U 94082A 95287.70286223 -.00000286 00000-0 00000+0 0 1865
2 23426 1.9563 271.8414 0000585 322.4069 136.7439 1.00273609 3031
RS-15
1 23439U 94085A 95286.81987794 -.00000039 00000-0 10000-3 0 842
2 23439 64.8142 63.1221 0166784 241.8062 116.5928 11.27525080 32893
NOAA 14
1 23455U 94089A 95288.81814857 .00000116 00000-0 88313-4 0 3532
2 23455 98.9131 230.4391 0008622 211.5053 148.5616 14.11540019 40831
ODERACS II A
1 23471U 95004C 95289.01896019 .00048951 12029-4 16508-3 0 2094
2 23471 51.6486 223.8691 0009095 203.5310 156.5235 15.90566594 40356
ODERACS II B
1 23472U 95004D 95272.32172989 .06795146 12641-4 14643-3 0 2947
2 23472 51.6455 294.0490 0004927 317.5101 44.3762 16.46511812 37926
Glonass 71
1 23511U 95009A 95286.01339643 -.00000055 00000-0 00000+0 0 1064
2 23511 64.7473 332.8302 0007940 219.8724 140.1378 2.13103000 4681
Glonass 72
1 23512U 95009B 95288.00802851 -.00000049 00000-0 00000+0 0 1144
2 23512 64.7366 332.7652 0006267 301.0587 58.9442 2.13102244 4724
Glonass 73
1 23513U 95009C 95289.23978350 -.00000041 00000-0 00000+0 0 1220
2 23513 64.7418 332.7382 0014749 205.8638 154.1266 2.13102996 4755
SFU
1 23521U 95011A 95287.57096778 .00004156 00000-0 13451-3 0 1051
2 23521 28.4534 340.7657 0020520 107.7198 252.5649 15.29003568 32226
GMS 5
1 23522U 95011B 95288.36586632 -.00000291 00000-0 10000-3 0 652
2 23522 0.6916 302.4455 0001986 181.5538 171.3745 1.00273651 1987
DMSP B5D2-8
1 23533U 95015A 95288.95799172 .00000063 00000-0 57402-4 0 2520
2 23533 98.8369 289.6836 0008220 35.0192 325.1516 14.12706376 29006
```

```
Microlab 1
1 23547U 95017C 95286.35650052 .00000221 00000-0 79707-4 0 562
2 23547 69.9797 25.1469 0013144 180.0046 180.1084 14.45422394 27851
OFEQ 3
1 23549U 95018A 95287.59426448 .00023056 00000-0 64334-3 0 1260
2 23549 143.3653 171.0298 0248384 230.1203 127.7442 15.09338764 29002
GFZ-1
1 23558U 86017JE 95287.37727466 .00004271 00000-0 56749-4 0 662
2 23558 51.6519 277.1829 0006566 26.7545 333.3808 15.60625742551445
ERS-2
1 23560U 95021A 95286.20679753 .00000043 00000-0 32228-4 0 1262
2 23560 98.5496 358.8504 0001145 52.8013 307.3279 14.32248756 25079
Spektr
1 23579U 95024A 95288.07398963 -.00007298 00000-0 -90216-4 0 1591
2 23579 51.6467 277.3399 0002356 191.0966 169.1241 15.57646421 23072
GOES 9
1 23581U 95025A 95288.80791065 -.00000192 00000-0 10000-3 0 716
2 23581 0.3104 271.7475 0003349 308.0770 5.0179 1.00273522 1461
Helios 1A
1 23605U 95033A 95287.86446040 .00000144 00000-0 36547-4 0 1056
2 23605 98.0967 222.4155 0001241 56.7369 303.3951 14.63835509 14511
UPM SAT 1
1 23606U 95033B 95289.23320017 .00000099 00000-0 26261-4 0 730
2 23606 98.0770 224.0456 0004721 236.7966 123.2787 14.66899436 14805
CERISE
1 23607U 95033C 95288.26128260 .00000224 00000-0 48451-4 0 330
2 23607 98.0774 223.1242 0006154 247.4872 112.5680 14.67157779 14676
TDRS 6
1 23613U 95035B 95288.39768546 .00000122 00000-0 00000+0 0 655
2 23613 0.1684 84.9007 0001907 151.6489 139.5560 1.00266610 927
Glonass 74
1 23620U 95037A 95286.20869701 .00000004 00000-0 00000+0 0 567
2 23620 64.8360 212.2944 0018204 168.7157 191.3490 2.13102894 1723
Glonass 75
1 23621U 95037B 95287.32362580 -.00000001 00000-0 00000+0 0 642
2 23621 64.8498 212.2514 0017430 178.8327 181.1953 2.13102297 1740
Glonass 76
1 23622U 95037C 95288.32072313 -.00000007 00000-0 00000+0 0 563
2 23622 64.8380 212.2151 0036882 165.6011 194.5289 2.13102561 1760
Prognoz-M2
1 23632U 95039A 95287.24627240 -.00001803 00000-0 00000+0 0 139
2 23632 66.0770 255.9900 9150248 316.2300 9.1830 0.26380901 198
SICH-1
1 23657U 95046A 95287.75607585 .00000194 00000-0 26259-4 0 231
2 23657 82.5338 67.3736 0029067 127.7925 232.5926 14.73418510 6541
Soyuz TM-22
1 23665U 95047A 95288.07398963 -.00007298 00000-0 -90216-4 0 513
2 23665 51.6467 277.3399 0002356 191.0966 169.1241 15.57646421 6518
TELSTAR 402R
1 23670U 95049A 95283.19916814 -.00000205 00000-0 10000-4 0 254
```

```
2 23670 0.1881 212.0700 0008285 134.4148 14.5179 1.00272876 143
1995049B
1 23671U 95049B 95286.30423376 .00000003 00000-0 56985-3 0 107
2 23671 7.1412 170.8985 7290126 195.3284 117.3663 2.19446378 420
RESURS-F
1 23672U 95050A 95289.21807445 .00125646 -11819-5 82438-4 0 533
2 23672 82.3197 178.0646 0009285 59.5048 300.7151 16.17068136 3198
1995050B
1 23673U 95050B 95272.04140007 .15624522 -12803-5 16689-3 0 206
2 23673 82.3159 198.1915 0014895 62.0452 298.1827 16.49844063 429
Cosmos 2320
1 23674U 95051A 95289.20930016 .00112843 12602-4 15138-3 0 363
2 23674 64.9146 47.3477 0041752 71.5169 289.0504 16.04602508 2736
1995051B
1 23675U 95051B 95275.94497615 .20175346 78196-5 24199-3 0 236
2 23675 64.9241 95.4652 0012263 76.2787 28.2541 16.49089160 548
1995052A
1 23676U 95052A 95288.51766434 .00040894 -92263-6 29465-3 0 98
2 23676 82.9394 84.5310 0384508 53.1192 310.4459 15.14405189 1411
1995052B
1 23677U 95052B 95288.90273655 .00050666 -75570-6 30594-3 0 118
2 23677 82.9424 84.1496 0389833 52.5050 311.0935 15.16336622 1478
Progress M-29
1 23678U 95053A 95288.07398963 -.00007298 00000-0 -90216-4 0 154
2 23678 51.6467 277.3399 0002356 191.0966 169.1241 15.57646421 998
1995053B
1 23679U 95053B 95283.51479976 .10010060 12476-4 42419-3 0 125
2 23679 51.6729 299.9679 0007889 94.0130 42.2228 16.43076460 264
1995054A
1 23680U 95054A 95287.91319444 -.00000133 00000-0 10000-3 0 81
2 23680 3.0474 275.9843 0007462 259.0832 263.4245 0.99901198 30
1995054D
1 23683U 95054D 95285.37956904 -.00000245 00000-0 10000-3 0 28
2 23683 3.1084 276.2352 0018072 357.2443 334.2168 1.00234693 08
1995054E
1 23684U 95054E 95288.26466843 -.00000070 00000-0 10000-4 0 47
2 23684 47.4789 274.5332 7281844 1.0154 359.8104 2.26839274 86
1995054F
1 23685U 95054F 95287.38706578 -.00000023 00000-0 00000+0 0 11
2 23685 47.5097 274.9483 7258187 0.7324 359.8422 2.26467368 62
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

2124. Updated WWW Site

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: amsoft@epix.net
Message-ID: <NEWTNews.813970745.11764.amsoft@amsoft>
Source record: 23933
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

The AmSoft web page "http://hamster.business.uwo.ca/~amsoft/" has
been reworked. It is now the Mother of all WWW sites for Amateur
Radio. Connect to over 125 ham sites direct from the front page.
New HTML work includes online forms, plenty of color and lots of
FUN! It could be addicting using our page.

2125. Need SGP & SDP Code

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: gerheim@sonalysts.com
Message-ID: <460cf6$pkj@hatch.sonalysts.com>
Source record: 23934

We have a copy of the Project Space Track Report Number 3, containing
FORTRAN 8-(listings of the 5 SGP/SDP routines. We would like to know
if we can download the code from an ftp site. We would especially
like to have C code for these routines. We need the source listings,
which we can incorporate into our own image analysis routines. Complete
executables for trackers don't interest us. We
can type and translate, but it's slow and prone to error.

Please email.

--
****
Al Gerheim, N4QN |Opinions expressed here | Sonalysts Inc. POB 280
gerheim@sonalysts.com |are my own. Contents may| 215 Parkway North
Work: (203)442-4355 |settle during shipment. | Waterford CT 06385
****

2126. Re: NEW ELECTRONIC PRODUCT FOR DISTRIBUTION

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: hermann@embratel.net.br
Message-ID: <460sd5$3nv@rjo02.embratel.net.br>
Source record: 23935
Cross-posted to: t.tv.animaniacs,t.sport.lacrosse,t.music.stone-temple,rec.video.satellite.europe,rec.radio.amateur.space,music.ween,music.van-halen,lt.music.t

In article <NEWTNews.7650.813712189.rrcom@rrcom.netvision.net.il>, rrcom@netvision.net.il says:
> We are looking for distributors world wide for:
> THE SMALLEST FM WALKMAN RADIO IN THE WORLD

I don't want to be your distributor and next time, please, don't send "junk mail" on alt.tv.xuxa,
please.

2127. Re: NEW ELECTRONIC PRODUCT FOR DISTRIBUTION

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: hermann@embratel.net.br
Message-ID: <460sgm$3o3@rjo02.embratel.net.br>
Source record: 23936
Cross-posted to: t.tv.animaniacs,t.sport.lacrosse,t.music.stone-temple,rec.video.satellite.europe,rec.radio.amateur.space,music.ween,music.van-halen,lt.music.t

In article <NEWTNews.7650.813712189.rrcom@rrcom.netvision.net.il>, rrcom@netvision.net.il says:
> We are looking for distributors world wide for:
> THE SMALLEST FM WALKMAN RADIO IN THE WORLD
I don't want to be your distributor and next time do not post "junk mail"
on this newsgroup alt.tv.xuxa.

2128. Re: Solar Flare affects on Radio signals????

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: dbcntcas@teleport.com
Message-ID: <dbcntcas-1710950901080001@ip-pdx08-50.teleport.com>
Source record: 23937

Sure do Robert. I and others have been studying the effects for years.
de Dave, N7DB (CN85)

--
Dave Bernhardt dbcntcas@teleport.com

2129. ARLK056 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk056.1995@ampr.org>
Source record: 23938
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK056
ARLK056 Keplerian data

ZCZC SK81
QST de W1AW
Keplerian Bulletin 56 ARLK056
From ARRL Headquarters
Newington, CT October 17, 1995
To all radio amateurs

SB KEP ARL ARLK056
ARLK056 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-73
1 99973U 99999A 95292.75777078 .00129591 00000-0 21726-3 0 64
2 99973 39.0123 112.2231 0008123 284.4394 75.5644 16.00409957 43
Mir
1 16609U 86017A 95289.16461962 .00002048 00000-0 33786-4 0 02989
2 16609 51.6467 271.8675 0003058 190.7709 169.3219 15.57662504551810
HST
1 20580U 90037B 95289.19335238 .00000400 00000-0 24439-4 0 07528
2 20580 28.4698 353.2613 0006375 124.8336 235.2855 14.90947489101989
AO-10
1 14129U 83058B 95287.22679695 .00000146 00000-0 10000-3 0 03784
2 14129 26.4582 243.6447 5983732 317.8205 9.0183 2.05877619064780
RS-10/11
1 18129U 87054A 95289.15269967 .00000045 00000-0 32420-4 0 01449
2 18129 82.9266 329.6595 0012881 109.9080 250.3457 13.72357640416568
UO-11
1 14781U 84021B 95288.99097031 .00000122 00000-0 28482-4 0 08505
2 14781 97.7867 285.8901 0012104 150.0618 210.1286 14.69385829621643
RS-12/13
1 21089U 91007A 95289.15474383 .00000092 00000-0 81173-4 0 08393
2 21089 82.9220 11.0605 0027808 193.7869 166.2529 13.74061338235384
AO-13
1 19216U 88051B 95288.65225512 -.00000542 00000-0 67211-4 0 01019
2 19216 57.4407 158.7138 7335095 21.3715 357.9163 2.09727634024697
```

```
UO-14
1 20437U 90005B 95289.13965939 .00000035 00000-0 30538-4 0 01407
2 20437 98.5629 11.5344 0010130 201.4237 158.6538 14.29899681299035
RS-15
1 23439U 94085A 95289.12591810 -.00000039 00000-0 10000-3 0 00939
2 23439 64.8140 59.3916 0167070 241.2585 117.1469 11.27524983033150
AO-16
1 20439U 90005D 95289.17681458 .00000039 00000-0 32136-4 0 09334
2 20439 98.5734 13.4048 0010420 201.6576 158.4168 14.29954126299051
DO-17
1 20440U 90005E 95289.08339177 .00000034 00000-0 29857-4 0 09346
2 20440 98.5761 13.8305 0010631 200.5655 159.5093 14.30095537299067
WO-18
1 20441U 90005F 95289.13807140 .00000012 00000-0 21521-4 0 09495
2 20441 98.5755 13.8458 0011015 201.9799 158.0911 14.30066046299078
LO-19
1 20442U 90005G 95289.15215538 .00000017 00000-0 23439-4 0 09352
2 20442 98.5768 14.2595 0011301 201.6562 158.4144 14.30170359299090
FO-20
1 20480U 90013C 95289.17890749 -.00000011 00000-0 55553-4 0 08444
2 20480 99.0662 355.2462 0540435 319.5596 36.6469 12.83231085266465
AO-21
1 21087U 91006A 95289.06613044 .00000094 00000-0 82657-4 0 06601
2 21087 82.9415 143.1332 0034677 167.4380 192.7648 13.74560124236339
UO-22
1 21575U 91050B 95289.16480031 .00000053 00000-0 32467-4 0 06453
2 21575 98.3842 357.4263 0007201 286.0433 73.9956 14.36994397222877
KO-23
1 22077U 92052B 95289.18225565 -.00000037 00000-0 10000-3 0 05556
2 22077 66.0788 342.4332 0000504 78.7248 281.3830 12.86292740149292
KO-25
1 22828U 93061F 95289.11874550 .00000053 00000-0 38889-4 0 04099
2 22828 98.6052 3.9375 0009333 212.3430 147.7181 14.28115429075136
IO-26
1 22826U 93061D 95289.15024246 .00000045 00000-0 36065-4 0 04286
2 22826 98.6094 3.9261 0008233 230.2067 129.8391 14.27783353107032
AO-27
1 22825U 93061C 95289.13538551 .00000028 00000-0 28882-4 0 04292
2 22825 98.6081 3.7920 0007597 229.3635 130.6887 14.27674853107022
PO-28
1 22829U 93061G 95289.20214539 .00000043 00000-0 34753-4 0 04292
2 22829 98.6053 4.0611 0009222 214.2105 145.8480 14.28095869107064

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
October 21, 1995, at 2230z on Baudot and AMTOR.
NNNN
/EX
```

2130. Re: Mode S question

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: kf8bex@oeonline.com
Message-ID: <DGL6Ev.27y@oeonline.oeonline.com>
Source record: 23939

V$BCIESLAK@china.qgraph.COM wrote:

>Can anyone give me the output power of the mode S beacons of AO13 or
>DOVE..

If it was still working DOVE's Mode-S beacon would be at 2401.220 MHz.
They turned Mode-S off a while ago. Try UO-11 instead. Its Mode-S beacon
was recently heard at 2401.500 with a carrier.

Good Luck.

2131. Pre-amplifier

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: Karl.Leite@pcimage.UCSD.EDU
Message-ID: <e70_9510180321@pcimage.cyber.net>
Source record: 23940

```
**************************************************
Dear Friends,

Thank you for reading this message. I would
to order pre-amplifier to 1.2 to 1.6 GHz.

But, I don't know how to find it. Please,
any help? I thank you in advance!

Vy best wishes and 73,

*IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;*
*: Karl Leite : Internet:- karl.leite@pcimage.cyber.net :*
*: Natal, (RN) : karl.leite@dialdata.com.br :*
*: PS7KM : Pkt Radio:- PS7KM@PT7NK.#CE.BRA.SA :*
*HMMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<*
---
* UniQWK #1812* Page your SySop at 3 AM & learn new words!

-*- SF-Quick/BW 1.00q [UNREGISTERED]

* Sent via SFE-mail from [UNREGISTERED BBS]
```

2132. Pre-amplifier

Newsgroup: rec.radio.amateur.space
Date: 1995-10-17 00:00:00 UTC
From: Karl.Leite@pcimage.UCSD.EDU
Message-ID: <e71_9510180321@pcimage.cyber.net>
Source record: 23941

```
**************************************************
Dear Friends,

Thank you for reading this message. I would
to order pre-amplifier to 1.2 to 1.6 GHz.

But, I don't know how to find it. Please,
any help? I thank you in advance!

Vy best wishes and 73,

*IMMMMMMMMMMMMMMKMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM;*
*: Karl Leite : Internet:- karl.leite@pcimage.cyber.net :*
*: Natal, (RN) : karl.leite@dialdata.com.br :*
*: PS7KM : Pkt Radio:- PS7KM@PT7NK.#CE.BRA.SA :*
*HMMMMMMMMMMMMMMMJMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<*
---
* UniQWK #1812* Page your SySop at 3 AM & learn new words!

-*- SF-Quick/BW 1.00q [UNREGISTERED]

* Sent via SFE-mail from [UNREGISTERED BBS]
```

2133. meteor scatter

Newsgroup: rec.radio.amateur.space
Date: 1995-10-18 00:00:00 UTC
From: Buster <lathrop@azstarnet.com>
Message-ID: <46391j$bl6@news.azstarnet.com>
Source record: 23942
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space

I have heard pings from rocks before. I'm just wondering if anyone has ever done or thought of working other types of ionization trails. How about when the shuttle re-enters the atmosphere. Or maybe one last contact using AO-13 when it re-enters?

2134. gps

Newsgroup: rec.radio.amateur.space
Date: 1995-10-19 00:00:00 UTC
From: William David Hall <76113.2516@CompuServe.COM>
Message-ID: <4649hp$4pa$1@mhadg.production.compuserve.com>
Source record: 23943

Has anyone ever tried to build a gps reciever to plug into the
laptop?????

2135. Goddard Anniversary Day Today (10/19)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-19 00:00:00 UTC
From: ai181@freenet.buffalo.edu
Message-ID: <DGpnMo.487@freenet.buffalo.edu>
Source record: 23944

Today is the 96th Anniversary of what Dr. Goddard called his "Anniversary Day". This was the day he had his vision of spaceflight which determined his destiny. The following is from his autobiographical notes regarding October 19, 1899:

"On this day I climbed a tall cherry tree at the back of the barn... and as I looked towards the fields at the east, I imagined how wonderful it would be to make some device which had even the possibility of ascending to Mars, and how it would look on a small scale, if sent up from the meadow at my feet..."

"It seemed to me then that a weight whirling around a horizontal shaft, moving more rapidly above than below, could furnish lift by virtue of the greater centrifugal force at the top of the path."

"I was a different boy when I descended the tree from when I ascended," he wrote. "Existence at last seemed very purposive."

Source - "Robert H. Goddard, Pioneer of Space Research"
by Milton Lehman
Da Capo Press, Inc. 1988 Revised Version
(originally pub. as "This High Man" in 1963)
ISBN 0-306-80331-3 (pbk.)
--
(Dean R. Oberg)

2136. Re: MIR freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-19 00:00:00 UTC
From: Bennie Hall <benh@roanoke.infi.net>
Message-ID: <466d94$dju@allnews.infi.net>
Source record: 23945

DF4TR will be using the following frequencies 145.800,145.550 and perhaps 145.000mhz. For the EUROMIR 95 mission qsls for DP0MIR should be sent to the DARC QSL bureau..73 de WY4D Ben

2137. Re: MIR freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-19 00:00:00 UTC
From: Brett Kappenman <brett@halcyon.com>
Message-ID: <308681C5.61F7@halcyon.com>
Source record: 23946

Billy W. Dunn wrote:
>
> According to 74537.1100 @ compuserve.com I discovered that ever since Norman
> Thagard left the Mir is not using the same old
> setup. He says that he has heard or read packet simplex on 145.55, as well as
> voice, and voice on 145.8 down with 145.2 up.

I've also heard packet simplex on 145.555. I may have been off by .005

Brett Kappenman
brett@halcyon.com
KC7N?? (Maybe I'll have this today)

2138. Popular Communications $9.95/year!

Newsgroup: rec.radio.amateur.space
Date: 1995-10-19 00:00:00 UTC
From: p006778b@pbfreenet.seflin.lib.fl.us
Message-ID: <4666u7$9jd@bcfreenet.seflin.lib.fl.us>
Source record: 23947

AMERICA'S #1 MAGAZINE SUBSCRIPTION DISCOUNTERS SINCE 1990!

We are the Wal-Mart of magazine subscriptions! More than 500 titles to
choose from.
Delighted, repeat customers in all 50 states!
All subscriptions guaranteed in writing!
MasterCard-Visa-American Express-Discover cards accepted, or write:

Magazine King
P. O. Box 16601
W. Palm Beach FL 33416-6601.

Florida residents MUST add 6.2% sales tax.
U.S. customers only, phone 1-800-921-9898 to order up to 3 years.
Specify New or Renewal for best service.

Our prices are low because we pay little or nothing to advertise. If you
are inquiring only, or are skeptical, please do NOT call our "800"
number, as that eats into our profit margin, and could force us to raise
prices for our buying customers. Please feel free to phone 407/686-2133
daily noon to 10 PM Eastern Time. You will find courteous, helpful
customer service representatives anxious to help you. Thank you!

--

2139. Re: gps

Newsgroup: rec.radio.amateur.space
Date: 1995-10-19 00:00:00 UTC
From: Peter Briggs <pb@navdra.com>
Message-ID: <814117788snz@navdra.com>
Source record: 23948

In article <4649hp$4pa$1@mhadg.production.compuserve.com>
76113.2516@CompuServe.COM "William David Hall" writes:

> Has anyone ever tried to build a gps reciever to plug into the
> laptop?????

There are any number of PCMCIA receivers available. There are also several
ISA card receivers available.

Try the likes of Trimble, Ashtech, NavSymm and GEC Plessey Semicon for info.
If you are after a wide range of product info, look for a recent copy of GPS
World magazine.

Cheers ... Peter.

* The views expressed above are personal and are not endorsed by the DRA. */
/*===*\
|* Navigation Systems Research, Q131 Building, || MIME, UU, XX or BinHex *|
|* DRA, Farnborough, Hants, England. GU14 6TD. || Encoding Acceptable *|
===/

2140. Deep Space Explorers ?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-20 00:00:00 UTC
From: John Criswick <criswick@conveyor.com>
Message-ID: <468jcg$gd5@nic.ott.hookup.net>
Source record: 23949

I would like to know more about a group called Deep Space Explorers or any amateur radio group involved in deep space activities. If anyone can post that information to this group or to me personally I would appreciate it.

...John Criswick
criswick@conveyor.com

2141. NORAD Two-Line Orbital Element Sets (TLE692)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-20 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.814225113@dolphin>
Source record: 23950

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #692 -
Alouette 1
1 00424U 62049A 95289.84466274 .00000053 00000-0 51831-4 0 1436
2 00424 80.4666 164.8451 0022621 304.9994 54.9020 13.67852383648938
ATS 1
1 02608U 66110A 95291.80248428 .00000117 00000-0 10000-3 0 9456
2 02608 14.6418 355.3831 0009155 78.5003 281.6366 1.00376633 22435
ATS 3
1 03029U 67111A 95290.26393253 -.00000111 00000-0 10000-3 0 4092
2 03029 14.8679 2.4311 0009246 263.1037 109.3545 1.00273024102329
Cosmos 398
1 04966U 71016A 95293.17323491 .00648906 10316-4 35190-3 0 549
2 04966 51.3750 349.1020 0321632 183.7356 176.1228 15.61042111844215
Starlette
1 07646U 75010A 95292.55766567 -.00000174 00000-0 -23596-4 0 9229
2 07646 49.8281 22.2166 0206213 152.4967 208.7021 13.82189100 45545
LAGEOS
1 08820U 76039A 95289.47832806 .00000032 00000-0 10000-3 0 1434
2 08820 109.8517 302.1796 0043798 181.6756 178.3848 6.38664148198209
ETS-2
1 09852U 77014A 95288.32652125 -.00000067 00000-0 10000-3 0 440
2 09852 12.9105 35.7645 0005215 98.0566 262.0049 0.99997715 15185
GOES 2
1 10061U 77048A 95291.48947654 .00000067 00000-0 10000-3 0 5901
2 10061 12.0110 39.9103 0014297 125.4359 222.2008 1.00265810 12004
IUE
1 10637U 78012A 95291.34087618 -.00000154 00000-0 10000-3 0 1782
2 10637 35.3880 87.0151 1339692 50.3314 336.2801 1.00295051 17506
GPS BI-01
1 10684U 78020A 95287.41085950 -.00000051 00000-0 10000-3 0 3949
2 10684 64.8862 31.1785 0060839 162.6898 197.5298 1.98069497114523
```

```
GPS BI-02
1 10893U 78047A 95292.27360594 .00000017 00000-0 10000-3 0 1916
2 10893 63.2608 268.7233 0224676 14.6503 345.9941 2.01627072127939
GOES 3
1 10953U 78062A 95292.40078012 .00000069 00000-0 10000-3 0 5513
2 10953 10.9846 42.7123 0006316 135.4467 217.8154 1.00368577 16623
SeaSat 1
1 10967U 78064A 95290.27630885 -.00000019 00000-0 38421-4 0 4361
2 10967 107.9972 30.0970 0002387 228.6737 131.4208 14.38061034906389
GPS BI-03
1 11054U 78093A 95288.50377279 .00000021 00000-0 10000-3 0 3575
2 11054 62.9822 267.3988 0045891 180.8578 179.1374 1.93505291123901
Nimbus 7
1 11080U 78098A 95292.54850646 -.00000053 00000-0 -97788-5 0 5379
2 11080 98.9806 161.0830 0008199 259.3923 100.6309 13.83701965857755
GPS BI-04
1 11141U 78112A 95290.15677420 -.00000051 00000-0 10000-3 0 109
2 11141 64.8946 33.1236 0049096 27.5873 332.7007 1.92894943 13178
GPS BI-05
1 11690U 80011A 95289.54518691 -.00000049 00000-0 10000-3 0 9469
2 11690 65.2477 32.6721 0151443 192.3527 167.2780 2.00568432129292
GPS BI-06
1 11783U 80032A 95286.14333488 .00000006 00000-0 10000-3 0 1056
2 11783 62.4120 261.9944 0220678 29.3876 331.8226 2.03456700113784
GOES 5
1 12472U 81049A 95288.29025355 -.00000258 00000-0 10000-3 0 8877
2 12472 7.7467 52.7545 0006929 47.7407 312.3290 1.00232207 10639
Cosmos 1383
1 13301U 82066A 95291.07410776 .00000059 00000-0 51151-4 0 4433
2 13301 82.9310 312.0520 0026795 187.1085 172.9679 13.68069308664130
LandSat 4
1 13367U 82072A 95290.74252085 .00000031 00000-0 16865-4 0 7810
2 13367 98.1159 343.5568 0006668 168.4246 191.7098 14.57162398705065
DMSP B5D2-1
1 13736U 82118A 95292.53585242 .00000055 00000-0 41672-4 0 8703
2 13736 98.6275 119.7823 0009070 19.2286 340.9234 14.25758360666637
IRAS
1 13777U 83004A 95293.02739203 .00000372 00000-0 28624-3 0 1140
2 13777 98.9652 118.6502 0013812 46.0876 314.1421 13.99242087319649
Cosmos 1447
1 13916U 83021A 95291.20153054 .00000037 00000-0 22694-4 0 5397
2 13916 82.9459 10.7607 0039072 107.6010 252.9409 13.74331202630361
TDRS 1
1 13969U 83026B 95288.32320792 .00000085 00000-0 00000+0 0 4804
2 13969 8.5812 46.0987 0003914 171.6966 143.3608 1.00279938 18914
GOES 6
1 14050U 83041A 95291.33946341 -.00000180 00000-0 10000-3 0 4578
2 14050 6.5734 55.9898 0004045 28.2385 331.8212 1.00322293103761
OSCAR 10
1 14129U 83058B 95292.08364285 -.00000203 00000-0 10000-3 0 3796
```

```
2 14129 26.4563 242.8733 5982590 319.1256 8.7145 2.05881638 64881
LandSat 5
1 14780U 84021A 95291.18978350 .00000040 00000-0 18703-4 0 3588
2 14780 98.1003 344.3080 0004749 170.3865 189.7425 14.57169958618544
UoSat 2
1 14781U 84021B 95290.96577999 .00000155 00000-0 33918-4 0 8349
2 14781 97.7867 287.7730 0012154 143.7970 216.4066 14.69386808621934
GPS BI-09
1 15039U 84059A 95285.16473699 -.00000062 00000-0 10000-3 0 3692
2 15039 64.5598 27.6285 0082087 18.6230 341.6897 1.92302267 82642
Cosmos 1574
1 15055U 84062A 95290.45402026 .00000017 00000-0 26664-5 0 7405
2 15055 82.9538 65.6950 0026711 303.1801 56.6789 13.73627048567524
GPS BI-10
1 15271U 84097A 95288.70249158 .00000018 00000-0 10000-3 0 660
2 15271 62.1128 262.3266 0156920 354.7705 5.0875 2.00604871 80347
Cosmos 1602
1 15331U 84105A 95290.62324722 .00000304 00000-0 32895-4 0 4256
2 15331 82.5347 341.2119 0021957 35.7778 324.4892 14.84679138596830
NOAA 9
1 15427U 84123A 95292.80349445 .00000056 00000-0 53502-4 0 4424
2 15427 98.9794 352.1845 0013973 279.0847 80.8735 14.13737017559526
GPS BI-11
1 16129U 85093A 95290.32229148 -.00000055 00000-0 10000-3 0 6835
2 16129 65.2310 30.7964 0155908 86.2476 275.5497 1.89368097 17309
Mir
1 16609U 86017A 95293.42474760 .00014256 00000-0 19465-3 0 2771
2 16609 51.6462 250.5248 0003070 195.4859 310.1002 15.57744314552476
SPOT 1
1 16613U 86019A 95293.24690770 .00000090 00000-0 62356-4 0 8628
2 16613 98.6380 1.7388 0000904 32.7124 327.4095 14.20073250186113
Cosmos 1766
1 16881U 86055A 95292.34959915 .00000237 00000-0 25686-4 0 3414
2 16881 82.5178 37.3913 0021189 55.6776 304.6439 14.83666485497987
EGP
1 16908U 86061A 95291.70621390 -.00000083 00000-0 10000-3 0 367
2 16908 50.0080 22.4907 0011715 119.7720 240.4281 12.44412875 86211
NOAA 10
1 16969U 86073A 95292.72483046 .00000028 00000-0 30017-4 0 3568
2 16969 98.5154 291.8754 0013438 344.9376 15.1399 14.24959193472217
MOS-1
1 17527U 87018A 95292.20885244 -.00000043 00000-0 00000+0 0 2884
2 17527 98.9674 354.1517 0008782 236.9836 123.0488 13.97615229441128
GOES 7
1 17561U 87022A 95292.26002865 .00000081 00000-0 10000-3 0 5916
2 17561 2.5798 71.3674 0001853 307.0448 327.5510 1.00282542 14871
Kvant-1
1 17845U 87030A 95293.07809767 -.00001004 00000-0 -66304-5 0 4137
2 17845 51.6458 252.2609 0003058 195.7740 164.5499 15.57718332486537
DMSP B5D2-3
```

```
1 18123U 87053A 95292.76113430 .00000012 00000-0 28814-4 0 1813
2 18123 98.7772 121.9594 0013274 222.3080 137.7071 14.15421242430348
RS-10/11
1 18129U 87054A 95290.53795724 .00000062 00000-0 50736-4 0 1256
2 18129 82.9265 328.6356 0012957 106.3271 253.9311 13.72357891416755
Meteor 2-16
1 18312U 87068A 95290.19261658 .00000066 00000-0 46386-4 0 4322
2 18312 82.5577 185.6038 0011413 178.8419 181.2768 13.84063977412424
Meteor 2-17
1 18820U 88005A 95292.92358681 .00000033 00000-0 16606-4 0 7536
2 18820 82.5390 239.0089 0014895 245.7606 114.1994 13.84744487390131
DMSP B5D2-4
1 18822U 88006A 95292.75718959 .00000001 00000-0 18636-4 0 957
2 18822 98.3914 131.1769 0006911 358.3499 1.7656 14.23167905400235
Glonass 34
1 19163U 88043A 95288.63415809 .00000059 00000-0 10000-3 0 226
2 19163 65.1703 94.1119 0008100 148.8067 211.2731 2.13102555 57005
Glonass 36
1 19165U 88043C 95292.44484107 .00000079 00000-0 10000-3 0 4337
2 19165 65.1612 93.9512 0000522 270.2811 89.7411 2.13102183 57704
METEOSAT 3
1 19215U 88051A 95292.14917588 -.00000273 00000-0 10000-3 0 2002
2 19215 2.7582 69.0755 0001132 176.6675 126.0201 1.00272743 14813
AO-13
1 19216U 88051B 95287.69866028 -.00000564 00000-0 59624-4 0 994
2 19216 57.4393 158.8883 7334651 21.2988 357.9360 2.09728059 24676
OKEAN 1
1 19274U 88056A 95292.54660719 .00000228 00000-0 25441-4 0 415
2 19274 82.5155 137.7746 0018540 195.3548 164.7119 14.82396768393579
Meteor 3-2
1 19336U 88064A 95289.23101286 .00000051 00000-0 10000-3 0 4304
2 19336 82.5411 339.7630 0017695 123.5670 236.7140 13.16974897347235
Glonass 39
1 19503U 88085C 95288.25036904 -.00000046 00000-0 10000-3 0 3245
2 19503 65.6650 333.0084 0007819 168.4769 191.6122 2.13101858 55107
NOAA 11
1 19531U 88089A 95292.78339521 -.00000028 00000-0 10000-4 0 2525
2 19531 99.1951 299.5017 0011191 195.2617 164.8219 14.13067195364351
TDRS 2
1 19548U 88091B 95291.73778169 -.00000195 00000-0 10000-3 0 1506
2 19548 2.0204 72.2134 0009047 138.8315 166.8005 1.00273061 13094
Glonass 40
1 19749U 89001A 95288.75777107 .00000059 00000-0 10000-3 0 5399
2 19749 65.1042 93.6563 0004662 271.2392 88.7268 2.13101498 52629
Glonass 41
1 19750U 89001B 95292.56720544 .00000079 00000-0 10000-3 0 4489
2 19750 65.1427 93.6056 0011011 210.5911 149.4240 2.13102454 52723
GPS BII-01
1 19802U 89013A 95292.33536656 .00000080 00000-0 10000-3 0 1258
2 19802 55.2267 120.2812 0025618 180.1824 179.8887 2.00558112 48869
```

```
Akebono
1 19822U 89016A 95291.86595759 .00010526 00000-0 53188-3 0 5882
2 19822 75.1073 263.9674 3769901 288.5065 34.7922 7.88052276147557
Meteor 2-18
1 19851U 89018A 95290.50041467 .00000042 00000-0 24134-4 0 4306
2 19851 82.5195 115.3925 0013655 305.5562 54.4324 13.84398465335114
MOP-1
1 19876U 89020B 95288.10980903 .00000060 00000-0 10000-3 0 1444
2 19876 1.4494 73.0192 0006067 138.5843 221.5631 1.00276354 4224
TDRS 3
1 19883U 89021B 95288.18331312 -.00000275 00000-0 10000-3 0 1297
2 19883 0.1019 75.4968 0005349 147.2135 185.5424 1.00271408 2818
GPS BII-02
1 20061U 89044A 95292.17533256 -.00000011 00000-0 10000-3 0 1307
2 20061 54.3726 296.3654 0151005 216.4676 142.5225 2.00563203 46605
Nadezhda 1
1 20103U 89050A 95292.71221552 .00000042 00000-0 28899-4 0 5521
2 20103 82.9557 286.7517 0038126 8.4710 351.7084 13.73858843315524
GPS BII-03
1 20185U 89064A 95292.01238530 .00000076 00000-0 10000-3 0 1474
2 20185 55.0202 120.7920 0012562 317.1856 42.7197 2.00565387 45173
GMS 4
1 20217U 89070A 95291.67829707 -.00000368 00000-0 10000-3 0 2566
2 20217 1.2909 75.7308 0001669 353.9033 321.4138 1.00279434 22986
INTERCOSMOS 24
1 20261U 89080A 95290.87731347 .00000217 00000-0 66130-4 0 4479
2 20261 82.5927 66.1268 1241145 234.8725 112.9852 12.47283052275572
GPS BII-04
1 20302U 89085A 95292.05148398 -.00000026 00000-0 10000-3 0 1403
2 20302 53.3162 236.3543 0015091 172.8254 187.2860 2.00559447 43971
Meteor 3-3
1 20305U 89086A 95292.05637162 .00000044 00000-0 10000-3 0 4153
2 20305 82.5372 291.9706 0007047 168.5162 191.6078 13.04411692286638
COBE
1 20322U 89089A 95292.55565913 -.00000179 00000-0 -86450-4 0 1593
2 20322 98.9567 306.7241 0009490 354.2645 5.8416 14.03447616303038
Kvant-2
1 20335U 89093A 95293.07809767 -.00001004 00000-0 -66304-5 0 4114
2 20335 51.6458 252.2609 0003058 195.7740 164.5499 15.57718332335549
GPS BII-05
1 20361U 89097A 95289.07105317 -.00000008 00000-0 10000-3 0 9816
2 20361 55.8484 62.9925 0082830 125.0388 235.7442 2.00562668 33399
COSMOS 2054 (Altair-1)
1 20391U 89101A 95291.34569740 -.00000131 00000-0 10000-3 0 2351
2 20391 3.3776 65.1309 0003501 113.0462 316.9316 1.00271938 21567
SPOT 2
1 20436U 90005A 95292.24906437 .00000169 00000-0 10000-3 0 9867
2 20436 98.7257 4.6872 0001012 27.2551 332.8667 14.20032523297508
UO-14
1 20437U 90005B 95291.72873452 .00000028 00000-0 27696-4 0 1338
```

```
2 20437 98.5626 14.0795 0010206 192.9165 167.1748 14.29900036299404
UO-15
1 20438U 90005C 95289.72581816 .00000004 00000-0 18828-4 0 9290
2 20438 98.5592 10.4494 0009236 203.8523 156.2222 14.29215785299006
PACSAT
1 20439U 90005D 95293.16523794 .00000035 00000-0 30662-4 0 9323
2 20439 98.5735 17.3325 0010458 189.6231 170.4752 14.29954651299626
DO-17
1 20440U 90005E 95292.72159375 .00000037 00000-0 31105-4 0 9321
2 20440 98.5760 17.4147 0010736 189.2097 170.8893 14.30096113299581
WO-18
1 20441U 90005F 95290.74730882 .00000033 00000-0 29544-4 0 9364
2 20441 98.5752 15.4303 0011078 196.8669 163.2142 14.30066494299306
LO-19
1 20442U 90005G 95292.16051073 .00000036 00000-0 30638-4 0 9315
2 20442 98.5766 17.2238 0011423 191.9546 168.1367 14.30170989299525
GPS BII-06
1 20452U 90008A 95292.95666859 .00000020 00000-0 10000-3 0 864
2 20452 54.0073 176.5859 0064756 84.7001 276.1607 2.00553909 41976
MOS-1B
1 20478U 90013A 95292.21789111 .00000090 00000-0 10000-3 0 8522
2 20478 99.1389 359.4646 0001672 114.6670 245.4667 13.94861064210829
DEBUT
1 20479U 90013B 95290.17632510 .00000026 00000-0 13777-3 0 9317
2 20479 99.0659 356.2236 0540629 316.9009 39.0937 12.83334039266600
FO-20
1 20480U 90013C 95290.66021360 -.00000017 00000-0 41880-4 0 8281
2 20480 99.0660 356.4505 0540469 316.2117 39.7300 12.83231087266655
MOS-1B R/B
1 20491U 90013D 95291.19300654 .00000214 00000-0 46171-3 0 1792
2 20491 99.0621 54.3764 0470161 143.3278 220.1014 13.02978398270213
LACE
1 20496U 90015A 95290.98748632 .00002190 00000-0 71473-4 0 5879
2 20496 43.1001 150.9700 0010634 283.6896 76.2781 15.34952611316446
Nadezhda 2
1 20508U 90017A 95292.78158253 .00000040 00000-0 27303-4 0 5515
2 20508 82.9518 61.2559 0043962 319.4866 40.3019 13.73499265282759
OKEAN 2
1 20510U 90018A 95289.94015782 .00000227 00000-0 27821-4 0 4490
2 20510 82.5220 92.7348 0020882 39.2189 321.0524 14.78533002303583
GPS BII-07
1 20533U 90025A 95289.37489659 -.00000020 00000-0 10000-3 0 1060
2 20533 54.7162 297.1564 0045791 77.9088 282.6305 2.00571126 40676
PegSat
1 20546U 90028A 95293.22569396 .00008878 00000-0 17664-3 0 8522
2 20546 94.1233 215.2029 0061664 214.0657 145.6712 15.44875231307770
HST
1 20580U 90037B 95292.54038756 .00000584 00000-0 42660-4 0 7288
2 20580 28.4694 331.7501 0006043 158.6438 201.4417 14.90951101102483
MACSAT 2
```

```
1 20608U 90043B 95289.73600426 .00000162 00000-0 25258-4 0 1327
2 20608 89.9329 175.4788 0104670 189.3186 170.6088 14.64868543290507
Glonass 44
1 20619U 90045A 95292.41103425 -.00000015 00000-0 10000-3 0 2368
2 20619 65.2583 332.2241 0025454 209.6792 150.2464 2.13102470 42155
Glonass 45
1 20620U 90045B 95292.99902057 -.00000012 00000-0 10000-3 0 2379
2 20620 65.2579 332.1963 0007117 43.8409 316.2876 2.13102536 42201
Glonass 46
1 20621U 90045C 95293.06593353 -.00000012 00000-0 10000-3 0 8325
2 20621 65.2789 332.2543 0011004 194.6731 165.3677 2.13101850 42203
Kristall
1 20635U 90048A 95293.07809767 -.00001004 00000-0 -66304-5 0 2038
2 20635 51.6458 252.2609 0003058 195.7740 164.5499 15.57718332306371
ROSAT
1 20638U 90049A 95290.50331888 .00000142 00000-0 28259-4 0 5007
2 20638 52.9915 316.3587 0014572 109.9275 250.3287 15.07270290295564
Meteor 2-19
1 20670U 90057A 95290.72933498 -.00000066 00000-0 -72246-4 0 9300
2 20670 82.5488 181.2356 0014396 215.9520 144.0677 13.84150933268063
CRRES
1 20712U 90065A 95290.24619147 .00000859 00000-0 81304-3 0 1714
2 20712 18.1187 349.7576 7197371 195.1632 118.7790 2.35605452 37367
GPS BII-08
1 20724U 90068A 95290.69403287 .00000063 00000-0 10000-3 0 9557
2 20724 54.8875 118.4358 0122240 175.6110 184.5552 2.00565665 36561
Feng Yun1-2
1 20788U 90081A 95292.48508102 -.00000027 00000-0 10000-4 0 5944
2 20788 98.8099 301.3064 0016633 90.7903 269.5621 14.01357145262242
Meteor 2-20
1 20826U 90086A 95289.56152067 .00000030 00000-0 13664-4 0 9410
2 20826 82.5245 118.9941 0014281 119.5505 240.7072 13.83616590255018
GPS BII-09
1 20830U 90088A 95292.73677842 -.00000011 00000-0 10000-3 0 9659
2 20830 55.7974 60.8231 0067401 99.9635 260.7967 2.00557771 37248
GPS BIIA-10
1 20959U 90103A 95289.65164253 .00000050 00000-0 10000-3 0 9284
2 20959 55.0835 120.4980 0101596 230.4734 128.6981 2.00570684 35771
DMSP B5D2-5
1 20978U 90105A 95292.51548428 .00000158 00000-0 72008-4 0 3770
2 20978 98.6287 0.2548 0079118 162.4067 197.9884 14.32589198255119
Glonass 47
1 21006U 90110A 95291.68308697 .00000077 00000-0 10000-3 0 8046
2 21006 65.1077 92.8998 0058684 186.7646 173.1821 2.13102662 37849
Glonass 48
1 21007U 90110B 95290.46467867 .00000073 00000-0 10000-3 0 9279
2 21007 65.1301 93.0113 0036337 178.8313 181.2029 2.13101175 37800
Glonass 49
1 21008U 90110C 95291.29524063 .00000076 00000-0 00000+0 0 1386
2 21008 65.0951 92.9391 0008169 266.4673 93.4682 2.13099109 37815
```

```
AO-21
1 21087U 91006A 95293.06968457 .00000094 00000-0 82657-4 0 6427
2 21087 82.9413 140.1708 0034936 155.7115 204.5697 13.74560202236888
RS-12/13
1 21089U 91007A 95292.72283501 .00000052 00000-0 39317-4 0 8388
2 21089 82.9224 8.4156 0028221 183.1745 176.9237 13.74061204235875
MOP-2
1 21140U 91015B 95291.96721644 -.00000014 00000-0 10000-3 0 1104
2 21140 0.1273 6.1611 0003332 55.3271 313.1752 1.00272061 19182
Nadezhda 3
1 21152U 91019A 95292.74937274 .00000072 00000-0 61220-4 0 2426
2 21152 82.9266 324.6245 0040756 295.2771 64.4171 13.73524843230601
Glonass 50
1 21216U 91025A 95292.17123973 -.00000017 00000-0 10000-3 0 4492
2 21216 65.0111 331.8569 0006288 203.9143 156.1373 2.13102760 35364
Glonass 51
1 21217U 91025B 95293.17923972 -.00000011 00000-0 10000-3 0 8534
2 21217 64.9825 331.8255 0006835 225.5031 134.5219 2.13101566 35374
Glonass 52
1 21218U 91025C 95290.47503361 -.00000030 00000-0 10000-3 0 3289
2 21218 64.9956 331.8950 0006006 5.2383 354.8500 2.13102601 35321
GRO
1 21225U 91027B 95293.10790670 .00003322 00000-0 66809-4 0 3042
2 21225 28.4591 65.1579 0002916 15.4692 344.6008 15.43167646132645
Meteor 3-4
1 21232U 91030A 95292.76854563 .00000051 00000-0 10000-3 0 8410
2 21232 82.5412 183.4657 0014943 45.0293 315.2024 13.16469113215776
NOAA 12
1 21263U 91032A 95292.75302803 .00000078 00000-0 54287-4 0 6772
2 21263 98.5803 313.5775 0011794 257.5063 102.4792 14.22566566230137
OKEAN 3
1 21397U 91039A 95292.16899460 .00000187 00000-0 23486-4 0 1405
2 21397 82.5245 4.1366 0024144 101.3805 259.0126 14.76414459235654
GPS BIIA-11
1 21552U 91047A 95288.42610094 -.00000018 00000-0 10000-6 0 9014
2 21552 56.0760 58.7080 0066420 242.5953 116.7302 2.00558203 31343
ERS-1
1 21574U 91050A 95292.75166567 .00000026 00000-0 25768-4 0 2122
2 21574 98.5487 5.2873 0001209 90.5552 269.5770 14.32248741222889
UO-22
1 21575U 91050B 95291.74110722 .00000045 00000-0 29571-4 0 6382
2 21575 98.3839 359.9351 0007038 277.5600 82.4787 14.36994804223249
ORBCOMM-X
1 21576U 91050C 95291.67068240 .00000037 00000-0 27300-4 0 7337
2 21576 98.3819 358.1327 0003433 297.2650 62.8187 14.36404565223135
TUBSAT-A
1 21577U 91050D 95292.21579139 .00000028 00000-0 23951-4 0 6329
2 21577 98.3817 359.2138 0005796 280.9884 79.0646 14.36497051223242
SARA
1 21578U 91050E 95290.20399430 .00000278 00000-0 10405-3 0 8329
```

```
2 21578 98.4052 3.4782 0004209 282.5888 77.4832 14.39075129223248
TDRS 4
1 21639U 91054B 95292.42948464 .00000081 00000-0 00000+0 0 9536
2 21639 0.0341 91.5853 0002335 97.4158 178.8048 1.00276537109477
Meteor 3-5
1 21655U 91056A 95289.09882944 .00000051 00000-0 10000-3 0 8389
2 21655 82.5549 133.5753 0014623 62.6967 297.5640 13.16842007200415
UARS
1 21701U 91063B 95291.19142179 .00000161 00000-0 35141-4 0 7107
2 21701 56.9857 3.7445 0005729 105.3413 254.8251 14.96441533223987
DMSP B5D2-6
1 21798U 91082A 95292.72988962 .00000040 00000-0 44836-4 0 281
2 21798 98.9598 304.7499 0012173 189.2888 170.8067 14.13922429200807
Glonass 53
1 21853U 92005A 95287.40194392 .00000043 00000-0 10000-3 0 440
2 21853 65.0398 92.7192 0007539 196.5764 163.4166 2.13102299 28864
Glonass 54
1 21854U 92005B 95292.38346061 .00000077 00000-0 10000-3 0 2007
2 21854 65.0464 92.5433 0015811 22.8229 337.2731 2.13104031 28959
Glonass 55
1 21855U 92005C 95291.97919131 .00000077 00000-0 00000+0 0 1909
2 21855 65.0393 92.5672 0007771 191.4516 168.5561 2.13102210 28935
JERS-1
1 21867U 92007A 95293.16748453 .00002300 00000-0 19647-3 0 6945
2 21867 97.7099 8.5990 0002109 97.3972 262.7492 14.98650753201763
GPS BIIA-12
1 21890U 92009A 95291.87782126 -.00000025 00000-0 10000-3 0 7122
2 21890 53.8725 236.6291 0058608 186.3722 173.5447 2.00567096 26786
GPS BIIA-13
1 21930U 92019A 95293.08228190 -.00000066 00000-0 10000-3 0 6987
2 21930 55.7128 358.2587 0035313 180.7622 179.2866 2.00560801 25732
EUVE
1 21987U 92031A 95290.63947475 .00001077 00000-0 39950-4 0 4914
2 21987 28.4303 20.1498 0009413 264.3094 95.6417 15.19472786186599
SAMPEX
1 22012U 92038A 95291.69482591 .00000987 00000-0 84505-4 0 6671
2 22012 81.6714 15.3160 0116601 244.0808 114.8360 14.91475864179080
GPS BIIA-14
1 22014U 92039A 95292.62367626 .00000015 00000-0 00000+0 0 5976
2 22014 54.8382 178.2215 0089955 318.3743 40.9985 2.00566506 17566
Glonass 56
1 22056U 92047A 95292.81695322 -.00000014 00000-0 00000+0 0 1054
2 22056 64.8453 331.9275 0006823 262.3101 97.6838 2.13103324 25042
Glonass 57
1 22057U 92047B 95293.11256933 -.00000012 00000-0 00000+0 0 945
2 22057 64.8599 331.9476 0008103 308.8783 51.1214 2.13102622 25023
Glonass 58
1 22058U 92047C 95291.17541549 -.00000025 00000-0 10000-3 0 523
2 22058 64.8475 332.0088 0009249 266.4461 93.5195 2.13103091 25032
TOPEX
```

```
1 22076U 92052A 95292.26317679 -.00000038 00000-0 10000-3 0 9146
2 22076 66.0301 355.1446 0007764 263.6961 96.3155 12.80930239149134
KO-23
1 22077U 92052B 95289.26000619 -.00000037 00000-0 10000-3 0 5286
2 22077 66.0788 342.2703 0000516 76.6253 283.4820 12.86292742149304
S80/T
1 22078U 92052C 95292.19255991 -.00000037 00000-0 10000-3 0 5266
2 22078 66.0765 334.8893 0002013 62.2853 297.8367 12.86576235149765
GPS BIIA-15
1 22108U 92058A 95291.08926953 -.00000023 00000-0 10000-3 0 6420
2 22108 54.1067 237.4687 0118321 152.9509 207.6680 2.00553294 22713
FREJA
1 22161U 92064A 95293.07170348 .00000176 00000-0 10905-3 0 5540
2 22161 62.9899 132.3440 0821609 357.5780 2.1357 13.21856255146552
LAGEOS II
1 22195U 92070B 95289.68529044 -.00000009 00000-0 10000-3 0 4391
2 22195 52.6409 146.1945 0137339 329.6944 29.5735 6.47293870 70442
GPS BIIA-16
1 22231U 92079A 95292.27057022 .00000009 00000-0 10000-3 0 6102
2 22231 54.6434 179.4587 0031996 287.3111 72.2153 2.00553366 21317
GPS BIIA-17
1 22275U 92089A 95290.92513610 -.00000002 00000-0 10000-3 0 6341
2 22275 54.6294 176.9616 0024758 256.0192 103.7828 2.00568097 20690
TDRS 5
1 22314U 93003B 95292.38624163 -.00000280 00000-0 10000-3 0 5707
2 22314 2.1262 70.8929 0002793 173.4954 236.4467 1.00269429 10169
GPS BIIA-18
1 22446U 93007A 95291.49138429 -.00000013 00000-0 10000-3 0 6214
2 22446 54.3675 297.2546 0083746 354.9143 5.0299 2.00572262 19698
Glonass 59
1 22512U 93010A 95288.81131745 .00000059 00000-0 10000-3 0 7386
2 22512 65.0365 92.5298 0008852 184.0142 175.9990 2.13102039 20460
Glonass 60
1 22513U 93010B 95291.09661132 .00000075 00000-0 00000+0 0 8192
2 22513 65.0536 92.4628 0007497 182.3911 177.6358 2.13102600 20704
Glonass 61
1 22514U 93010C 95292.32860866 .00000077 00000-0 00000+0 0 8142
2 22514 65.0766 92.4058 0011607 179.9419 180.0866 2.13102555 20734
ASTRO-D
1 22521U 93011A 95288.84300251 .00001406 00000-0 93287-4 0 4428
2 22521 31.1053 189.0019 0056711 254.2465 105.1973 15.02494022145536
UFO F1
1 22563U 93015A 95291.18141309 -.00000054 00000-0 00000+0 0 4623
2 22563 25.7742 292.4575 0009180 269.9188 159.2163 0.99249113 13685
GPS BIIA-19
1 22581U 93017A 95291.13513270 -.00000077 00000-0 10000-3 0 4697
2 22581 55.2067 357.8422 0057535 35.9446 324.4711 2.00569527 18740
ARSENE
1 22654U 93031B 95290.75019648 -.00000093 00000-0 10000-3 0 3340
2 22654 2.7943 80.2892 2886156 221.8844 112.4800 1.42203868 8132
```

```
GPS BIIA-20
1 22657U 93032A 95291.27103607 -.00000076 00000-0 10000-3 0 5355
2 22657 55.2309 357.6774 0071726 207.1106 152.5720 2.00559122 14077
RADCAL
1 22698U 93041A 95290.51378207 .00000086 00000-0 31868-4 0 4384
2 22698 89.5351 284.1300 0093953 40.3688 320.4427 14.21355748119818
GPS BIIA-21
1 22700U 93042A 95289.73959699 -.00000017 00000-0 10000-3 0 4605
2 22700 54.2743 238.3165 0040746 341.9574 17.9306 2.00568407 16847
NOAA 13
1 22739U 93050A 95292.38761113 .00000039 00000-0 46778-4 0 9120
2 22739 99.0059 241.4488 0010009 179.6253 180.4919 14.10945402112951
GPS BIIA-22
1 22779U 93054A 95292.82041587 -.00000011 00000-0 10000-3 0 5252
2 22779 54.5185 297.2183 0020502 252.0936 107.7115 2.00552919 15668
Meteor 2-21
1 22782U 93055A 95292.20923952 .00000073 00000-0 53051-4 0 4355
2 22782 82.5524 178.9102 0021382 299.8922 60.0112 13.83041218107687
UFO F2
1 22787U 93056A 95289.00434606 -.00000084 00000-0 10000-3 0 5471
2 22787 4.3956 325.0653 0004140 215.0070 278.1879 1.00270043 6378
SPOT 3
1 22823U 93061A 95289.75332825 -.00000044 00000-0 00000+0 0 4795
2 22823 98.7275 2.2764 0001214 91.0939 269.0377 14.20027369106541
STELLA
1 22824U 93061B 95291.73096786 -.00000010 00000-0 13733-4 0 4234
2 22824 98.6065 5.9452 0005297 223.6870 136.3891 14.27103065107356
AO-27
1 22825U 93061C 95292.70966340 .00000022 00000-0 26822-4 0 4263
2 22825 98.6079 7.3120 0007642 217.4862 142.5781 14.27675344107539
IO-26
1 22826U 93061D 95292.72424977 .00000021 00000-0 26371-4 0 4258
2 22826 98.6090 7.4461 0008248 218.2325 141.8268 14.27783718107546
HEATHSAT
1 22827U 93061E 95292.17366281 .00000052 00000-0 38448-4 0 4860
2 22827 98.6065 6.8293 0008417 205.2518 154.8258 14.27910310107478
ITAMSAT
1 22828U 93061F 95292.13142508 .00000039 00000-0 33333-4 0 4033
2 22828 98.6049 6.9053 0009380 202.8092 157.2673 14.28115834 75567
PO-28
1 22829U 93061G 95291.72442377 .00000019 00000-0 25147-4 0 4172
2 22829 98.6052 6.5461 0009268 206.0464 154.0250 14.28095983107424
KO-25
1 22830U 93061H 95292.20511367 .00000029 00000-0 28896-4 0 4360
2 22830 98.5039 358.7993 0011174 177.6583 182.4649 14.28099105107490
GPS BIIA-23
1 22877U 93068A 95292.37108921 -.00000015 00000-0 10000-3 0 3298
2 22877 55.5151 58.8242 0017145 321.8246 38.0525 2.00570816 14549
METEOSAT 6
1 22912U 93073B 95288.90660426 -.00000095 00000-0 10000-3 0 3716
```

```
2 22912 0.5745 279.6423 0001912 317.5716 102.8826 1.00273198 5390
HST Array
1 22920U 90037C 95293.16799382 .00007917 00000-0 57246-3 0 3824
2 22920 28.4596 274.7602 0003442 80.1168 280.0109 15.02295021103119
Meteor 3-6
1 22969U 94003A 95291.90322089 .00000051 00000-0 10000-3 0 2042
2 22969 82.5529 71.4400 0016120 119.6807 240.5924 13.16731573 83160
TUBSAT-B
1 22970U 94003B 95289.42498145 .00000051 00000-0 10000-3 0 1954
2 22970 82.5553 73.1161 0016707 123.6127 236.6585 13.16826581 82840
GPS BIIA-24
1 23027U 94016A 95291.45640861 -.00000076 00000-0 10000-3 0 2692
2 23027 55.0785 359.6942 0068825 195.9413 163.8973 2.00566642 11836
Glonass 62
1 23043U 94021A 95290.52971851 -.00000031 00000-0 00000+0 0 2707
2 23043 64.7322 332.4029 0007369 200.6186 159.4170 2.13102989 11812
Glonass 63
1 23044U 94021B 95293.22789075 -.00000012 00000-0 00000+0 0 2410
2 23044 64.7192 332.3060 0031597 206.1236 153.7876 2.13103252 11879
Glonass 64
1 23045U 94021C 95292.46585041 -.00000017 00000-0 00000+0 0 2485
2 23045 64.7102 332.3450 0009681 30.6677 329.4622 2.13102854 11858
GOES 8
1 23051U 94022A 95293.20930572 -.00000256 00000-0 10000-3 0 4010
2 23051 0.2781 84.2832 0003797 116.0757 188.8806 1.00268803 12955
MSTI 2
1 23101U 94028A 95293.02606159 .00008064 00000-0 13709-3 0 2452
2 23101 97.0916 124.5254 0012625 128.2946 231.9594 15.51609005 81871
STRV-1A
1 23125U 94034B 95285.78886466 .00436660 00000-0 79065-1 0 2025
2 23125 7.4821 343.0418 7267309 215.8521 60.9203 2.30868122 10360
STRV-1B
1 23126U 94034C 95287.44140026 -.00142591 00000-0 -21499-1 0 1785
2 23126 7.5463 342.3231 7273373 217.0726 58.1751 2.30507822 10441
Nadezhda 4
1 23179U 94041A 95289.87779024 .00000027 00000-0 11322-4 0 1384
2 23179 82.9432 57.6666 0038028 85.0635 275.4860 13.75672417 63202
Glonass 65
1 23203U 94050A 95290.25720273 -.00000015 00000-0 00000+0 0 2046
2 23203 64.7913 212.2992 0006980 147.7219 212.3474 2.13102346 9209
Glonass 66
1 23204U 94050B 95290.49117095 -.00000016 00000-0 00000+0 0 2125
2 23204 64.7709 212.3316 0015166 345.6188 14.3610 2.13102114 9209
Glonass 67
1 23205U 94050C 95292.25101758 -.00000014 00000-0 00000+0 0 1982
2 23205 64.7733 212.2627 0002179 300.3032 59.6961 2.13102775 9245
DMSP B5D2-7
1 23233U 94057A 95292.56073510 .00000144 00000-0 10150-3 0 5278
2 23233 98.8671 349.4369 0012918 141.6790 218.5310 14.12646678 58717
OKEAN 1-7
```

```
1 23317U 94066A 95291.14516528 .00000155 00000-0 20085-4 0 1025
2 23317 82.5418 282.5968 0026587 147.2418 213.0436 14.73965891 54732
ELEKTRO
1 23327U 94069A 95292.58302897 -.00000103 00000-0 00000+0 0 966
2 23327 0.5275 258.7936 0003389 225.3485 189.3209 1.00271776 3578
RESURS 1-3
1 23342U 94074A 95291.11290919 .00000110 00000-0 26575-4 0 3654
2 23342 98.0014 348.4879 0001780 66.7333 293.4093 14.69776886 51104
Glonass 68
1 23396U 94076A 95291.15589911 .00000075 00000-0 00000+0 0 1582
2 23396 64.9936 92.5269 0030515 187.9645 172.0127 2.13102612 7060
Glonass 69
1 23397U 94076B 95289.92370363 .00000068 00000-0 00000+0 0 1621
2 23397 64.9769 92.5830 0011026 323.8296 36.1184 2.13102350 7037
Glonass 70
1 23398U 94076C 95292.15351642 .00000076 00000-0 00000+0 0 1720
2 23398 64.9606 92.4922 0001645 274.0837 85.9222 2.13102133 7093
LUCH (Altair-2)
1 23426U 94082A 95291.09209771 -.00000282 00000-0 00000+0 0 1872
2 23426 1.9488 271.7929 0000754 334.3597 268.3233 1.00272584 3061
RS-15
1 23439U 94085A 95291.07718358 -.00000039 00000-0 10000-3 0 855
2 23439 64.8140 56.2355 0167121 240.9518 117.4600 11.27525037 33377
NOAA 14
1 23455U 94089A 95292.29146473 .00000106 00000-0 82772-4 0 3588
2 23455 98.9136 233.8895 0008844 200.3977 159.6810 14.11541034 41321
ODERACS II A
1 23471U 95004C 95293.03934753 .00072800 13120-4 23291-3 0 2145
2 23471 51.6437 202.7211 0013564 203.3401 156.7340 15.91069012 40994
ODERACS II B
1 23472U 95004D 95272.32172989 .06795146 12641-4 14643-3 0 2947
2 23472 51.6455 294.0490 0004927 317.5101 44.3762 16.46511812 37926
Glonass 71
1 23511U 95009A 95292.58301451 -.00000016 00000-0 00000+0 0 1088
2 23511 64.7456 332.5986 0008138 219.0231 140.9896 2.13103148 4824
Glonass 72
1 23512U 95009B 95291.29285460 -.00000025 00000-0 00000+0 0 1155
2 23512 64.7374 332.6532 0006657 303.1773 56.8269 2.13102293 4797
Glonass 73
1 23513U 95009C 95292.52460217 -.00000017 00000-0 00000+0 0 1238
2 23513 64.7413 332.6212 0014673 205.9695 154.0270 2.13103062 4828
SFU
1 23521U 95011A 95292.46615694 .00011446 00000-0 35572-3 0 1079
2 23521 28.4599 307.3278 0013928 189.3930 186.5291 15.31552666 32971
GMS 5
1 23522U 95011B 95289.63509236 -.00000290 00000-0 10000-3 0 668
2 23522 0.6909 302.4155 0001998 181.7155 269.4300 1.00273317 2005
DMSP B5D2-8
1 23533U 95015A 95292.71174779 -.00000005 00000-0 20824-4 0 2579
2 23533 98.8370 293.3865 0008091 25.6334 334.5247 14.12706174 29530
```

```
Microlab 1
1 23547U 95017C 95290.71626915 .00000176 00000-0 66883-4 0 579
2 23547 69.9797 15.0312 0012898 174.4730 185.6544 14.45424211 28489
OFEQ 3
1 23549U 95018A 95293.15044887 .00033850 00000-0 94869-3 0 1306
2 23549 143.3650 204.5812 0247372 276.5608 80.7058 15.09646446 29844
GFZ-1
1 23558U 86017JE 95291.92364410 .00004271 00000-0 56656-4 0 672
2 23558 51.6517 254.3028 0006792 43.4496 316.7030 15.60668958552150
ERS-2
1 23560U 95021A 95290.25869182 .00000015 00000-0 21591-4 0 1270
2 23560 98.5474 2.8421 0000978 60.9137 299.2143 14.32249250 25652
Spektr
1 23579U 95024A 95293.07809767 -.00001004 00000-0 -66304-5 0 1621
2 23579 51.6458 252.2609 0003058 195.7740 164.5499 15.57718332 23850
GOES 9
1 23581U 95025A 95288.80791065 -.00000192 00000-0 10000-3 0 716
2 23581 0.3104 271.7475 0003349 308.0770 5.0179 1.00273522 1461
Helios 1A
1 23605U 95033A 95291.00876511 .00000157 00000-0 38990-4 0 1066
2 23605 98.0970 225.5059 0001351 65.1012 295.0331 14.63836934 14975
UPM SAT 1
1 23606U 95033B 95292.30273581 .00000042 00000-0 16177-4 0 750
2 23606 98.0808 227.0719 0005365 215.2164 144.8678 14.66898879 15257
CERISE
1 23607U 95033C 95292.35327225 .00000231 00000-0 49649-4 0 346
2 23607 98.0777 227.1573 0006139 232.4062 127.6585 14.67159991 15274
TDRS 6
1 23613U 95035B 95292.41926530 .00000127 00000-0 00000+0 0 679
2 23613 0.1768 84.9499 0001891 151.3229 151.5125 1.00268575 963
Glonass 74
1 23620U 95037A 95289.96276092 -.00000015 00000-0 00000+0 0 572
2 23620 64.8356 212.1678 0018119 168.4615 191.6039 2.13102928 1801
Glonass 75
1 23621U 95037B 95291.07769387 -.00000016 00000-0 00000+0 0 652
2 23621 64.8476 212.1260 0017518 179.2325 180.7926 2.13102354 1821
Glonass 76
1 23622U 95037C 95292.07478663 -.00000015 00000-0 00000+0 0 578
2 23622 64.8364 212.0948 0036711 165.6744 194.4506 2.13102645 1841
Prognoz-M2
1 23632U 95039A 95287.24627240 -.00001803 00000-0 00000+0 0 139
2 23632 66.0770 255.9900 9150248 316.2300 9.1830 0.26380901 198
SICH-1
1 23657U 95046A 95291.83073774 .00000215 00000-0 29430-4 0 241
2 23657 82.5339 63.6241 0029054 114.5430 245.8818 14.73420103 7148
Soyuz TM-22
1 23665U 95047A 95293.07809767 -.00001004 00000-0 -66304-5 0 542
2 23665 51.6458 252.2609 0003058 195.7740 164.5499 15.57718332 7296
TELSTAR 402R
1 23670U 95049A 95283.19916814 -.00000205 00000-0 10000-4 0 254
```

```
2 23670 0.1881 212.0700 0008285 134.4148 14.5179 1.00272876 143
1995049B
1 23671U 95049B 95290.84600068 .00000015 00000-0 63396-3 0 114
2 23671 7.1377 169.1190 7290253 198.7924 105.3761 2.19448538 525
RESURS-F
1 23672U 95050A 95292.93152249 .00193969 -11834-5 12937-3 0 638
2 23672 82.3215 173.6999 0010534 86.2574 273.9917 16.16823944 3793
1995050B
1 23673U 95050B 95272.04140007 .15624522 -12803-5 16689-3 0 206
2 23673 82.3159 198.1915 0014895 62.0452 298.1827 16.49844063 429
Cosmos 2320
1 23674U 95051A 95293.19678608 .00223513 29471-4 27603-3 0 417
2 23674 64.9135 32.7077 0040357 67.5405 293.0029 16.05863082 3371
1995051B
1 23675U 95051B 95275.94497615 .20175346 78196-5 24199-3 0 236
2 23675 64.9241 95.4652 0012263 76.2787 28.2541 16.49089160 548
1995052A
1 23676U 95052A 95292.94400159 .00057781 -55176-6 41447-3 0 122
2 23676 82.9385 80.4173 0383206 37.5900 325.1512 15.14811294 2085
1995052B
1 23677U 95052B 95293.25736210 .00078481 -64811-8 47108-3 0 160
2 23677 82.9381 80.0898 0388169 37.2445 325.5572 15.16839682 2135
Progress M-29
1 23678U 95053A 95293.07809767 -.00001004 00000-0 -66304-5 0 183
2 23678 51.6458 252.2609 0003058 195.7740 164.5499 15.57718332 1777
1995053B
1 23679U 95053B 95283.51479976 .10010060 12476-4 42419-3 0 125
2 23679 51.6729 299.9679 0007889 94.0130 42.2228 16.43076460 264
1995054A
1 23680U 95054A 95293.24482850 -.00000055 00000-0 10000-3 0 146
2 23680 3.0253 275.8640 0007203 262.1168 17.6550 0.99886879 80
1995054D
1 23683U 95054D 95285.37956904 -.00000245 00000-0 10000-3 0 28
2 23683 3.1084 276.2352 0018072 357.2443 334.2168 1.00234693 08
1995054E
1 23684U 95054E 95291.79106611 .00001689 00000-0 63994-3 0 60
2 23684 47.4825 273.5240 7282613 1.9753 359.7292 2.26859342 167
1995054F
1 23685U 95054F 95291.36102978 .00000821 00000-0 80978-3 0 53
2 23685 47.5642 273.6814 7263432 1.8369 359.7438 2.26472776 157
1995055A
1 23686U 95055A 95293.14381640 -.00000137 00000-0 10000-4 0 37
2 23686 1.3738 207.5405 4344731 182.7217 178.4060 1.71982493 17
1995055B
1 23687U 95055B 95292.26218892 -.00000230 00000-0 10000-4 0 21
2 23687 4.2216 209.0037 7247233 181.1133 177.3688 2.20196217 00
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

2142. What modes is the rs/10-11 and rs/12-13 using?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-20 00:00:00 UTC
From: bd384@scn.org
Message-ID: <DGrn88.9HE@scn.org>
Source record: 23951

Has anyone worked rs/11 or rs/13 recently?

2143. Re: MIR freqs?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: hamdan@ix.netcom.com
Message-ID: <469jb4$a9q@ixnews4.ix.netcom.com>
Source record: 23952

In <308681C5.61F7@halcyon.com> Brett Kappenman <brett@halcyon.com>
writes:
>
>Billy W. Dunn wrote:
>>
>> According to 74537.1100 @ compuserve.com I discovered that ever
since Norman
>> Thagard left the Mir is not using the same old
>> setup. He says that he has heard or read packet simplex on 145.55,
as well as
>> voice, and voice on 145.8 down with 145.2 up.
>
>I've also heard packet simplex on 145.555. I may have been off by
005
>
>Brett Kappenman
>brett@halcyon.com
>KC7N?? (Maybe I'll have this today)

To all: I worked MIR on October 7th, at 6:10 UTC, on 145.550 MHZ
(though you must compensate somewhat for Doppler) on packet simplex.
73's de Bernie, KF0QS. hamdan@ix.netcom.com

2144. Re: Deep Space Explorers ?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: buch@exis.net
Message-ID: <469kus$r9k@grouper.Exis.Net>
Source record: 23953

John Criswick <criswick@conveyor.com> wrote:

>I would like to know more about a group called Deep Space Explorers
>or any amateur radio group involved in deep space activities. If
>anyone can post that information to this group or to me personally I
>would appreciate it.

>...John Criswick
>criswick@conveyor.com

QST for August 1995 ran a nice article on the SETI (Search for Extra Terrestrial Intelligence) League. See page 37. The article describes a project to combine the efforts of thousands of hams to look for signals coming from other solar systems. This is necessary because the government refuses to fund NASA to continue the effort they have been conducting for decades.

You can contact the author at n6tx@setileague.org. They have a web site at http://seti1.setileague.org/homepg.html

---

Joe Buch - N2JB
Editor - Technical Topics - NASWA Journal
Virginia Beach, Virginia

---
buch@exis.net

2145. Pre-Amplifier

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: karl.leite@dialdata.COM.BR
Message-ID: <1dd.123107.50.0CC7FAD1@dialdata.com.br>
Source record: 23954

****

Dear Friends,

Thank you for reading this message. I would
like to order one pre-amplifier to 1.2 to 1.6 GHz.

But, I don't know how to find it. Please,
any help? I thank you in advance!

Vy best wishes and 73,

****

*
□
□ Karl Leite □ Internet:- karl.leite@pcimage.cyber.net □
□ Natal, (RN) □ karl.leite@dialdata.com.br □
□ PS7KM □ Pkt Radio:- PS7KM@PT7NK.#CE.BRA.SA □
□

___
* UniQWK #1812* The ultimate mail reader is here!!!!

2146. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: cde@ecom.u-net.com
Message-ID: <46b8b9$19q@oveja.u-net.com>
Source record: 23955
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <46agrc$j39@pink.lm.com>, raver909@telerama.lm.com (Joe LeSesne) says:>At 2:06 AM Eastern Time these exact words were
heard by a female astronaut: "We have an Unidentified
Flying Object."

How do I know this? I heard it whilst watching
NASA TV.
Before you laugh at this, check the tapes of
NASA TV or better yet check with an amateur
radio operator who taped the feed.

For 10-15 minutes nothing else was said. When something
WAS said it wasn't about the UFO. Don't sleep on this
It could be a BIG story. Either:

a) Our astronauts are hallucinating or mis-
identifying meteors, spacejunk, satellites, etc.

b) Our astronauts had a unique encounter and
there are extraterrestrial intelligently piloted
vehicles in space.
c) some other earth power is spying on our shuttle
with their devices.

or

d) NASA has known this for some time and is covering up
the the fact. The woman didn't sound very upset or shaken,
she said rather matter of factly,"We have an Unidentified
Flying Object."

>--

Just because it was "Unidentified" dosn't mean it was an alien craft just it was not an identified object. I dont suppose she took a photo of "it".

Chris

2147. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <46bcdv$pd2@over.mhv.net>
Source record: 23956
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

C D Emondson (cde@ecom.u-net.com) wrote:
: In article <46agrc$j39@pink.lm.com>, raver909@telerama.lm.com (Joe LeSesne) says:>At 2:06 AM Eastern Time these exact words were
: heard by a female astronaut: "We have an Unidentified
: Flying Object."

: How do I know this? I heard it whilst watching
: NASA TV.
: Before you laugh at this, check the tapes of
: NASA TV or better yet check with an amateur
: radio operator who taped the feed.

: For 10-15 minutes nothing else was said. When something
: WAS said it wasn't about the UFO. Don't sleep on this
: It could be a BIG story. Either:

: a) Our astronauts are hallucinating or mis-
: identifying meteors, spacejunk, satellites, etc.

: b) Our astronauts had a unique encounter and
: there are extraterrestrial intelligently piloted
: vehicles in space.
: c) some other earth power is spying on our shuttle
: with their devices.

: or

: d) NASA has known this for some time and is covering up
: the the fact. The woman didn't sound very upset or shaken,
: she said rather matter of factly,"We have an Unidentified
: Flying Object."

: >--

: Just because it was "Unidentified" dosn't mean it was an alien craft just it
: was not an identified object. I dont suppose she took a photo of "it".

: Chris

Take it over to the UFO groups please...

Tom - KB2SMS

2148. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: raver909@telerama.lm.com
Message-ID: <46bjic$hmu@tusk.lm.com>
Source record: 23957
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

C D Emondson (cde@ecom.u-net.com) wrote:

> Just because it was "Unidentified" dosn't mean it was an alien craft just it
> was not an identified object. I dont suppose she took a photo of "it".

True and someone sent me this email:

On Sat, 21 Oct 1995, (name witheld) wrote:

>
>
> Why does it have to be an alien?

(To which I responded)

It doesn't. It means unidentified.

> They see UFOs all the time - space debris.

I'll buy that but if it was simply space debris then why were there no
further communication. You'd think that if that were the case then
Houston would have responded with "Yeah that's part of a XYZ stage" or
the Shuttle having identified it would have said, "Yeah that UFO was ice
crystals from an experiment we did" etc..

> UFO does not mean aleine, it just means an object they can't
> identify.

True, however since Houston didn't respond with any type of explaination
for the astronauts (at least in any way that was transmitted on NASA TV) then
that object remains unidentified. Alien or otherwise.

> There is all kinds of parts, ice etc that float by. She said it matter
> of factly because there is no reason to act any other way!

Or she said it matter of factly because thats how they have been trained.
The facts are this:

She said: "We have an Unidentified Flying Object"

nothing futher was heard from either the Shuttle or Houston for 10-15
minutes and when there was communication it didn't offer an explaination
for the object was, there was no communication between Houston and
Columbia about it at all which leads me to believe that either:

a) The astronauts on board did not identify it.
b) Houston didn't identify it.

so

1) Neither discussed it further
2) They discussed it further on a different channel which was not relayed on NASA TV.

So far there has been no word from NASA on this. One of our local TV stations here called them and asked about it, as did CNN.
Like I said, check the tape.

joe

--

2149. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: catpage@reston.com
Message-ID: <catpage-2110951625490001@jobrien-ppp.clark.net>
Source record: 23958
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <46b8b9$19q@oveja.u-net.com>, cde@ecom.u-net.com (C D Emondson) wrote:

> In article <46agrc$j39@pink.lm.com>, raver909@telerama.lm.com (Joe LeSesne) says:>At 2:06 AM Eastern Time these exact words were
> heard by a female astronaut: "We have an Unidentified
> Flying Object."

> Just because it was "Unidentified" dosn't mean it was an alien craft just it
> was not an identified object. I dont suppose she took a photo of "it".
>

We have a photo of this object!!

It is our "image of the day" at http://www.reston.com/sts73/cat.orbit.html

ad astra cum felidae
--
http://www.reston.com/sts73/catpage.html

2150. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: Brian Zeiler <bdzeiler@students.wisc.edu>
Message-ID: <46bon7$eb0@news.doit.wisc.edu>
Source record: 23959
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

raver909@telerama.lm.com (Joe LeSesne) wrote:
>
>At 2:06 AM Eastern Time these exact words were
>heard by a female astronaut: "We have an Unidentified
>Flying Object."

Something tells me this thread will last until about February of 1996...

--
Brian Zeiler

2151. Satellite Tracking Software

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: pss@infocom.net
Message-ID: <46cfme$jti@news.infocom.net>
Source record: 23960

A demo version of Micro Orbiter 3.0 (satellite tracking program for the pc) is now available at:

http://www.infocom.net/~pss

2152. Comment 10/21/95 5:13pm

Newsgroup: rec.radio.amateur.space
Date: 1995-10-21 00:00:00 UTC
From: Ken.Ernandes@227.woodybbs.com
Message-ID: <a0e_9510220630@woodybbs.com>
Source record: 23961

Joe -

Regarding the Hunting Hilton Hamfest:

Ham-It-Up's own co-sysop Ken Ernandes, N2WWD will a guest speaker,
making a presentation on Amateur Satellite Operations at 9:30 AM.

73, Ken N2WWD
--
|Fidonet: Ken Ernandes 1:2619/227
|Internet: Ken.Ernandes@227.woodybbs.com
|
| Standard disclaimer: The views of this user are strictly his own.

2153. Re: Updated WWW Site

Newsgroup: rec.radio.amateur.space
Date: 1995-10-22 00:00:00 UTC
From: bob@ultranet.com
Message-ID: <46ejd9$1m@caesar.ultra.net>
Source record: 23962
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

amsoft@epix.net wrote:

>The AmSoft web page "http://hamster.business.uwo.ca/~amsoft/" has
>been reworked. It is now the Mother of all WWW sites for Amateur
>Radio. Connect to over 125 ham sites direct from the front page.
>New HTML work includes online forms, plenty of color and lots of
>FUN! It could be addicting using our page.

Thanks for the info Pet, hope you can ignore ignorant comment
by Jim Strohm.

Bob

2154. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-22 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDGuvwu.CpJ@netcom.com>
Source record: 23963
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Joe LeSesne <raver909@telerama.lm.com> wrote:
>At 2:06 AM Eastern Time these exact words were
>heard by a female astronaut: "We have an Unidentified
>Flying Object."

That sounds like nothing more than a JOKE to me.

>For 10-15 minutes nothing else was said. When something
>WAS said it wasn't about the UFO. Don't sleep on this
>It could be a BIG story.

Ha! Oh brother. Sure, a gullible UFOite
specialty... making something out of NOTHING!

FYI, most astronauts have a good sense of humor.
Too bad the same isn't true for UFO believers.

2155. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-22 00:00:00 UTC
From: Lee Cole Smith <cole@apollo.phys.virginia.edu>
Message-ID: <DGv4s1.An3@murdoch.acc.Virginia.EDU>
Source record: 23964
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

raver909@telerama.lm.com (Joe LeSesne) wrote:
>
>At 2:06 AM Eastern Time these exact words were
>heard by a female astronaut: "We have an Unidentified
>Flying Object."
>
>How do I know this? I heard it whilst watching
>NASA TV.
>Before you laugh at this, check the tapes of
>NASA TV or better yet check with an amateur
>radio operator who taped the feed.
>
>For 10-15 minutes nothing else was said. When something
>WAS said it wasn't about the UFO. Don't sleep on this
>It could be a BIG story. Either:
>
>a) Our astronauts are hallucinating or mis-
>identifying meteors, spacejunk, satellites, etc.
>
>b) Our astronauts had a unique encounter and
>there are extraterrestrial intelligently piloted
>vehicles in space.
>c) some other earth power is spying on our shuttle
>with their devices.
>
>or
>
>d) NASA has known this for some time and is covering up
>the the fact. The woman didn't sound very upset or shaken,
>she said rather matter of factly,"We have an Unidentified
>Flying Object."
>
>--

Gosh, you sure thoroughly covered all possibilities...I
guess we just have to dismiss the idea that it was a
joke. How old are you?

2156. FOR SALE OR TRADE:VARIAN MICROWAVE AMPS&ACCESSORIES

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <46esi2$h0h@ixnews2.ix.netcom.com>
Source record: 23816
Cross-posted to: rec.radio.swap,sci.electronics,rec.radio.amateur.space

FOR SALE- OR TRADE::
Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 404-923-5726

2157. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: Philip Chien <kc4yer@amsat.org>
Message-ID: <46eqvq$2c3@paperboy.ids.net>
Source record: 23817
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <46agrc$j39@pink.lm.com> Joe LeSesne, raver909@telerama.lm.com writes:
>At 2:06 AM Eastern Time these exact words were
>heard by a female astronaut: "We have an Unidentified
>Flying Object."
>
>How do I know this? I heard it whilst watching
>NASA TV.
>Before you laugh at this, check the tapes of
>NASA TV or better yet check with an amateur
>radio operator who taped the feed.
>
>For 10-15 minutes nothing else was said. When something
>WAS said it wasn't about the UFO. Don't sleep on this
>It could be a BIG story. Either:

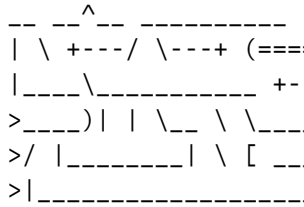
<snip>

or Cady Coleman (the astronaut you heard) has a pretty good sense of humor. I've known her for a couple of years - and trust me, she's got a sense of humor.

The crew was also asked if they had ever seen a space alien in space, and commander Ken Bowersox commented that the only alien he had ever seen in space was fellow astronaut Story Musgrave. Now that's at least a bit more believeable! (especially if you know Story).

The STS-52 mission was in orbit over Halloween, and on the last full day of the mission everybody watching NASA TV saw astronaut Tammy Jernigan get kidnapped by a space alien.

yeah, right.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

2158. SAREX-Help!

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: 100520.1322@compuserve.com
Message-ID: <814441576.25093@kjf46.demon.co.uk>
Source record: 23818

Can any one help,

I am looking for the frequency for the space shuttle and Mir during orbit, I have ben told you can recieve the transmissions, any truth in it? I have been pointed in this direction from another group and told to ask about "SAREX".

Thanks in advance
Kev Freegard--------- 100520.1322@compuserve.com

2159. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: cassera@aloha.net
Message-ID: <46fp34$ei3@nuhou.aloha.net>
Source record: 23819
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Lee Cole Smith <cole@apollo.phys.virginia.edu> wrote:
=>raver909@telerama.lm.com (Joe LeSesne) wrote:
=>>
=>>At 2:06 AM Eastern Time these exact words were
=>>heard by a female astronaut: "We have an Unidentified
=>>Flying Object."
=>>
=>
=>Gosh, you sure thoroughly covered all possibilities...I
=>guess we just have to dismiss the idea that it was a
=>joke. How old are you?
=>

Dear Mr. Smith,

It sure is nice to hear that our boys and girls in space are
having so much fun joking around at our (tax payers) expense.

Must not have been a very funny joke since it seems to
have been followed by quite a bit of silence, eh?

+---+
+ World Wide Web = http://aloha.net/~cassera +
+---+

2160. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDGwDC0.FMy@netcom.com>
Source record: 23820
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Richard Cassera <cassera@aloha.net> wrote:
>=>Gosh, you sure thoroughly covered all possibilities...I
>=>guess we just have to dismiss the idea that it was a
>=>joke. How old are you?
>
>It sure is nice to hear that our boys and girls in space are
>having so much fun joking around at our (tax payers) expense.

Well EXCUSE them for being human!

>Must not have been a very funny joke since it seems to
>have been followed by quite a bit of silence, eh?

So now you're complaining there wasn't MORE joking
around "at taxpayers expense"? Geez...

2161. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: rickenharp@aol.com
Message-ID: <46gn99$qas@newsbf02.news.aol.com>
Source record: 23821
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Or E, she was kidding around. Or...back to the first one: there's so much spacejunk floating around it could easily have been that. Or it could have been a ufo - but one unsubstantiated remark doesnt make it one.

2162. Re: Deep Space Explorers ?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: buch@exis.net
Message-ID: <46gp0l$le0@grouper.Exis.Net>
Source record: 23822

John Criswick <criswick@conveyor.com> wrote:

>I would like to know more about a group called Deep Space Explorers
>or any amateur radio group involved in deep space activities. If
>anyone can post that information to this group or to me personally I
>would appreciate it.

>...John Criswick
>criswick@conveyor.com

QST for August 1995 ran a nice article on the SETI (Search for Extra Terrestrial Intelligence) League. See page 37. The article describes a project to combine the efforts of thousands of hams to look for signals coming from other solar systems. This is necessary because the government refuses to fund NASA to continue the effort they have been conducting for decades.

You can contact the author at n6tx@setileague.org. They have a web site at http://seti1.setileague.org/homepg.html

---

Joe Buch - N2JB
Editor - Technical Topics - NASWA Journal
Virginia Beach, Virginia

---
buch@exis.net

2163. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: caseycct@ridgecrest.ca.us
Message-ID: <DGx1oq.Jt3@ridgecrest.ca.us>
Source record: 23823
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Joe LeSesne (raver909@telerama.lm.com) wrote:
>
> At 2:06 AM Eastern Time these exact words were
> heard by a female astronaut: "We have an Unidentified
> Flying Object."
>
> a) Our astronauts are hallucinating or mis-
> identifying meteors, spacejunk, satellites, etc.

Misidentifying spacejunk? Isn't any piece of space junk
unidentified (at least to a human observer)? There are
thousands of pieces of space junk in orbit around the earth,
this is the obvious explanation. It is interesting to note
that being in orbit doesn't really constitute flight so the
statement likely inaccurate at the very least.

> b) Our astronauts had a unique encounter and
> there are extraterrestrial intelligently piloted
> vehicles in space.

Dream on ;-)

> c) some other earth power is spying on our shuttle
> with their devices.

Unlikely, even if true so what?

> d) NASA has known this for some time and is covering up
> the the fact. The woman didn't sound very upset or shaken,
> she said rather matter of factly,"We have an Unidentified
> Flying Object."

Unidentified flying objects are just that, no big deal.
Anything "flying" that you don't know 100% for sure what it is
is unidentified. This makes the vast majority of things we
see moving in the sky "ufo"s by definition. The wonder assigned
to such objects must somehow be connected to a fascination with
flight since no one makes a big deal about unidentified driving
objects (udos) or unidentified crawling objects (ucos).

Now, had the astronaut said something like,
"I see an extraterrestrial spacecraft" it would be a different
story.

--
Erik van Bronkhorst

CW/KotGT DoD#4342585443 AMA#438054
caseycct@owens.ridgecrest.ca.us
ftp://www.ridgecrest.ca.us/pub/users/caseycct/erik.html
kc6uut@wa6ybn.#soca.ca.usa.na

2164. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: jamesoberg@aol.com
Message-ID: <46fh6n$po9@newsbf02.news.aol.com>
Source record: 23824
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Arguing by elimination usually leads to the same quality output that any animal elimination process creates. Why are imaginations so limited?

How about

e) she was joking with a crewmate about the jar lid she frisbeed over in zero-G?
or f)
or g)
or h)
,
,
,
,
,
,
,
,
,
all the way to Sebastien, Tanya, and more. But people stuck on flying saucer obsessions show their minds are so LIMITED!!

Be creative!

2165. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: mbv@ti.com
Message-ID: <46h18i$n0b@superb.csc.ti.com>
Source record: 23825
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <catpage-2110951625490001@jobrien-ppp.clark.net>, catpage@reston.com (STS-73 Cat Crew) says:
>
>>
>We have a photo of this object!!
>
>It is our "image of the day" at http://www.reston.com/sts73/cat.orbit.html
>
>ad astra cum felidae
>--
>http://www.reston.com/sts73/catpage.html
~~~~~~

Thanks a LOT cats! I just sent parts of this thread with your message
to a *cat lover* before I pulled up the image. She is still mad at
me for sending her a copy of the "How to Handle a Radioactive Cat" gif
months ago. Please tell me this cat was very comfortable during this
test and it was an actual experiment that will benefit catkind :)

Ken mbv@ti.com
~~~~~~

2166. ARLS019 More hams on tv

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls019.1995@ampr.org>
Source record: 23826
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS019
ARLS019 More hams on tv

ZCZC AS98
QST de W1AW
Space Bulletin 019 ARLS019
From ARRL Headquarters
Newington, CT October 23, 1995
To all radio amateurs

SB SPACE ARL ARLS019
ARLS019 More hams on tv

Mark your calendar. Amateur Radio is expected to be part of the cable television Sci-Fi Channel's ''Inside Space'' program the weekend of November 17.

Tentative plans are for airings on Friday evening the 17th at 9 PM Eastern Time and later in the weekend. The show is expected to include scenes from the AMSAT Phase 3-D satellite lab in Orlando, as well as perhaps ARRL Field Day and other Amateur Radio scenes, says AMSAT Executive Vice President Keith Baker, KB1SF.

The Sci-Fi Channel also has recently been filming amateurs in conjunction with yet another episode of Inside Space, to air in December or January.
NNNN
/EX

2167. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: tebeevor@pine.shu.ac.UK
Message-ID: <ECS9510231624A@pine.shu.ac.uk>
Source record: 23827

```
unsubscribe tebeevor@pine.shu.ac.uk Ham-space
```

2168. * SpaceNews 23-Oct-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <46ggh9$t2j@pilot.njin.net>
Source record: 23828
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.info

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 23-Oct-95 *
Date: 23 Oct 1995 12:40:09 -0400
Organization: Rutgers University
Message-ID: <46ggh9$t2j@pilot.njin.net>

SB NEWS @ AMSAT $SPC1023
* SpaceNews 23-Oct-95 *

BID: $SPC1023

=========
SpaceNews
=========

MONDAY OCTOBER 23, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* OSCAR-11 REPORT *
==================
As of Wednesday 18 October 1995 at 06:11 UTC, telemetry was nominal, and
WOD was dated 16th October. Bulletin $BID UO11.029 dated 6th October was
being broadcast.

The current diary schedule is as follows:

ASCII status (210 seconds)
ASCII bulletin (60 seconds)
SEU (30 seconds)
ASCII TLM (90 seconds)
ASCII WOD (120 seconds)
ASCII bulletin (60 seconds)
ENG (30 seconds)

There are also additional status blocks after each bulletin is transmitted.
It is possible that the long period of ASCII status transmissions will be
replaced by binary TLM and WOD.

A new WOD survey of channels 1, 2, 3, 61 (magnetometers) is usually started
when the weekly bulletin is loaded, or when other ground control activity
occurs.

OSCAR-11 can be heard on 145.826 MHz. Modulation is 1200 baud AFSK with
tones of 1200/2400 Hz. There have been many designs for suitable decoders,
but perhaps the simplest way is to use an old telephone modem, using Bell

202, or V23 tones. It is essential to invert the modem's output signal before feeding it into the computer. For ASCII, the serial port should be set to 1200 E,7,1.

The satellite also has an S-Band beacon that transmits a continous carrier on 2401.5 MHz.

Schools can now send their Amateur Satellite News to Richard Limebear, G3RWL, via the Internet (g3rwl@amsat.org) for inclusion in the ASCII new broadcasts made by OSCAR-11.

[Info via Clive Wallis, G3CWV]

* GALILEO NEWS *
==========
Engineering data returned from NASA's Jupiter-bound Galileo spacecraft on 11-Oct-95 indicates a problem with the spacecraft's tape recorder, project officials report.

Project officials say a week or more may be required for the problem to be isolated or well-understood, but that the spacecraft remains otherwise healthy and in contact with controllers on Earth.

The problem was detected shortly after Galileo took an image of Jupiter and its major moons from 22 million miles away. After taking the three images required for a color photograph to be produced, the tape recorder used to store the data was commanded to rewind. Data received from Galileo suggest the tape recorder did not stop as expected after rewinding.

"Galileo engineers have commanded the tape recorder to a standby mode while they investigate further," said Galileo Project Manager William J. O'Neil of NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA. Project engineers are proceeding slowly and cautiously to understand the problem, according to O'Neil, and are avoiding sending unnecessary commands to the spacecraft. In addition to analyzing spacecraft telemetry, engineers are working with an identical tape recorder in a laboratory spacecraft mockup on the ground.

"The next scheduled spacecraft operation that we need to perform is a routine thruster flushing in about two weeks," said O'Neil. "We want to take the time in the interim to understand this problem in detail."

[Info via NASA]

* MIR CREW USING NEW AMATEUR RADIO COMMUNICATIONS *
==========
German Cosmonaut Thomas Reiter (amateur radio callsign DP0MIR) and his two Russian crew members (R0MIR) have installed a new 70 cm band transceiver aboard their Mir space station.

Uplink Downlink

Main 70 cm frequencies are: 435.725 MHz 437.925 MHz (Voice)

435.775 MHz 437.975 MHz (Packet)

2 meter frequencies are: 145.200 MHz 145.800 MHz

145.550 MHz 145.550 MHz

There has been no 9600 baud packet radio activity yet since the high speed
TNC will not arrive at MIR space station until the end of the year. ESA
plans to extend the EUROMIR 95 mission an additional 44 days.

[Info via Keith Stein]

* OSCAR STATUS REPORT *
======================
Pacsat AO-16:

Normal BBS.

Dove DO-17:
Softwrare load in progress
11/17/95
WD0E

[telemetry dwell 60 secs]

Weber WO-18:
14-Oct-95

*Collecting and Sending WOD

Week3: BCR Ch# 21 22 29 2F 33 36

*Photo 9/13 of Brazil

*Monday, New Spectrum

73, IK3WVJ & KB7KCL

Lusat LU-19:

BBS now functioning normal power levels on 437.125 MHz

LUSAT-1 to AMARG

September 16.

AX.25 downlink on 437.125 mhz.
CW experiment if off.
LU8DYF.

ITAMSAT IO-26:

No signals on either d/l after MBL telem last week [Thursday]

[Info via Graham Ranft, VK7ZO]

* STS-73 LAUNCHED *
====================
After a record number of launch delays, the Space Shuttle "Columbia" was
successfully transported into earth orbit after a launch at 13:53 UTC on

20-Oct-95 from the Kennedy Space Center, Florida.

* THANKS! *
==========
Thanks to all those sent messages of appreciation to SpaceNews, especially:

KB2SMS KF0MS

* FEEDBACK/INPUT WELCOMED *
==========
Comments and input for SpaceNews should be directed to the editor (John, KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

2169. NORAD Two-Line Orbital Element Set: Space Shuttle (95296.25042824)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-23 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.814488398@dolphin>
Source record: 23829

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 73
1 23688U 95056A 95296.25042824 -.00001713 54165-5 00000+0 0 135
2 23688 39.0112 97.5339 0008495 295.6952 35.8236 16.01252657 423
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2170. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: J.Walter@stud.tue.nl
Message-ID: <46h4sd$n1j@tuegate.tue.nl>
Source record: 23830
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <46fh6n$po9@newsbf02.news.aol.com>,
jamesoberg@aol.com (JamesOberg) wrote:
>Arguing by elimination usually leads to the same quality output that any
>animal elimination process creates. Why are imaginations so limited?

If I remember correctly Oberg, it's people like you who always complain that
the imagination of "believers" is running wild. but no, Oberg wants to walk
both sides of the street this time.

>How about
>
>e) she was joking with a crewmate about the jar lid she frisbeed over in
>zero-G?
>or f)
>or g)
>or h)
>all the way to Sebastien, Tanya, and more. But people stuck on flying
>saucer obsessions show their minds are so LIMITED!!

Correction, the mind of the _non-believer_, who is stuck on flying saucers,
is VERY limited.

>Be creative!

This really sounds strange comming from a debunker. Are you sure you're
feeling well?

2171. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: tom sorrell <tom@wolfenet.com>
Message-ID: <308CA6F0.2B8C@wolfenet.com>
Source record: 23831
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

bullshit

2172. Mac Ham WWW

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: john@wd1v.mv.com
Message-ID: <john-2410950521320001@wd1v.mv.com>
Source record: 23832

Announcing New WWW Site for Macintosh Ham Radio Enthusiasts

http://www.mv.com/ipusers/wd1v

Mac Ham Software including:

Macnet Roster
a database of all hams in the world using Mac computers

WD1V's Ham Radio Test Simulators
the fast path for upgrading your ham license with a Mac

Plus more information - come see!

\/
John D. Seney, WD1V Internet: john@wd1v.mv.com
144 Pepperidge Drive AOL: jseney@aol.com
Manchester, NH 03103-6150 AX.25 Pkt: wd1v@wb1dsw.nh.usa.na
(H) 603-668-1096 TCP/IP Pkt: wd1v@wd1v.ampr.org

macnet world wide web home page: http://www.mv.com/ipusers/wd1v

Macnet Roster - "Whos Who" of all amateurs using Mac Computers
Macnet Test - Amateur Radio Test Simulators
Macnet Collection - 10 Disks of Amateur Radio and Scientific Prgms

\/

LeCroy Corporation - Test and Measurment Sales Engineering
Serving NE Massachusetts, NH, and ME
WWW http://www.lecroy.com
NASDAQ: (LCRY)
(O) 800-553-2769 (F) 603-627-1623 (P) 800-SKYPAGE #5956779

All opinions are my own, including Digital Storage Scope.FAQ

To obtain the latest copy automatically, simply send me an EMAIL
with "subscribe scope.faq" in the subject field.
or: WWW http://beam.slac.stanford.edu/www/library/w3/dso.html
\/

2173. New Weather Satellite Receiver

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: wowee@msn.com
Message-ID: <00001ff1+000004b4@msn.com>
Source record: 23833

Hello fellow electronics enthusiasts!

Being an engineer at Ramsey Electronics has put me in an exiting position to bring fun to build and use electronic kits to electronic hobbyists such as myself. Can you believe that I am performing a job that is my hobby as well? (Amazing!) Well, because kit building is my hobby, it turns out that in creating them, we come up with some really cool ideas for products that we would like to build ourselves. My newest, and Ramsey's latest is the Weather Satellite Receiver system. Yes, there are other satellite receivers out there, but how many are kits?

After virtually a year of work on the hardware and the software, I am proud to present an easy to use APT (automatic picture transmission) satellite system. Much work has gone into creating an easy to build electronic kit with clear and concise directions of putting it together, as well as a simple to use and understand graphical interface on the software. We have decided to remove most of the "bells and whistles" out of the program to make it easier for students and inexperienced computer users to learn and use.

Ramsey Electronics is now offering this kit which includes five major parts as follows:

1. Weather satellite antenna - A simple to assemble turnstile antenna system for receiving satellites from horizon to horizon.

2. Antenna Pre-amplifier - A mast mounted RF-Amplifier designed especially for the purpose of weather satellite transmissions. It is powered remotely from the Weather Satellite Receiver through the transmission line.

3. Weather satellite receiver (WSR-1A) - A wide band FM receiver operating around 137.5MHz.

4. Weather satellite decoder board (SD-24) - A "Smart Card" PC interface board that digitizes the signal from the WSR-1A at a very accurate sample rate.

5. Imaging Software (Weather Viewer) - A graphical program written exclusively for the weather satellite systems. It combines the commands most commonly used for satellite image enhancement into one package.

If you wish to receive an image captured from a tape recording of a satellite to demonstrate the system's ability to align a satellite image, e-mail me at the following address. I will also send your some

more information and technical specifications on the subject.

Yours sincerely;

Mark Wyman

WOWEE@MSN.COM

2174. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: joey.lloyd@me.gatech.edu
Message-ID: <joey.lloyd.88.04BB1A9D@me.gatech.edu>
Source record: 23834
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <46gqe0$4up@pendragon.jsc.nasa.gov> medtek@bix.com writes:

>Something could have gotten loose in the orbiter.

Good Point!

Joey G. Lloyd - Georgia Tech - joey.lloyd@me.gatech.edu

"He who drives too fast always has someone in his way.", JGL

2175. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: tebeevor@pine.shu.ac.UK
Message-ID: <ECS9510241408A@pine.shu.ac.uk>
Source record: 23835

```
unsub tebeevor@pine.shu.ac.uk ham-space
```

2176. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: tracer@shellx.best.com
Message-ID: <46i3gp$1vt@shellx.best.com>
Source record: 23836
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <46fp34$ei3@nuhou.aloha.net> cassera@aloha.net (Richard Cassera) writes:
>Lee Cole Smith <cole@apollo.phys.virginia.edu> wrote:
>=>
>=>Gosh, you sure thoroughly covered all possibilities...I
>=>guess we just have to dismiss the idea that it was a
>=>joke. How old are you?
>
>It sure is nice to hear that our boys and girls in space are
>having so much fun joking around at our (tax payers) expense.

Naw, most of the "expense" was paid at launch time. The cost of a few minutes floating around in LEO is trivial compared with the cost of getting 5-7 human beings and an allegedly reusable spacecraft up there to begin with.

>
>Must not have been a very funny joke since it seems to
>have been followed by quite a bit of silence, eh?

I've seen those NASA-channel broadcasts. Most of the airtime IS spent in silence. ESPECIALLY at 2 in the morning. I watch the NASA channel sometimes because it's a welcome relief to the nonstop soundbites I get on commercial TV, and because I can make fun comments like "Hey, why is the Orbiter's nose pointing slightly UPWARD when they do a deorbit burn?". But even deorbit burns are a wave of nonstop action and excitement compared with the usual "aaaaaand ... here comes ORBIT FIFTY-SIX!".

--
tracer@best.com (Jeff Boeing) - A.K.A. - rogerw@robadome.com (Roger M. Wilcox)
----------------- I'm not flying fast, just orbiting low ---------------------
MSTie #38808 | Quick-N-Dirty Aviation
| "Trading altitude for airspeed since 1992"

2177. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: n2qxf@bbs.k2bjg.ampr.ORG
Message-ID: <122@BBS.K2BJG.AMPR.ORG>
Source record: 23837

```
Add n2qxf%bbs.k2bjg.ampr.org@ampr-gw.intac.com ham-space
```

2178. ARLS020 More gear for Mir

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls020.1995@ampr.org>
Source record: 23838
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS020
ARLS020 More gear for Mir

ZCZC AS99
QST de W1AW
Space Bulletin 020 ARLS020
From ARRL Headquarters
Newington, CT October 24, 1995
To all radio amateurs

SB SPACE ARL ARLS020
ARLS020 More gear for Mir

German Cosmonaut Thomas Reiter, DP0MIR, and his two Russian crewmates, have installed a 70-cm band transceiver aboard their Mir space station, according to John Magliacane, KB2BD, in SpaceNews.

The main 70-cm band frequencies are:

Voice: 435.725 MHz (uplink), and 437.925 MHz (downlink).

Packet: 435.775 (uplink) and 437.975 MHz (downlink).

2-meter frequencies are:

Voice: 145.200 MHz (uplink) and 145.800 MHz (downlink).

Packet: 145.550 MHz (uplink) 145.550 MHz (downlink).

ARRL Note: This voice uplink frequency is not available for use in areas where repeater outputs operate on the same or adjacent frequencies, and will be subject to interference from repeaters when Mir is in range of North America.

There has been no 9600 baud packet radio activity yet, since the high speed TNC will not arrive at the Mir space station until later, SpaceNews said.

Most activity from DP0MIR has been in talking with schools, mainly in Germany.

The three men aboard Mir were scheduled to return to earth in mid-January, but that reportedly has been extended into mid-February.
NNNN
/EX

2179. Re: WISP Driver for SatTacker (SASI)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-24 00:00:00 UTC
From: dhoatson@aol.com
Message-ID: <46jocu$mqd@newsbf02.news.aol.com>
Source record: 23839

I could not come to an agreement with SASI to the rights for the driver, so work was stopped quite a while ago. I have no plans to add support for the SatTracker.

73 David A. Hoatson, KC6WYG

2180. NORAD Two-Line Orbital Element Set: Space Shuttle (95297.25042824)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-25 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.814585493@dolphin>
Source record: 23840

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 73
1 23688U 95056A 95297.25042824 -.00001715 54233-5 00000+0 0 156
2 23688 39.0138 90.8293 0008441 302.3275 42.9495 16.01559108 585
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2181. Mir Packet?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-25 00:00:00 UTC
From: boyer <john.boyer@rd.bbc.co.uk>
Message-ID: <46l5dp$sbl@bbcnews.rd.bbc.co.uk>
Source record: 23841

Is there a FAQ on MIR and amateur radio?

Regards John B.
John.boyer@rd.bbc.co.uk
g6sed@g6sed.ampr.org

2182. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-25 00:00:00 UTC
From: Hugh Stewart McKenna <ahipc1j.smcken01@eds.com>
Message-ID: <46lmup$iut@maverick.tad.eds.com>
Source record: 23842
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

You are assuming that the UFO was OUTSIDE the shuttle.
:)
--
Hugh Stewart McKenna ahipc1j.smcken01@eds.com
The above are entirely my own opinions.
Any other opinions are entirely someone else's opinions
(unless I change my mind)

2183. Sts-73 Sees ufo

Newsgroup: rec.radio.amateur.space
Date: 1995-10-25 00:00:00 UTC
From: MUENZLERK@uthscsa.edu
Message-ID: <01HWURBO7LBM00BR52@uthscsa.edu>
Source record: 23843

Jeff.Root@f2006.n282.z1.fidonet.org (Jeff Root) writes:

-Is there any indication that this "UFO" was outside the Space Shuttle,
-as opposed to inside? They have a lot of junk flying around inside
-the cabin.
-
- -- Jeff, in Minneapolis (Hi, Dean O. in Buffalo!)

This is the most probable explanation of the "UFO." I recently
watched a show, on FOX I think, about "UFOs." It showed several
"UFOs" during the previews that were taken by cameras on the
space shuttle. ALL of these "UFOs" were out-of-focus water
droplets that had adhered to the windows. These water droplets
refracted the light from the sun or interior lighting so that they
had an oval appearance to them. Since they were out of focus they
it was difficult to see the outline of the darker portion of the droplets.

Kevin, WB5RUE
muenzlerk@uthscsa.edu
"I am Voltohm of Borg! Resistance is E/I, power is EI, you will be
attenuated!"

2184. International ham statistics--historical

Newsgroup: rec.radio.amateur.space
Date: 1995-10-25 00:00:00 UTC
From: jimslavin@aol.com
Message-ID: <46mlmg$bg7@newsbf02.news.aol.com>
Source record: 23844

I am looking for the number of ham radio operators worldwide broken out by year since the beginning of this century. I have been able to find similar information for U.S. hams, but have hit a dead end with international numbers. Can anyone point me in the right direction?

Please respond directly by email to "JimSlavin@aol.com"

2185. Satellite Tracking

Newsgroup: rec.radio.amateur.space
Date: 1995-10-25 00:00:00 UTC
From: deweydewey@aol.com
Message-ID: <46n0ai$hq1@newsbf02.news.aol.com>
Source record: 23845

A demo version of Micro Orbiter (a pc based satellite tracking program)
is now available at:

http://www.infocom.net/~pss

Some of the best graphics available anywhere.

Dewey

2186. Re: commercial sat freq's

Newsgroup: rec.radio.amateur.space
Date: 1995-10-25 00:00:00 UTC
From: lopes@hp_1.dee.uc.pt
Message-ID: <46md4i$qur@gnu.mat.uc.pt>
Source record: 23846

Fred (peerenbf@dmapub.dma.org) wrote:
> Can anybody post a listing of the commercial and government type
> satellite frequencies? I have been asked by several "bird watchers" if
> this was available from some source.

> thanks in advance
> Fred ke8tq

2187. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-26 00:00:00 UTC
From: dweller@ramtops.demon.co.uk
Message-ID: <19951026.084850.23@ramtops.demon.co.uk>
Source record: 23847
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <46fjpd$4q@liana.franken.de>,
arthur@liana.franken.de (Bernd Raschke) wrote:

> raver909@telerama.lm.com (Joe LeSesne) writes:
>
> >d) NASA has known this for some time and is covering up
> >the the fact. The woman didn't sound very upset or shaken,
> >she said rather matter of factly,"We have an Unidentified
> >Flying Object."
> The Truth is out there. Trust nobody!
>

You seem to have come in late to this discussion. Unidentified
Flying Objects are just that -- things that fly that haven't
been identified. There's a lot of junk out where the shuttles
go that's hard to identify (space junk from past missions,
satellites, etc.). Now if she'd said 'unknown spaceship',
that would be interesting.

--
Doug Weller

2188. Rebroadcast of Shuttle Audio

Newsgroup: rec.radio.amateur.space
Date: 1995-10-26 00:00:00 UTC
From: travelfax@aol.com
Message-ID: <46offp$8im@newsbf02.news.aol.com>
Source record: 23848

Does anyone have the latest freqs? I hear nothing on the freqs I thought were being used on amateur bands.

TRAVELFAX@aol.com

2189. Re: Rebroadcast of Shuttle Audio

Newsgroup: rec.radio.amateur.space
Date: 1995-10-26 00:00:00 UTC
From: drted@ix.netcom.com
Message-ID: <46oni9$m8p@ixnews6.ix.netcom.com>
Source record: 23849

In <46offp$8im@newsbf02.news.aol.com> travelfax@aol.com (TRAVELFAX)
writes:
>
>Does anyone have the latest freqs? I hear nothing on the freqs I
thought
>were being used on amateur bands.
>
>TRAVELFAX@aol.com
I just switched over to 14295 and the shuttle audio is being
rebroadcast at 19:28z. This is one of the published WA3NAN
frequencies...
--
Bye... Ted..
Deep in the Heart of the Armpits of Houston, Texas...

2190. NORAD Two-Line Orbital Element Set: Space Shuttle (95299.25042824)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-26 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.814747478@dolphin>
Source record: 23850

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 73
1 23688U 95056A 95299.25042824 -.00001718 54309-5 00000+0 0 256
2 23688 39.0126 77.4131 0008435 316.2391 59.7548 16.02108797 917
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2191. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-26 00:00:00 UTC
From: bill@or.credence.com
Message-ID: <1995Oct26.193713.16494@credence.com>
Source record: 23851
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <46i3gp$1vt@shellx.best.com> tracer@shellx.best.com (Roger M. Wilcox) writes:
>
>I've seen those NASA-channel broadcasts. Most of the airtime IS spent in
>silence. ESPECIALLY at 2 in the morning. I watch the NASA channel sometimes
>because it's a welcome relief to the nonstop soundbites I get on commercial
>TV, and because I can make fun comments like "Hey, why is the Orbiter's nose
>pointing slightly UPWARD when they do a deorbit burn?". But even deorbit
>burns are a wave of nonstop action and excitement compared with the usual
>"aaaaaand ... here comes ORBIT FIFTY-SIX!".
>
I was watching one of those around 11:50PM, waiting for the midnight
launch hilights replay. Mission control was silent and still, but the
night janitor came slooowly through, emptying the wastebaskets. Just
then my 16-yr old daughter came to kiss me goodnight, saw the screen,
and said that watching NASA janitors empty the trash was the epitome of
parental lifelessness.....

2192. Re: !!! Over 400 WWW Ham Sites !!!

Newsgroup: rec.radio.amateur.space
Date: 1995-10-27 00:00:00 UTC
From: liz@intex.net
Message-ID: <46r0kj$23g_001@Intex.intex.net>
Source record: 23852
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <NEWTNews.814767294.12034.amsoft@486dx4_120>,
amsoft@epix.net wrote:
>
>Try the URL http://hamster.business.uwo.ca/~amsoft And link to over

Thanks for the link! :)

LIz N.

~~~~~~
Intex.net The Business Community's Internet Provider (214) 669-0999
Elizabeth & John Norsworthy visiting you from Dallas, Tx. via Intex.net
Visit us at: http://www.intex.net/hour_house/hour_house.html
Hour House (Midnight Angel) BBS (214) 243-0378
J&E Computer Services (214) 314-8772
Internet: liz@intex.net
America OnLine: NorsworthE
CompuServe: 102116,3314
FidoNet: 1:124/9023
MSNetwork: Midnight_Angel@msn.com
~~~~~~

2193. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-27 00:00:00 UTC
From: sts48@ix.netcom.com
Message-ID: <46rhml$qns@ixnews5.ix.netcom.com>
Source record: 23853
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <b900net-2710950209390001@ip062.lax.primenet.com>
b900net@primenet.com (Al Walker) writes:
>
>Such jaber-wockey would not come from the pilot but from a "mission
specialist"

Just to let you know that Catherine Coleman is a Mission Specialist,
that is her title, and Kathryn Thornton is the Payload Commander

2194. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-27 00:00:00 UTC
From: jamesoberg@aol.com
Message-ID: <46rt7j$33h@newsbf02.news.aol.com>
Source record: 23854
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

<< If I remember correctly Oberg, it's people like you who always complain that
the imagination of "believers" is running wild. but no, Oberg wants to walk
both sides of the street this time. >>

Sorry, once again, as usual, UFO buffs DON'T remember correctly. But we save the UFO newsgroups for the insult-trading, and here we're supposed to discuss reality. Claims of UFO sightings by astronauts are part of the modern space age mythos and I consider them valid topics for this thread, except when the discussion degenerates into sincere assertions of true belief, and sincere questioning of the intelligence and ethics of those who disagreee with you. THAT line of (un)reasoning fits into alt.alien.visitors much better!

2195. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-28 00:00:00 UTC
From: jamesoberg@aol.com
Message-ID: <46sbth$b84@newsbf02.news.aol.com>
Source record: 23855
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Sigh. I probably have sixty or seventy dfifferent "cases" of astronauts and cosmonauts encountering UFOs, and the kind of mentality that could find ANY of them credible -- or proof of ETI encounters -- seems to me to be incapable of really handling real mysteries of space exploration. May the space snake of Story Musgrave bite you all in the soft body tissues!

2196. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-28 00:00:00 UTC
From: c9414388@alinga.newcastle.edu.au
Message-ID: <46t1ha$b89@seagoon.newcastle.edu.au>
Source record: 23856
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

I know what Joe wrote provokes many people to 'flame' back saying he is jumping to conclusions - but totally dismissing his claims as a pile of 'ufo nut - wishful thinking - bull' is really being no better. I have heard and read of several cases where astronauts see unidentifiable objects while on a mission - some are easily explained as natural (or man-made) phenomena, while others are still a mystery to this day.

Thoughtful suggestions and unbiased, rational arguments are needed on this topic. Not the 'aliens made my dog talk' or 'ufo nuts abuse to many substances' crap that is far too common on both sides of the spectrum.

The idea of alien existence is not really that far fetched an idea, whether its true or not. That's to say that if we prove definitely that aliens DO NOT exist... the idea that we thought once that they could exist, was not stupid.

A Cole-Clark.
<c9414388@alinga.newcastle.edu.au>
"Damn i need a beer" - Einstein after figuring E = MC^2.

2197. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-28 00:00:00 UTC
From: Brian Zeiler <bdzeiler@students.wisc.edu>
Message-ID: <46sg3r$l4m@news.doit.wisc.edu>
Source record: 23857
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

jamesoberg@aol.com (JamesOberg) wrote:

May
>the space snake of Story Musgrave bite you all in the soft body tissues!

Actually, that space snake -- or as Dean says, that "wacky, scary space snake" -- is remarkably consistent with the snake falling out of the sky over Mexico in 1993, which was videotaped by an amateur. Twenty glowing orbs emerged from it, and these orbs, in turn, looked and wobbled exactly like the footage from Tremonton, Utah in 1950. Please, dig up the snake explanation for me.

--
Brian Zeiler

2198. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-29 00:00:00 UTC
From: Brian Zeiler <bdzeiler@students.wisc.edu>
Message-ID: <46ve1c$1mka@news.doit.wisc.edu>
Source record: 23858
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

jamesoberg@aol.com (JamesOberg) wrote:

>Gosh, Brian, if you are suggesting that the Tremonton film shows anything
>else BUT birds (despite what some enthusiastic but naive NAVY analysts
>concluded back in those days) you are even more helpless than I thought.

The analysts were USAF, Jim. Do you have any evidence that the objects
were analyzed by the Navy and concluded to be birds? Since when was
the Navy involved with UFO research? The USAF's Project Bluebook
concluded that the objects were NOT birds. Nor were they aircraft or
anything else known to mankind. Do you have any evidence that the
objects were birds?

--
Brian Zeiler

2199. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-29 00:00:00 UTC
From: Bill@halcyon.com
Message-ID: <NEWTNews.815021027.17335.bill@bill.halcyon.com>
Source record: 23859

In Article<4708k4$3hd@ddi2.digital.net>, <random@digital.net> write:

> Hi, I am looking for a card for a pc that can take sat weather pictures.
>
> Can anyone suggest a place to look? thanks
>

I know of one. Call Advanced Electronic Applications at (206) 774-5554 and
ask for literature on their AEA FAX III product. It plugs into your receiver
and a RS-232 port and allows you to copy weather FAXs, even color them.

Bill

reply to bill@halcyon.com

2200. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-29 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDH7EMt.2r5@netcom.com>
Source record: 23860
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Brian Zeiler <bdzeiler@students.wisc.edu> wrote:
>jamesoberg@aol.com (JamesOberg) wrote:
>>May the space snake of Story Musgrave bite you all in the soft body tissues!
>
>Actually, that space snake -- or as Dean says, that "wacky, scary space
>snake"

No, I certainly never said that about Story's "space snake", but
then imagination has always prevailed over accuracy in your posts.

> is remarkably consistent with the snake falling out of the sky
>over Mexico in 1993, which was videotaped by an amateur.

Heh. And you also love to try and claim two TOTALLY different
examples are "remarkably consistent". Story's space debris has
absolutely no comparison to your silly example. That is almost
as bad as when you said the STS-48 ice particle "UFOs" were
"identical" to the video of Venus taken over Mexico City during
the eclipse. Can you at least please keep your wild UFO fantasies
out of the sci. hierarchy?

2201. Shuttle 2 Meter downlink frequencies

Newsgroup: rec.radio.amateur.space
Date: 1995-10-29 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <47143q$ojm@superb.csc.ti.com>
Source record: 23861

I know this has been asked and answered here, but I didn't save it and now I need it: What are the new shuttle downlink and uplink frequencies for 2 meters and 70 CM ? The 145.55 Mhz downlink was changed due to possible interference problems with MIR as I recall and 70 CM was added for this mission.

Ken Durham K5MBV mbv@ti.com

2202. Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-29 00:00:00 UTC
From: random@digital.net
Message-ID: <4708k4$3hd@ddi2.digital.net>
Source record: 23862

Hi, I am looking for a card for a pc that can take sat weather pictures.

Can anyone suggest a place to look? thanks

2203. Re: where do I find sattrack soft ?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-30 00:00:00 UTC
From: chrisl@SEDS.LPL.Arizona.EDU
Message-ID: <4721l2$jbi@news.ccit.arizona.edu>
Source record: 23863

There are a number of these available at ftp.seds.org in
/pub/sat/(platform) or in the /pub/software/(platform)/sat directories.

Current elements are available in /pub/sat

--

Christopher A. Lewicki + (520) 703-5542 + Maintainer of SEDS.LPL.Arizona.EDU
Chair, Students for the Exploration and Development of Space (SEDS-USA)

2204. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-30 00:00:00 UTC
From: Curt Prasky <cprasky@infi.net>
Message-ID: <4720b0$9ve@news.infi.net>
Source record: 23864
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

c9414388@alinga.newcastle.edu.au (Adam Cole-Clark) wrote:

>The idea of alien existence is not really that far fetched an idea,
>whether its true or not. That's to say that if we prove definitely that
>aliens DO NOT exist... the idea that we thought once that they could exist,
>was not stupid.

Actually, I think the idea that life does not exist anywhere else is a
more far-fetched idea. The universe is a mighty big place, and it seems
likely that ours is definitely NOT the only solar system in it. It would
seem most unlikely that the Earth is the only planet in all the universe
where intelligent life actually evolved.

2205. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-30 00:00:00 UTC
From: Hugh Stewart McKenna <ahipc1j.smcken01@eds.com>
Message-ID: <4730uu$s2t@maverick.tad.eds.com>
Source record: 23865
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Actually, I'm wondering if this wasn't a true report...
I don't get to see the news much at weekends, but I SWEAR that one
national news network reported that a shuttle porthole had been slightly
damaged by 'floating debris'.
Could this be related to this apparent UFO thread ?
Maybe we naysayers are being 'hoisted by our own petards'.

--
Hugh Stewart McKenna ahipc1j.smcken01@eds.com
The above are entirely my own opinions.
Any other opinions are entirely someone else's opinions
(unless I change my mind)

2206. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-10-30 00:00:00 UTC
From: Jerry Rolape <rolape@cpcug.org>
Message-ID: <473e6q$m6u@news3.digex.net>
Source record: 23866

```
MultiFAX
Route 1, Box 27
Peachland, NC 28133
Voice: 704-272-9028
FAX: 704-272-9036
BBS: 716-425-8759

Sells PC cards, radios, antennas. Package and individual piece prices.
```


```
+---------------------------------+
| Jerry from the Nation's Capital |
| rolape@cpcug.org |
| DC Wine and Arts |
| http://cpcug.org/user/rolape |
+---------------------------------+
```

2207. NORAD Two-Line Orbital Element Set: Space Shuttle (95303.25000000)

Newsgroup: rec.radio.amateur.space
Date: 1995-10-30 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.815095007@dolphin>
Source record: 23867

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 73
1 23688U 95056A 95303.25000000 -.00001724 54492-5 00000+0 0 410
2 23688 39.0124 50.5515 0007898 340.2406 106.4468 16.03225100 1550
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2208. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-31 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDHB7pM.9M8@netcom.com>
Source record: 23868
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Hugh Stewart McKenna <ahipc1j.smcken01@eds.com> wrote:
>Actually, I'm wondering if this wasn't a true report...

No, it was nothing more than a joke... which had the
unfortunate (but all too predictable) side effect of
sending some over-eager UFO types into a tizzy.

>I don't get to see the news much at weekends, but I SWEAR that one
>national news network reported that a shuttle porthole had been slightly
>damaged by 'floating debris'.

One of the windows suffered a small hit, but the "debris"
was likely something on the scale of a paint chip.

>Could this be related to this apparent UFO thread ?

Not even close.

2209. HRTOL

Newsgroup: rec.radio.amateur.space
Date: 1995-10-31 00:00:00 UTC
From: Steve Lorek <slorek@tcp.co.uk>
Message-ID: <30967565.1E14@tcp.co.uk>
Source record: 23869

Just to update our thousands of visitors in the past few days. The Ham Radio Today On-Line pages are all ready for the grand opening on November 3rd. We've got loads of features (reviews, ex-PMR conversions, beginners guides, news etc.) ready for the day, so be prepared. So you'd better all stay up until midnight on the night, because that's when it'll be released! That's 00:00 hours on November 3rd! The URL is:

http://www.tcp.co.uk/~slorek/

No other site can touch Ham Radio Today On-Line - you won't believe your eyes when you see it!

```
-------------------------------------------------
| Steve Lorek | slorek@tcp.co.uk |
-------------------------------------------------
| Editor, Ham Radio Today On-Line, the best |
| Amateur Radio Web site in the world!!! Visit |
| it at http://www.tcp.co.uk/~slorek |
-------------------------------------------------
```

2210. !!Complete Kenwood TS 520 Ham Station For Sale!!

Newsgroup: rec.radio.amateur.space
Date: 1995-10-31 00:00:00 UTC
From: ironick@cloud9.net
Message-ID: <475umb$dfi@news.cloud9.net>
Source record: 23870

For Sale - Complete Shack w/ Antenna System plus more...
Kenwood TS 520 Transceiver - 5 Band, 100 Watt Voice, 200 watt CW, PTT Mike, keyer, mobile power adapter, original
manual, MFJ 815B SWR meter, 150 ft RG8U coax cable, Cushcraft AP8-8 Band Trapped Vertical w/ Radial System and
lightening Surge Protector, and many extras including an ICOM 22A 2m mobile transceiver w/ 1/4 wave whip antenna, $650
takes all. Will Ship. Please reply to "ironick@cloud9.net".

2211. Kansas City Tracker info. wanted.

Newsgroup: rec.radio.amateur.space
Date: 1995-10-31 00:00:00 UTC
From: cr709@FreeNet.Carleton.CA
Message-ID: <DHC2IE.Ly4@freenet.carleton.ca>
Source record: 23871

Hi.
I'm looking for information on the Kansas City
Tracker hardware and software/interface protocol.
Can you point me to any articles? Is the Tracker
commercial hardware or (ideally) a construction
project?

Thanks.
Grant Bechthold
Ottawa, ONtario, Canada
cr709@FreeNet.Carleton.ca

2212. Req: Current AO-13 Operations Schedule

Newsgroup: rec.radio.amateur.space
Date: 1995-10-31 00:00:00 UTC
From: bob@texas.net
Message-ID: <473uoc$b7k@empire.texas.net>
Source record: 23872

Hi;
Does anyone have a current AO-13 operations schedule effective
after 30 Oct? I seem to remember reading that the transponders
were to be shut off from MA60-140 due to prolonged periods of
solar eclipse, but can't find where I read it. The only ref I
can find is a provisional schedule on the amsat ftp server that's
pretty old. Please post for all to see...

Thanks

Bob Scott WY7O | Roses are red, Violets are blue
bob@texas.net | I'm schizophrenic, And so am I

2213. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-10-31 00:00:00 UTC
From: garry@sr.hp.com
Message-ID: <473rc9$fdi@canyon.sr.hp.com>
Source record: 23873
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Curt Prasky (cprasky@infi.net) wrote:
: c9414388@alinga.newcastle.edu.au (Adam Cole-Clark) wrote:

: >The idea of alien existence is not really that far fetched an idea,
: >whether its true or not. That's to say that if we prove definitely that
: >aliens DO NOT exist... the idea that we thought once that they could exist,
: >was not stupid.

: Actually, I think the idea that life does not exist anywhere else is a
: more far-fetched idea. The universe is a mighty big place, and it seems
: likely that ours is definitely NOT the only solar system in it. It would
: seem most unlikely that the Earth is the only planet in all the universe
: where intelligent life actually evolved.

I am puzzled by the sceptics who back SETI which has zero evidence for interstellar radio contact yet immediately disregard the sightings collected by Project Bluebook and the conclusions that UFO's are no threat. Not all Venus, birds, swamp gas or thermal inversions but real "things" that appear to be doing no harm. Looking at these sightings and video's with the degree of commitment and backing that is going into SETI or Phoenix could reveal some more hard evidence that these are real, fleeting objects. SETI believers like to use the Drake equation to say that there is life out there to listen to, yet use the same equation (as Richard Caldwell recently has) to show the slim chance of life existing that may have evolved enough to find us. If I was a scientist working on SETI I would sure like that steady income from gullible fanatics who believe we are not alone, but the neighbors never came calling. . .

Garry (%^{>

2214. Test. Please ignore

Newsgroup: rec.radio.amateur.space
Date: 1995-10-31 00:00:00 UTC
From: jlbarber@wolfenet.com
Message-ID: <474ic6$fpd@news1.wolfe.net>
Source record: 23874

Having trouble with the old newsreader by golly..

2215. Mode S dish...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: ted <ted>
Message-ID: <476evr$5g6@dingo.cc.uq.oz.au>
Source record: 23875

..`Electronics World + Wireless World' (August 95) carried a small article by John Cronk on a `high performance' antenna for 24cm.

Essentially this antenna was a parabolic reflector in the Y plane and flat in the X plane, fed by a dipole/ref combination at the parabolic focal point...

Although I've only seen the Myers Mode S dish in a small photo in 73, I'd say both of these antennas are similar. However the Cronk antenna had a very narrow reflector ie 60in x 12in approximately (remember its for 1.2Ghz), scaling it down seemed to give it a size narrower than the photo in 73 depicted of the Myers dish. Also, the Myers dish appears to have a reflector construction similar to typical `gridpack' microwave parabolic dishes... (Cronk used mesh!) This would lead me to suspect the Myers dish is a linearly polarised beasty!?

This type of reflector had not previously occurred to me and I'd be interested to hear from anyone with experience of this type of `dish', especially feeding with a small helical element??

73 Ted VK1BL

2216. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: greg@cosc.canterbury.ac.nz
Message-ID: <476fv4$8lg@cantua.canterbury.ac.nz>
Source record: 23876
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <473rc9$fdi@canyon.sr.hp.com>, garry@sr.hp.com (Garry Bryan) writes:

|> Looking at these sightings and video's with the degree of commitment
|> and backing that is going into SETI or Phoenix could reveal some more hard
|> evidence that these are real, fleeting objects.

What do you actually propose to *do* with these reports that
hasn't already been done?

Anecdotal evidence only gets you so far, because of the
propensity of the human visual system and brain to
misinterpret inputs. A photograph or video can be analysed,
but you can't draw much conclusion from such an analysis
without making a lot of assumptions about the conditions
under which it was taken and the nature of the object being
photographed - and if the object is completely unknown, you
can't make any such assumptions.

At least SETI has a well defined goal and method to
follow. If they find a clear signal that doesn't go
away, they will have something to study. There's no
such method for studying fleeting, unreproducible
events that leave no substantial physical evidence.

|> Garry (%^{>

Greg

2217. Re: Req: Current AO-13 Operations Schedule

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-0111950714240001@maria-4o.ip.realtime.net>
Source record: 23877

In article <473uoc$b7k@empire.texas.net>, bob@texas.net (Bob) wrote:

> Hi;
> Does anyone have a current AO-13 operations schedule effective
> after 30 Oct? I seem to remember reading that the transponders
> were to be shut off from MA60-140 due to prolonged periods of
> solar eclipse, but can't find where I read it. The only ref I
> can find is a provisional schedule on the amsat ftp server that's
> pretty old. Please post for all to see...
>
> Thanks
> ___
> Bob Scott WY7O | Roses are red, Violets are blue
> bob@texas.net | I'm schizophrenic, And so am I

From Weekly OSCAR Status Reports: 28-OCT-95

AO-13: Current Transponder Operating Schedule:
N QST ** AO-13 TRANSPONDER SCHEDULE ** 1995 Oct 30 - 1996 Jan 01
Mode-B : MA 0 to MA 70 |
Mode-BS : MA 70 to MA 110 | Omnis : MA 230 to MA 25
Mode-S : MA 110 to MA 112 |<- S beacon only
Mode-S : MA 112 to MA 135 |<- S transponder; B trsp. is OFF
Mode-S : MA 135 to MA 140 |<- S beacon only
Mode-BS : MA 140 to MA 180 | Alon/Alat 180/0
Mode-B : MA 180 to MA 256 | Move to attitude 225/0, Jan 01
[G3RUH/DB2OS/VK5AGR]

--
Ron W5RKN

2218. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: cas@ops1.bwi.wec.com
Message-ID: <cas.331.00E314BF@ops1.bwi.wec.com>
Source record: 23878
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <476djm$4ib@cantua.canterbury.ac.nz> greg@cosc.canterbury.ac.nz (Greg Ewing) writes:
>From: greg@cosc.canterbury.ac.nz (Greg Ewing)
>Subject: Re: STS-73 Sees UFO
>Date: 1 Nov 1995 00:05:10 GMT

>In article <475amr$6pi@unogate.unocal.com>, stgprao@sugarland.unocal.COM (Richard Ottolini) writes:
>|>
>|> Then take our own solar system as a disappointing example.
>|> Life on appears to be on one of thirty planet-size bodies.

>I think that's a very encouraging example! If one in
>thirty planets has life, and planets aren't too uncommon
>(no reason to think otherwise) then there are billions
>of life-bearing planets out there...

Unfortunately, the available data only shows that life evolved on one planet. We have no idea on how many it *didn't* evolve (or, for that matter, on how many it *did*) - only bad statistics can result from incomplete data.

>|> and things crawling on the visible land
>|> 5% of earth's history.

>And every other place in the universe has had at least
>as long a time to develop life in.

So? We still have absolutely *no* data regarding how long it takes on the average, nor on what percentage of planets it's likely to happen at all. A sample of one is *not* statistically valid, except to show it's not impossible.

>Greg

Bob C.

* Good, fast, cheap! (Pick 2) *

2219. Re: Mode S dish...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: n7ryw@teleport.com
Message-ID: <478dj3$9bn@maureen.teleport.com>
Source record: 23879

In article <476evr$5g6@dingo.cc.uq.oz.au>, ted said...

>This would lead me to suspect the Myers dish is a linearly polarised
beasty!?

Quite true, and with the satellites being circularly polarised, this
amounts to a 3db loss. Don't try to feed that dish with a circular horn,
though. Read on...

>This type of reflector had not previously occurred to me and I'd be
interested
>to hear from anyone with experience of this type of `dish', especially
feeding
>with a small helical element??

A good thought, but every circular polarity feed I have considered using
has a round pattern, unlike a simple dipole. The Meyers dish is fed
properly with its dipole, for a linear signal. What would result with a
circular polarity feed is a lot of signal going around the 'gaps' in the
reflector that would have been occupied by reflector material if it were a
round dish.

This is why the best antenna for AO-13 (and others with CP) is still a one
meter (or larger) round dish with CP feed. Helixes work good, as do
properly constructed tubular feedhorns, and I have also considered a sort
of 'crossed dipole' with a reflector, somewhat like a backfire array. It
all depends on the F/D ratio, but that is getting into another subject.

--
From Bill, n7ryw@teleport.com
Amsat NA Life Member #2109

2220. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: garry@sr.hp.com
Message-ID: <478h7b$3id@canyon.sr.hp.com>
Source record: 23880
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Greg Ewing (greg@cosc.canterbury.ac.nz) wrote:

: In article <473rc9$fdi@canyon.sr.hp.com>, garry@sr.hp.com (Garry Bryan) writes:

: |> Looking at these sightings and video's with the degree of commitment
: |> and backing that is going into SETI or Phoenix could reveal some more hard
: |> evidence that these are real, fleeting objects.

: What do you actually propose to *do* with these reports that
: hasn't already been done?

I am proposing something along the lines that Richard Caldwell would like to see; scientists with advanced telemetry equipment, IR, UV, radiography and high res FILM (70MM or IMAX) stake out some of the hot spots and gather some high quality images for analysis. Since visual sightings seem to be the norm and not physical contact that is all we have to go on. Which is infinitly more than SETI.

: Anecdotal evidence only gets you so far, because of the
: propensity of the human visual system and brain to
: misinterpret inputs. A photograph or video can be analysed,
: but you can't draw much conclusion from such an analysis
: without making a lot of assumptions about the conditions
: under which it was taken and the nature of the object being
: photographed - and if the object is completely unknown, you
: can't make any such assumptions.

As I stated before an objective, scientific inquiry into the most prolific sightings;ie Mexico City, would yield controlled circumstances and not assumptions and anecdotal evidence.

: At least SETI has a well defined goal and method to
: follow. If they find a clear signal that doesn't go
: away, they will have something to study. There's no
: such method for studying fleeting, unreproducible
: events that leave no substantial physical evidence.

It is an assumption that SETI signals are going to be clear and repeating. The power levels required for interstellar signals that will be of sufficent strength to be above background noise and in the region we are listening to is a great leap of faith. The Drake equation has no solution, only guesses and hopeful assumptions. We have only recently found evidence of other planetary bodies orbiting other stars. Up until that point we had only hypothesis.
What I propose is to study these fleeting objects with the same intent as SETI. The assumption that there are other beings using high power EMF is just as valid as the assumption that UFO's ar ET vehicles. Both deserve study, but the UFO

field has been tainted by the govt. to the point that any serious study gets labeled lunatic just because of the subject matter. I was surprised when SETI got NASA funding because it certainly fits the lunatic criteria. . .

Garry (%^{>

2221. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: jamesoberg@aol.com
Message-ID: <479dc9$9a6@newsbf02.news.aol.com>
Source record: 23881
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

<< The objects wobbling in the sky
over Tremonton in that (1952?) film do not bare any resemblance to birds,
or to their flight characteristics, other than the fact that they are
airborne>>

Sure they do. If they are REAL "UFOs", when have they ever been seen doing
that same thing again. Geez, do some wider reading, get some perspective,
exercise your brain, don't believe ME or ZEILER or any single source or
point of view, and enjoy the debate.

And learn which newsgroups to post which kind of messages on.

2222. Re: Satellite Tracking

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: rburgan@detroit.freenet.org
Message-ID: <478mum$lph@detroit.freenet.org>
Source record: 23882

Is this a Windows (3.1) based program, or if not, does anyone
know of a good satelitte tracking program for Windows. I'm
currently using STSPLUS for Dos, which does fine, but would
like t run in Windows 3.1 .
--

2223. Re: Need help, I can't find any satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Nov1.180630.25115@ke4zv.atl.ga.us>
Source record: 23883

In article <ZrHGZQ8.jaytp@delphi.com> Jay Pregent <jaytp@delphi.com> writes:
>I know this area is for Ham operators but I need your advice.
>
>I have just recently purchased an older (70Mhz) TVRO system. I overhauled
>all the mechanics (Acturator and polorasiation servo). The mast is true. And
>as far as I can tell, the eletronics are all working. I don't have a 4Ghz test
>signal to confirm this but all the operating voltages are there.
>
>My problem comes when I am trying to align it with a satellite. I have a print
>out that gives the angles for my location and have tried procedures to
>align the mount and the offset angle for the dish but it doesn't work.
>
>Is there any advice, tricks, or sure fire methods of finding a bird?
>I have ben useing a protractor and a plumbob to measure my angles,
>Is this the best method?

You have a frustrating situation, and I can sympathize with it.
For your peace of mind, the first thing you should try to do is
determine if the equipment is *working*. You can use the Sun as
a known signal source for this. When the dish main lobe transits
the Sun, you should note a marked change in received noise (monitoring
limiter current is the best way to detect this). That'll tell you
the equipment works.

You can boresight the Sun simply by moving the dish until the
shadow of the feed horn is precisely in the center of the
reflector. Note, since almanacs can be used to precisely
locate the look angle to the sun for any day and hour of
the year, you can use this as a cross check to calibrate
your pointing indicators.

Another (much cruder) method of determining if the equipment
works is to take a piezo sparker igniter (available for lighting
gas grills and heaters) and hold it in front of the dish and
spark it while watching the TV screen. If the receiver is working,
you should see noise hits corresponding to the sparks on the
screen.

Now after you know the equipment works, pick a nice strong bird
with several active transponders somewhere near the middle of your
receiving arc. Use a compass, don't forget to allow for magnetic
declination, to align the dish in azimuth with the satellite.
Use a plumb bob and protractor to align the dish in elevation.
This gets you *close*. Now nod the antenna up and down in elevation
looking for a signal. If none is found, move the dish about 2 degrees

in azimuth and try again. Work plus azimuth for a while, and if you find nothing, start looking at minus azimuth. Be systematic. If things are working, you will locate the satellite.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

2224. Re: Kansas City Tracker info. wanted.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: pop-gw.embratel.net.br@embratel.net.br
Message-ID: <4790hm$31n@rjo02.embratel.net.br>
Source record: 23884

Hello Grant, I am looking for info about this board. Please, can you pack and send me all messages you have already received about it ?
Thanks a lot.
73s de PY1TTO, Marcelo Cury

2225. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: manfredi@engr04.comsys.rockwell.com
Message-ID: <1995Nov1.154312.2097@nb.rockwell.com>
Source record: 23885
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <475amr$6pi@unogate.unocal.com>, stgprao@sugarland.unocal.COM (Richard Ottolini) writes:
>In article <4720b0$9ve@news.infi.net>, Curt Prasky <cprasky@infi.net> wrote:
>>c9414388@alinga.newcastle.edu.au (Adam Cole-Clark) wrote:
>> Actually, I think the idea that life does not exist anywhere else is a
>>more far-fetched idea. The universe is a mighty big place, and it seems
>>likely that ours is definitely NOT the only solar system in it. It would
>>seem most unlikely that the Earth is the only planet in all the universe
>>where intelligent life actually evolved.
>
>Then take our own solar system as a disappointing example.
>Life on appears to be on one of thirty planet-size bodies.
>Life larger than some slime only appear in the last 10% of
>the earth's history, and things crawling on the visible land
>5% of earth's history.

I'm not sure what you're trying to say.

The sensible way to look at this is that this is one solar system of 100 billion in this galaxy alone. That's one in 100,000,000,000. And we know that there are 100s of billions of galaxies. We also now know that planets do exist out there, around other suns. At least some do.

So, no matter how slim the chance for life is, with that kind of immensity one has to be awfully near-sighted to think there cannot be life elsewhere. The sheer numbers make it almost certain.

To me, this is somewhat comparable to saying that Christopher Columbus should have been being amazed to find living things in the New World. Heavens why? The chemistry is the same. The environmental conditions were pretty similar. So why think that life wouldn't exist in the New World?

Bert
manfredi@engr05.comsys.rockwell.com

2226. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-01 00:00:00 UTC
From: manfredi@engr04.comsys.rockwell.com
Message-ID: <1995Nov1.193846.5228@nb.rockwell.com>
Source record: 23886
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <cas.331.00E314BF@ops1.bwi.wec.com>, cas@ops1.bwi.wec.com (Bob Casanova) writes:

>We still have absolutely *no* data regarding how long it takes on the
>average, nor on what percentage of planets it's likely to happen at all. A
>sample of one is *not* statistically valid, except to show it's not impossible.

True, all true. But we have more information than that.

We know that the same chemistry we have here is also present elsewhere in the universe, from spectrographic data. We know that Carbon is a great element on which to base the complicated molecules needed to form life, because it has the +/- 4 valence and because it is still relatively light, which promotes stronger molecules.

We know that carbon-based, complicated molecules (i.e. "organic") stay together in a certain temperature range.

So we have certain parameters within which we can speculate that "life" might evolve (or, for those who must see this in a religious vein, environments in which God could create life).

So, basically, the questions are these:

1. Do we really believe that in the unfathomable vastness of the universe we are the _only_ planet with the attributes needed to support carbon-based molecules?

2. Assuming that the answer to #1 is obvious to most people, do we really think that we are so unbelievably lucky to be the _only_ planet in trillions to have generated life forms?

Bert
manfredi@engr05.comsys.rockwell.com

2227. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: greg@cosc.canterbury.ac.nz
Message-ID: <479fcb$kos@cantua.canterbury.ac.nz>
Source record: 23887
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <cas.331.00E314BF@ops1.bwi.wec.com>, cas@ops1.bwi.wec.com (Bob Casanova) writes:
|>
|> Unfortunately, the available data only shows that life evolved on one planet.
|> We have no idea on how many it *didn't* evolve (or, for that matter, on how
|> many it *did*) - only bad statistics can result from incomplete data.

True, but it's just as invalid to conclude unlikeliness
from inadequate data as it is to conclude likeliness.

The original poster took some data - one in thirty -
and drew a statistical conclusion from it.
I was just commenting that it's not the conclusion
I would have drawn from the same data.

|> We still have absolutely *no* data regarding how long it takes on the
|> average,

He seemed to be saying that life has only developed
to high levels here very recently, therefore it's
unlikely to have happened at all anywhere else.
I don't follow that reasoning.

|> Bob C.

Greg

2228. Re: Need help, I can't find any satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: Rick Bates <rbates@wco.com>
Message-ID: <47b3vk$iob@news.wco.com>
Source record: 23888

Jay Pregent <jaytp@delphi.com> wrote:
>I know this area is for Ham operators but I need your advice.
Try looking over in the rec.video.satellite.tvro news group. There is lots of folks there that can help.

>
>I have just recently purchased an older (70Mhz) TVRO system. I overhauled
>all the mechanics (Acturator and polorasiation servo). The mast is true. And
>as far as I can tell, the eletronics are all working. I don't have a 4Ghz test
>signal to confirm this but all the operating voltages are there.
>
>My problem comes when I am trying to align it with a satellite. I have a print
>out that gives the angles for my location and have tried procedures to
>align the mount and the offset angle for the dish but it doesn't work.
>
>Is there any advice, tricks, or sure fire methods of finding a bird?
>I have ben useing a protractor and a plumbob to measure my angles,
>Is this the best method?
>
>Any assistance would be apreciated.
>Thanks in advance
>JAYTP@delphi.com
>Jay

2229. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: billh@gn2.getnet.com
Message-ID: <1995Nov2.185426.20529@schbbs.mot.com>
Source record: 23889

In article <4708k4$3hd@ddi2.digital.net>, <random@digital.net> writes:

> Hi, I am looking for a card for a pc that can take sat weather pictures.
>
> Can anyone suggest a place to look? thanks
>
I have been using a QUORUM explorer with excellent results - it has receiver and decoder all on a pc card - just add preamp and antenna. Quorum has a BBS and I think a web page also.

Bill, W7JSW

2230. Viewing Predictions for STS-73 Entry

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: garym@crash.cts.com
Message-ID: <garym.sts73.entry1@cts.com>
Source record: 23890
Cross-posted to: sci.space.news,rec.radio.info,sci.space.shuttle,rec.radio.amateur.space

This is from Gil Carman, I'm just posting it to USENET for those of you
who are further North and might be able to get out and see the Shuttle
during entry.
--GaryM
(Moderator- Shuttle Elements Mailing List)

P.S. For the latest Shuttle Keplerian Elements and Tracking Information,
browse my web pages at <http://www.cts.com/browse/garym/elements>

==========

Here's the revised STS-73 predicted entry data, based on the latest
update as of today, Thursday, Nov 2. However, the KSC weather
forecast for a Sunday landing does not look good. Another message
will follow later with predictions for a Monday KSC landing.
The times for a Monday landing will be approximately 5 minutes
earlier than these.

Launch: 20-Oct-95 13:53:00.000 UTC

STS-73 Nominal KSC Entry Nov 5, 1995
Updated 02-Nov-95

CITY TIME ELEV ELSUN BOOM
1. San Francisco, CA 11:21:15 UTC 38.7 N -38.5 6:03
2. Sunnyvale, CA 11:21:20 UTC 27.5 N -38.2 8:06
3. Sacramento, CA 11:21:26 UTC 88.2 S -37.6 3:48
4. Pine Grove, CA 11:21:42 UTC 61.0 N -36.7 4:16
5. Bakersfield, CA 11:22:00 UTC 9.8 N -36.0 19:04
6. Fresno, CA 11:21:49 UTC 18.7 N -36.5 11:18
7. Las Vegas, NV 11:22:53 UTC 15.7 N -32.6 12:47
8. Cedar City, UT 11:23:18 UTC 61.4 N -30.8 4:05
9. Parowan, UT 11:23:20 UTC 77.2 N -30.6 3:40
10. Panguitch, UT 11:23:25 UTC 80.2 N -30.2 3:37
11. Salt Lake City, UT 11:23:24 UTC 10.5 S -29.6 17:31
12. Farmington, NM 11:24:27 UTC 52.0 NNE -26.7 4:28
13. Durango, CO 11:24:29 UTC 76.3 SSW -26.4 3:35
14. Socorro, NM 11:24:58 UTC 10.7 NNE -25.5 16:39
15. R. Rast 11:25:00 UTC 17.2 NNE -25.2 11:06
16. Santa Fe, NM 11:25:04 UTC 30.7 NNE -24.7 6:37
17. Tucumcari, NM 11:25:40 UTC 33.7 NNE -22.8 6:05
18. Amarillo, TX 11:26:07 UTC 67.2 NNE -21.2 3:39
19. Clinton, OK 11:26:45 UTC 28.2 SSW -18.8 6:55
20. Hydro, OK 11:26:49 UTC 22.8 SSW -18.5 8:21
21. Wichita Falls, TX 11:27:07 UTC 68.1 NNE -18.1 3:34

22. Oklahoma City, OK 11:27:07 UTC 19.2 SSW -17.5 9:44
23. Fort Worth, TX 11:27:35 UTC 32.0 NNE -16.9 6:05
24. Gainesville, TX 11:27:31 UTC 87.5 S -16.9 3:17
25. Denton, TX 11:27:34 UTC 57.3 NNE -16.8 3:53
26. Winfield, KS 11:26:58 UTC 7.9 SSW -17.3 19:59
27. College Stn, TX 11:28:07 UTC 11.1 NNE -15.7 14:53
28. Dallas, TX 11:27:56 UTC 30.5 NNE -15.9 6:13
29. Paris, TX 11:27:54 UTC 42.3 SSW -15.6 4:44
30. Alvin 11:28:31 UTC 7.5 NNE -14.6 19:28
31. Tyler, TX 11:28:13 UTC 46.8 NNE -15.0 4:17
32. Friendswood, TX 11:28:34 UTC 8.0 NNE -14.4 18:30
33. JSC 11:28:35 UTC 8.3 NNE -14.3 18:07
34. Shreveport, LA 11:28:38 UTC 71.2 SSW -13.7 3:13
35. Ringgold, LA 11:28:49 UTC 73.3 SSW -13.2 3:09
36. Jonesboro, LA 11:29:01 UTC 64.2 SSW -12.7 3:18
37. Winnfield, LA 11:29:05 UTC 85.9 N -12.6 2:59
38. Columbia, LA 11:29:14 UTC 58.8 SSW -12.1 3:26
39. Baton Rouge, LA 11:29:47 UTC 24.3 NNE -10.9 6:49
40. New Orleans, LA 11:30:14 UTC 19.6 NNE -9.8 8:08

Note: These times and elevations are at the point of closest approach (peak elevation) for each city. ELSUN is the Sun's elevation for that city at that time. BOOM is the estimated length of time (MIN:SEC) after closest approach when the sonic boom may be heard. However, it is unlikely that the boom can be heard if peak elevation is less than about 20 deg.

Note: To convert UTC to PST subtract 8 hours from the UTC time, for MST subtract 7, for CST subtract 6 and for EST subtract 5.

Gil Carman
NASA Johnson Space Center

2231. STS-73 Element_Set (95306.597)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: garym@cts.com
Message-ID: <STS-73.95306.597@cts.com>
Source record: 23891
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
Satellite: STS-73
Catalog number: 23688
Epoch time: 95306.59728094 (02 NOV 95 14:20:05.07 UTC)
Element set: GSFC-058
Inclination: 39.0112 deg
RA of node: 28.0407 deg Space Shuttle Flight STS-73
Eccentricity: 0.0007177 Keplerian Elements
Arg of perigee: 359.8672 deg
Mean anomaly: 0.2137 deg
Mean motion: 16.04082624 rev/day Semi-major Axis: 6641.2583 Km
Decay rate: -0.17E-04 rev/day*2 Apogee Alt: 267.64 Km
Epoch rev: 210 Perigee Alt: 258.10 Km

This data is also available on the Shuttle Elements Mailing List.
To subscribe to the list, send the command "subscribe shuttle-elts"
to "listserv@ucsd.edu" or read about the list with your web browser
at <http://www.cts.com/browse/garym/elements>

--
Gary Morris/KK6YB Email: garym@cts.com
San Diego, CA, USA WWW: <http://www.cts.com/browse/garym/elements>
```

2232. Re: Sts-73 sees ufo

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: Jeff.Root@f2006.n282.z1.fidonet.org
Message-ID: <1b3_9511021600@mmbbs.com>
Source record: 23892

I know this is completely off-topic, but I just *had* to reply.

Garry Bryan wrote:

> I am puzzled by the sceptics who back SETI which has zero
> evidence for interstellar radio contact yet immediately
> disregard the sightings collected by Project Bluebook and
> the conclusions that UFO's are no threat.

Garry,

There is a simple explanation for this. The people you refer to do not "immediately" disregard UFO sightings. We begin by being impressed by a sighting report. Then we learn the details, and discover that is was something totally ordinary. Then we are impressed by a different sighting report. When details of this new sighting become available, it turns out to be a different totally ordinary thing. Then we're impressed by yet another sighting report, but eventually find that it has some other totally ordinary cause. After this happens a few times, we are less easily impressed, and only pay attention to those reports that seem most credible. Yet, it still happens. As soon as solid data is available, it becomes obvious that the sighting has nothing to do with aliens. After ten or twenty such reports -- each claiming to be ultimate proof of aliens -- *all* turn out to be extremely sloppy interpretations of the evidence, we tend to disregard new reports.

The sceptics are the people who've already been through this. That doesn't cause us to be any less sure that the Universe is teeming with life, and that it is worth seeking.

-- Jeff, in Minneapolis

2233. STS-73 Element_Set (95306.833)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: garym@cts.com
Message-ID: <STS-73.95306.833@cts.com>
Source record: 23893
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-73
1 23688U 95056A 95306.83343056 .00000069 00000-0 99205-7 0 401
2 23688 39.0089 26.4526 0007396 2.8303 283.0514 16.04177705 2131

Satellite: STS-73
Catalog number: 23688
Epoch time: 95306.83343056
Element set: 40
Inclination: 39.0089 deg
RA of node: 26.4526 deg
Eccentricity: 0.0007396
Arg of perigee: 2.8303 deg
Mean anomaly: 283.0514 deg
Mean motion: 16.04177705 rev/day
Decay rate: 6.86070e-07 rev/day^2
Epoch rev: 213

This data is also available on the Shuttle Elements Mailing List.
To subscribe to the list, send the command "subscribe shuttle-elts"
to "listserv@ucsd.edu" or read about the list with your web browser
at <http://www.cts.com/browse/garym/elements>

--
Gary Morris/KK6YB Email: garym@cts.com
San Diego, CA, USA WWW: <http://www.cts.com/browse/garym/elements>
```

2234. Apollo beep tone?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: spkatzmann@ccgate.dp.beckman.com
Message-ID: <spkatzmann.25.00113D1D@ccgate.dp.beckman.com>
Source record: 23894

Does anyone know what frequency and duration the Apollo communications tone is? Thats the short beep that is heard after someone at Houston ground control or on the spacecraft says transmitts a voice message.

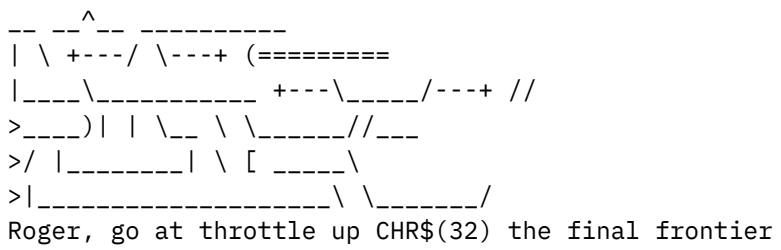
Steve.

2235. Re: SAREX-Help! Houston NASA TV repeater

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: Philip Chien <kc4yer@amsat.org>
Message-ID: <479g9k$3ni@paperboy.ids.net>
Source record: 23895

In <3seh00$ikv@news.tamu.edu>, g-taylor4@tamu.edu (Greg Taylor) writes:
>Which Houston repeater carries shuttle audio retransmissions?
>Tnx, Greg, KD4HZ

The simple answer - 146.64 Mhz. the W5RRR 2 meter repeater. I've
listened to it quite often when I'm in the Houston area. You'll hear
bunches of hams who work at the Johnson Space Center on that repeater,
including some of the ham astros.

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET


Roger, go at throttle up CHR$(32) the final frontier

2236. Re: Satellite Tracking

Newsgroup: rec.radio.amateur.space
Date: 1995-11-02 00:00:00 UTC
From: garym@nosc.mil
Message-ID: <1995Nov2.152506.25091@nosc.mil>
Source record: 23896

rburgan@detroit.freenet.org (Roland B. Burgan) writes:
>Is this a Windows (3.1) based program, or if not, does anyone
>know of a good satelitte tracking program for Windows. I'm
>currently using STSPLUS for Dos, which does fine, but would
>like t run in Windows 3.1 .

There is an index of archives that have Satellite Tracking software in
the Reference page of the Shuttle Elements Mailing List web pages. The
URL is:
http://www.cts.com/browse/garym/elements/references.html#software

The best satellite tracking program (IMHO) for Windows 3.1 is SatSpy. The
web page for it tells all about the program at, and you can download it too
(it's shareware):
http://www.usa.net/acappella/satspy/satspy.htm

--GaryM

2237. STS-73 Element_Set (95306.970)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: garym@cts.com
Message-ID: <STS-73.95306.970@cts.com>
Source record: 23897
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
Satellite: STS-73
Catalog number: 23688
Epoch time: 95306.97074404 (02 NOV 95 23:17:52.29 UTC)
Element set: GSFC-059
Inclination: 39.0107 deg
RA of node: 25.5281 deg Space Shuttle Flight STS-73
Eccentricity: 0.0007479 Keplerian Elements
Arg of perigee: 359.5359 deg
Mean anomaly: 0.5445 deg
Mean motion: 16.04201050 rev/day Semi-major Axis: 6640.9315 Km
Decay rate: -0.17E-04 rev/day*2 Apogee Alt: 267.51 Km
Epoch rev: 217 Perigee Alt: 257.58 Km

This data is also available via the Shuttle Elements Mailing List.
To subscribe to the list, send the command "subscribe shuttle-elts"
to "listserv@ucsd.edu". You will find more information about the listand
all about Shuttle Observing, Tracking, Keps, and more on our web pages
at <http://www.cts.com/browse/garym/elements>

--
Gary Morris/KK6YB Email: garym@cts.com
San Diego, CA, USA WWW: <http://www.cts.com/browse/garym/elements>
```

2238. STS-73 Element_Set (95307.219)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: garym@cts.com
Message-ID: <STS-73.95307.219@cts.com>
Source record: 23898
Cross-posted to: sci.space.news,rec.radio.info,rec.radio.amateur.space

```
STS-73
1 23688U 95056A 95307.21971085 .00142886 14123-4 20849-3 0 608
2 23688 39.0118 23.8479 0007350 6.9785 353.1128 16.04274634 2219

Satellite: STS-73
Catalog number: 23688
Epoch time: 95307.21971085 (03 NOV 95 05:16:23.02 UTC)
Element set: GSFC-060
Inclination: 39.0118 deg
RA of node: 23.8479 deg Space Shuttle Flight STS-73
Eccentricity: 0.0007350 Keplerian Elements
Arg of perigee: 6.9785 deg
Mean anomaly: 353.1128 deg
Mean motion: 16.04274634 rev/day Semi-major Axis: 6640.7284 Km
Decay rate: 0.14E-02 rev/day*2 Apogee Alt: 267.22 Km
Epoch rev: 221 Perigee Alt: 257.46 Km

This data is also available via the Shuttle Elements Mailing List.
To subscribe to the list, send the command "subscribe shuttle-elts"
to "listserv@ucsd.edu". You will find more information about the listand
all about Shuttle Observing, Tracking, Keps, and more on our web pages
at <http://www.cts.com/browse/garym/elements>

--
Gary Morris/KK6YB Email: garym@cts.com
San Diego, CA, USA WWW: <http://www.cts.com/browse/garym/elements>
```

2239. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: drted@ix.netcom.com
Message-ID: <47chb2$295@ixnews6.ix.netcom.com>
Source record: 23899
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <479l71$15pi@news.doit.wisc.edu> Brian Zeiler
<bdzeiler@students.wisc.edu> writes:
>
>jamesoberg@aol.com (JamesOberg) wrote:
>>>< The objects wobbling in the sky
---snip---
>they ruled out birds? And don't say the "flight characteristics",
>because the objects in Tremonton were moving far too bizarrely to be
>birds. No birds are so reflective, either, to glow white in bright
>daylight.
>
>--
>Brian Zeiler
>
>
Dog gone it, Brian... I am generally supportive and appreciative of your contributions on these subjects. However, try to refrain from making unsupported assumptions. Some birds, such as seagulls ARE so reflective that in the mid afternoon on a clear warm summer day, with the sun in your back and cirling seagulls a mile in the distance, they can appear to be a shiny plane with the sun reflecting off of silver surfaces. I have striking memories of the first time I witnessed this. I was riding a bus home and casually looking in the direction of a private airfield a mile away. I saw what I first believed to be the sun reflecting off of a private plane doing peculiar loops near the ground. Since the manuevers appeared too dangerous for a pilot to attempt, I watched more carefully. Over the next couple of minutes, I began to resolve the individual birds and realized that it was a flock of seagulls swooping into a fresh pasture before breaking up to seek their own snacks.

Now, in no way do I assume that the Utah film resembles what I saw. Nor do I assume Oberg has any foundation for his deflecting "explanation." I only wish to discourage you from being too careless in dismissing some possible explanations. I am certain that, on a bright sunny clear afternoon, a few dozen white seagulls, ducks or geese could easily be described as a bright reflective ovoid, as large as a pea held at armslength, making erratic and incredible motions before dissappearing suddenly.

Oh... I would have edited the newsgroups line and sent this to the appropriate newsgroup if my Netcom NetCruiser connection hasn't been so erratic and unreliable. Since the reliability of any Internet Service Provider is a valid topic for any newsgroup, I decided not to edit it.

If Netcom insists in providing such lousy service, I will be forced to find (easy enough) another ISP. And I will feel it my duty to warn others of the problems I have with Netcom...
--
Bye... Ted..
Deep in the Heart of the Armpits of Houston, Texas...

2240. NORAD Two-Line Orbital Element Set: Space Shuttle (95306.28603709)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.815414571@cougar>
Source record: 23900

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 73
1 23688U 95056A 95306.28603709 .00136286 13305-4 20240-3 0 578
2 23688 39.0117 30.1307 0006930 1.9301 358.1325 16.04000623 2041
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2241. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: Brian Zeiler <bdzeiler@students.wisc.edu>
Message-ID: <47duei$1lm4@news.doit.wisc.edu>
Source record: 23901
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

drted@ix.netcom.com (Ted Viens) wrote:
>Some birds, such as seagulls ARE so
>reflective that in the mid afternoon on a clear warm summer day, with
>the sun in your back and cirling seagulls a mile in the distance, they
>can appear to be a shiny plane with the sun reflecting off of silver
>surfaces.

Yes, but the USAF investigating scientists ruled out birds because no
birds are *AS* reflective as those objects. Furthermore, as the objects
moved across the sky, they ruled that the brightness was due to
self-luminescence, not reflection. I imagine that's an easy conclusion
to make, given that reflection would be easy to discriminate from
self-luminescence given that the objects traversed a large portion of the
sky, and thus a large variety of angles from the sun.

I agree that some birds are very reflective, but the USAF analysis was
thorough and they ruled out birds for two sound reasons.

--
Brian Zeiler

2242. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: jamesoberg@aol.com
Message-ID: <47e896$n4d@newsbf02.news.aol.com>
Source record: 23902
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space
Body handling: HTML body converted to readable text

Zeiler: <>

What USAF analysis?

Besides, don';t you think that UFO research has improved since 1952, with the accumulation of a LITTLE more experience?

You can always tell a fairy tale by the phrase, "Long ago and far away...". And lo and behold, UFO buffs love the stories that are from long ago and far away. Coincidence?

2243. VE3ONT status 432MHz ?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: Geoff, G3TQF <75337.1352@CompuServe.COM>
Message-ID: <47e7sb$sc8$1@mhadf.production.compuserve.com>
Source record: 23903

Please has anyone any info on VE3ONT activity on 432MHz this EME
weekend.
Thanks for your assistance. 73 Geoff, G3TQF

--
Geoff, G3TQF

2244. Re: Apollo beep tone?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <47c2ac$eg5@over.mhv.net>
Source record: 23904

Steve Katzmann (spkatzmann@ccgate.dp.beckman.com) wrote:
: Does anyone know what frequency and duration the Apollo communications tone
: is? Thats the short beep that is heard after someone at Houston ground
: control or on the spacecraft says transmitts a voice message.

: Steve.

That was (and still is) nothing more than a courtesy tone. It tells the
other station "go ahead, I'm finished, you can talk now".

Tom

2245. Re: Satellite Tracking

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: Kory Hamzeh <kory@avatar.com>
Message-ID: <Pine.BSD/.3.91.951103210755.10773B-100000@avatar.avatar.com>
Source record: 23905

On 1 Nov 1995, Roland B. Burgan wrote:

>
> Is this a Windows (3.1) based program, or if not, does anyone
> know of a good satelitte tracking program for Windows. I'm
> currently using STSPLUS for Dos, which does fine, but would
> like t run in Windows 3.1 .
> --
>

Try winorb, It's very nice and I beleive it's either public domain or
shareware, I'm not sure. It's ussually on ftp.amsat.org or oak.oakland.edu.

Kory

2246. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-03 00:00:00 UTC
From: manfredi@engr04.comsys.rockwell.com
Message-ID: <1995Nov3.212659.333@nb.rockwell.com>
Source record: 23906
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <479fcb$kos@cantua.canterbury.ac.nz>, greg@cosc.canterbury.ac.nz (Greg Ewing) writes:

>He seemed to be saying that life has only developed
>to high levels here very recently, therefore it's
>unlikely to have happened at all anywhere else.
>I don't follow that reasoning.

I'm with you, Greg. In fact, if you don't insist on "to high levels" means, life has been on this planet for a good chunk of its total existence. Maybe not mammals or vertebrates, but life nonetheless. We're talking hundreds of millions of years in a planet that is 4.5B years old, anyway.

Why isn't it just as likely that the environmental conditions simply had to settle down to something friendly to organic molecules? And that this same process could be repeated a zillion times elsewhere?

Bert
manfredi@engr05.comsys.rockwell.com

2247. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: gksmiley@aol.com
Message-ID: <47et7e$b61@newsbf02.news.aol.com>
Source record: 23766
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Brian, uh, hello. . . .Brian? I think what Oberg was saying is that it wasn't the Air Force group that championed the Tremonton films, but a Navy group. And you didn't even catch on that he had --again-- showed you up for a spouting ignoramus. You are so darned SINCERE that what you imagine happened REALLY happened, it's touching.

2248. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: an418071@anon.penet.fi
Message-ID: <47gntb$msr@server.cntfl.com>
Source record: 23767
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

On 1 Nov 1995 22:19:37 -0500, jamesoberg@aol.com (JamesOberg) wrote:

><< The objects wobbling in the sky
>over Tremonton in that (1952?) film do not bare any resemblance to birds,
>or to their flight characteristics, other than the fact that they are
>airborne>>
>
>Sure they do. If they are REAL "UFOs", when have they ever been seen doing
>that same thing again. Geez, do some wider reading, get some perspective,
>exercise your brain, don't believe ME or ZEILER or any single source or
>point of view, and enjoy the debate.
>
>And learn which newsgroups to post which kind of messages on.
Excuse me for interupting but I couldn't resist to ask you
How a "REAL" ufo characteristicly flies? And also how are you so
sure? Thanks for the reply in advance
Shicks@lc.gulfnet.com
Steve

2249. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: c9414388@alinga.newcastle.edu.au
Message-ID: <47gt5n$51g@seagoon.newcastle.edu.au>
Source record: 23768
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Curt Prasky (cprasky@infi.net) wrote:
: c9414388@alinga.newcastle.edu.au (Adam Cole-Clark) wrote:
:
: >The idea of alien existence is not really that far fetched an idea,
: >whether its true or not. That's to say that if we prove definitely that
: >aliens DO NOT exist... the idea that we thought once that they could exist,
: >was not stupid.
:
:
: Actually, I think the idea that life does not exist anywhere else is a
: more far-fetched idea. The universe is a mighty big place, and it seems
: likely that ours is definitely NOT the only solar system in it. It would
: seem most unlikely that the Earth is the only planet in all the universe
: where intelligent life actually evolved.
:

Sorry, I should have been more specific. I meant that it is not a stupid
idea to think that aliens have been here , on Earth, whether its true or
not.
I totally agree that it would be nearly impossible for us to be the only
intelligent life forms in space. Any scientist would agree with that.
--

I bit Gengis Khan

Adam Cole-Clark - <c9414388@alinga.newcastle.edu.au>
[FINGER FOR PGP PUBLIC KEY] : tthhoouu hhaaaasss cccoommmeth!

2250. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: gufon@ix.netcom.com
Message-ID: <47g222$jo1@ixnews2.ix.netcom.com>
Source record: 23769
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <47f3bi$110c@news.doit.wisc.edu> Brian Zeiler
<bdzeiler@students.wisc.edu> writes:
>
>(Regarding GeeK Smiley)Just like a gullible debunker nut to dredge up
skeptic fantasies that were debunked decades ago by objective analysis.

-Earth to GeeK, Earth to GeeK. Poor GeeKy you're so sincere when you
try to be condescending while making an ass of yourself. Brian, I think
the only thing that is touching about this exchange is probably GeeKy
touching himself. One hand on the keyboard, one hand playing
submarine!:) Anyway, Brian, you've destroyed both GeeKy and Oberg, once
again, but don't expect them to stop crying. Oberg's too busy counting
how many words he's had published to waste time paying attention to the
actual gist of the argument and GeeKy's too busy declaring victory to
accomplish anything. Do you think GeeKy has an actual Oberg
cheerleading outfit? I say yes!:)-

2251. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: drted@ix.netcom.com
Message-ID: <47eb9d$pcj@ixnews2.ix.netcom.com>
Source record: 23770
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space
Body handling: HTML body converted to readable text

In <47e896$n4d@newsbf02.news.aol.com> jamesoberg@aol.com (JamesOberg)
writes:
>
>Zeiler: <analysis was
>thorough and they ruled out birds for two sound reasons.>>
>
>What USAF analysis?
>
>Besides, don';t you think that UFO research has improved since 1952,
with
>the accumulation of a LITTLE more experience?
>
>You can always tell a fairy tale by the phrase, "Long ago and far
>away...". And lo and behold, UFO buffs love the stories that are from
long
>ago and far away. Coincidence?

Go get 'im, Brian...

--
Bye... Ted..
Deep in the Heart of the Armpits of Houston, Texas...

2252. Eldico 1000F Linear Amp from the 1960's

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: "John T. Young" <jtyoung@u.washington.edu>
Message-ID: <Pine.PTX.3.91j.951104192717.3877A-100000@carson.u.washington.edu>
Source record: 23771

Anybody out there have one of these classics: Eldico SSB-1000F Linear amplifiers? I'm experiencing a peculiar problem with mine and would appreciate some insights. If you have any familiarity with this almost antique, please contact me. Many thanks, John, KI7JB.
jtyoung@u.washington.edu

2253. Kepler

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: kujoes@ix.netcom.com
Message-ID: <47gfet$muk@ixnews5.ix.netcom.com>
Source record: 23772

I am trying to up date my itncp which uses kepler. Can anyone help me
to locate anywhere I can download kepler?

de Don (KB7RME)

2254. Re: Kepler

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Message-ID: <Pine.SOL.3.91.951104210436.17979A-100000@spacelink>
Source record: 23773

You are refering to Keplerian elements; mathematical descriptions of orbits. Keplerian elelments can usually be picked up off of packet BBS's and from numerous landline BBS's. NASA SPacelink is a good source, as is Compuserve, Celestial, and others. Check out space technology newsgroups on the Internet.

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

2255. NORAD Two-Line Orbital Element Set: Space Shuttle (95307.21971007)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.815453801@cougar>
Source record: 23774

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 73
1 23688U 95056A 95307.21971007 .00142886 14123-4 20849-3 0 602
2 23688 39.0118 23.8479 0007351 6.9784 353.1084 16.04274631 2194
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2256. NORAD Two-Line Orbital Element Sets (TLE701)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.815453953@cougar>
Source record: 23907

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #701 -
Alouette 1
1 00424U 62049A 95306.08294314 .00000053 00000-0 51831-4 0 1470
2 00424 80.4557 148.8206 0022588 265.3034 94.5531 13.67854459651155
ATS 1
1 02608U 66110A 95291.80248428 .00000117 00000-0 10000-3 0 9456
2 02608 14.6418 355.3831 0009155 78.5003 281.6366 1.00376633 22435
ATS 3
1 03029U 67111A 95306.56497017 -.00000126 00000-0 10000-3 0 4148
2 03029 14.8762 2.2123 0009801 259.6889 237.4074 1.00272575102480
Cosmos 398
1 04966U 71016A 95307.19005007 .00507502 10524-4 21632-3 0 786
2 04966 51.3823 277.1823 0268305 238.8954 118.5271 15.75238948846412
Starlette
1 07646U 75010A 95305.49920372 -.00000125 00000-0 13243-4 0 9259
2 07646 49.8275 331.1510 0206232 195.1633 164.3015 13.82189480 47338
LAGEOS
1 08820U 76039A 95307.17314505 .00000035 00000-0 10000-3 0 1470
2 08820 109.8525 308.2356 0044368 177.5154 182.5777 6.38664557199334
ETS-2
1 09852U 77014A 95302.32613183 .00000008 00000-0 10000-3 0 464
2 09852 12.9250 35.6040 0004824 100.8500 259.1717 0.99998827 15329
GOES 2
1 10061U 77048A 95305.44582412 .00000050 00000-0 00000+0 0 5941
2 10061 12.0305 39.7458 0011437 141.5201 204.0317 1.00269866 12140
IUE
1 10637U 78012A 95302.30509404 -.00000171 00000-0 10000-3 0 1827
2 10637 35.4103 86.8557 1340245 50.6503 334.8407 1.00292269 17617
GPS BI-01
1 10684U 78020A 95303.56698765 -.00000062 00000-0 10000-3 0 3984
2 10684 64.8961 30.6990 0062672 160.7150 199.5418 1.98069523114843
```

```
GPS BI-02
1 10893U 78047A 95298.22506795 .00000006 00000-0 10000-3 0 1943
2 10893 63.2678 268.5463 0225249 14.3001 346.2953 2.01627361128058
GOES 3
1 10953U 78062A 95301.36552131 .00000042 00000-0 10000-3 0 5575
2 10953 10.9979 42.6095 0006375 135.7149 216.9558 1.00371843 16710
SeaSat 1
1 10967U 78064A 95307.04063843 -.00000017 00000-0 38778-4 0 4407
2 10967 107.9964 64.7754 0002121 226.1029 133.9925 14.38065824908798
GPS BI-03
1 11054U 78093A 95301.94002863 .00000013 00000-0 10000-3 0 3608
2 11054 62.9737 267.0013 0045778 180.5832 179.3923 1.93505257124169
Nimbus 7
1 11080U 78098A 95305.13027161 -.00000060 00000-0 -16454-4 0 5409
2 11080 98.9783 173.0978 0008476 219.7392 140.3129 13.83701328859490
GPS BI-04
1 11141U 78112A 95305.19093785 -.00000078 00000-0 10000-3 0 138
2 11141 64.8985 32.7041 0049414 27.8837 332.4007 1.92894794 13460
GPS BI-05
1 11690U 80011A 95298.51975407 -.00000033 00000-0 10000-3 0 9483
2 11690 65.2560 32.4001 0148231 193.2950 166.3380 2.00568300129475
GPS BI-06
1 11783U 80032A 95303.83741870 -.00000006 00000-0 10000-3 0 1095
2 11783 62.4044 261.3976 0221091 29.4182 331.7923 2.03456670114149
GOES 5
1 12472U 81049A 95306.24821416 -.00000255 00000-0 10000-3 0 8906
2 12472 7.7772 52.5623 0006598 53.0394 306.9589 1.00226386 10811
Cosmos 1383
1 13301U 82066A 95303.50737199 .00000029 00000-0 16652-4 0 4463
2 13301 82.9294 302.9306 0027872 152.4835 207.7798 13.68069790665838
LandSat 4
1 13367U 82072A 95306.74197744 .00000024 00000-0 15191-4 0 7866
2 13367 98.1134 359.1379 0007748 120.9279 239.2680 14.57166116707395
DMSP B5D2-1
1 13736U 82118A 95306.00999694 .00000011 00000-0 23074-4 0 8798
2 13736 98.6276 133.0428 0008440 340.5497 19.5344 14.25760473668554
IRAS
1 13777U 83004A 95307.04261482 -.00000026 00000-0 11884-4 0 1280
2 13777 98.9663 132.3677 0013336 6.8119 353.3211 13.99245658321600
Cosmos 1447
1 13916U 83021A 95307.21833197 .00000022 00000-0 68657-5 0 5438
2 13916 82.9459 358.9179 0039663 64.6937 295.8318 13.74331535632566
TDRS 1
1 13969U 83026B 95303.33767721 .00000080 00000-0 00000+0 0 4894
2 13969 8.6060 45.9599 0002528 152.5809 182.0725 1.00262366 19065
GOES 6
1 14050U 83041A 95306.29051461 -.00000207 00000-0 10000-3 0 4604
2 14050 6.5996 55.8231 0004049 24.2540 335.7077 1.00319730103915
OSCAR 10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 3832
```

```
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727 65085
LandSat 5
1 14780U 84021A 95304.23652972 .00000308 00000-0 78410-4 0 3654
2 14780 98.1939 357.0280 0003901 171.3117 188.8146 14.57119064620440
UoSat 2
1 14781U 84021B 95303.01889508 .00000172 00000-0 36928-4 0 8378
2 14781 97.7874 299.2682 0012648 107.4750 252.7832 14.69392764623706
GPS BI-09
1 15039U 84059A 95302.32531950 -.00000056 00000-0 10000-3 0 3722
2 15039 64.5648 27.1480 0082034 18.7678 341.5702 1.92302267 82979
Cosmos 1574
1 15055U 84062A 95302.83697284 .00000018 00000-0 32439-5 0 7434
2 15055 82.9543 56.5616 0026094 267.0428 92.7741 13.73627402569227
GPS BI-10
1 15271U 84097A 95302.66013969 .00000005 00000-0 10000-3 0 724
2 15271 62.0996 261.8650 0157624 355.2797 4.5449 2.00605065 80627
Cosmos 1602
1 15331U 84105A 95304.10243188 .00000222 00000-0 23275-4 0 4285
2 15331 82.5343 328.5861 0020510 353.9643 6.1307 14.84686896598834
NOAA 9
1 15427U 84123A 95306.74592587 .00000050 00000-0 50282-4 0 4628
2 15427 98.9805 6.1861 0014033 237.3721 122.6092 14.13740215561493
GPS BI-11
1 16129U 85093A 95299.29958406 -.00000035 00000-0 10000-3 0 6856
2 16129 65.2350 30.5580 0155997 86.2243 275.5885 1.89368105 17474
Mir
1 16609U 86017A 95305.58692709 .00008513 00000-0 11833-3 0 3004
2 16609 51.6475 189.5725 0003481 289.0199 71.0389 15.57894225554373
SPOT 1
1 16613U 86019A 95306.84543624 .00000090 00000-0 62356-4 0 8668
2 16613 98.6365 15.0129 0000832 45.1875 314.9371 14.20075245188046
Cosmos 1766
1 16881U 86055A 95305.70309690 .00000229 00000-0 24792-4 0 3449
2 16881 82.5189 24.8808 0020428 15.0137 345.1679 14.83673455499960
EGP
1 16908U 86061A 95304.47606525 -.00000083 00000-0 10000-3 0 392
2 16908 50.0099 343.2356 0011600 148.2920 211.8616 12.44412809 87802
NOAA 10
1 16969U 86073A 95306.90871898 .00000026 00000-0 29220-4 0 3775
2 16969 98.5156 305.6369 0012637 302.6536 57.3425 14.24961572474230
MOS-1
1 17527U 87018A 95307.09214701 -.00000044 00000-0 00000+0 0 3121
2 17527 98.9645 8.7084 0016487 226.6120 133.3739 13.99187460443207
GOES 7
1 17561U 87022A 95299.25433054 .00000077 00000-0 10000-3 0 6051
2 17561 2.5961 71.2332 0001464 316.5343 323.3634 1.00285514 14941
Kvant-1
1 17845U 87030A 95307.12647714 .00004226 00000-0 62065-4 0 4250
2 17845 51.6455 181.8479 0003306 280.4019 79.9243 15.57915226488723
DMSP B5D2-3
```

```
1 18123U 87053A 95306.75775135 -.00000007 00000-0 18854-4 0 2015
2 18123 98.7767 135.7337 0013751 180.1898 179.9268 14.15422776432327
RS-10/11
1 18129U 87054A 95307.08812857 .00000023 00000-0 85070-5 0 1293
2 18129 82.9250 316.4000 0013431 66.2758 293.9801 13.72358256419029
Meteor 2-16
1 18312U 87068A 95303.71118226 .00000071 00000-0 49919-4 0 4351
2 18312 82.5581 174.8873 0012789 140.5988 219.6102 13.84064953414290
Meteor 2-17
1 18820U 88005A 95307.23032574 .00000068 00000-0 47365-4 0 7654
2 18820 82.5400 227.6288 0015244 201.3514 158.7017 13.84745716392118
DMSP B5D2-4
1 18822U 88006A 95307.09956733 .00000003 00000-0 19543-4 0 1068
2 18822 98.3911 144.8538 0005993 318.4796 41.5926 14.23169705402271
Glonass 34
1 19163U 88043A 95302.71192661 .00000062 00000-0 10000-3 0 268
2 19163 65.1779 93.6436 0008155 145.9199 214.1276 2.13102482 57306
Glonass 36
1 19165U 88043C 95305.58409940 .00000055 00000-0 10000-3 0 4366
2 19165 65.1636 93.5078 0000453 228.3175 131.6784 2.13102183 57983
METEOSAT 3
1 19215U 88051A 95306.24278988 -.00000286 00000-0 10000-3 0 2108
2 19215 2.7857 68.9339 0001219 176.7327 173.6122 1.00267929 14950
AO-13
1 19216U 88051B 95304.38706202 .00000239 00000-0 15756-3 0 1038
2 19216 57.4524 155.7574 7338361 22.7620 357.7609 2.09721719 25026
OKEAN 1
1 19274U 88056A 95305.03409041 .00000227 00000-0 25343-4 0 446
2 19274 82.5138 126.0841 0019868 152.7887 207.4360 14.82403883395420
Meteor 3-2
1 19336U 88064A 95306.24867034 .00000051 00000-0 10000-3 0 4349
2 19336 82.5433 327.7290 0018426 87.2509 273.0728 13.16975438349474
Glonass 39
1 19503U 88085C 95304.20529182 -.00000029 00000-0 10000-3 0 3289
2 19503 65.6563 332.4718 0007757 168.4717 191.6010 2.13101814 55446
NOAA 11
1 19531U 88089A 95306.87400871 -.00000022 00000-0 13607-4 0 2720
2 19531 99.1963 313.9720 0011637 155.0186 205.1551 14.13069259366348
TDRS 2
1 19548U 88091B 95304.82208119 -.00000209 00000-0 10000-3 0 1533
2 19548 2.0551 71.6208 0008648 157.6215 191.8858 1.00271769 13220
Glonass 40
1 19749U 89001A 95300.02000977 .00000051 00000-0 10000-3 0 5424
2 19749 65.1077 93.2740 0005202 272.4716 87.4665 2.13101504 52865
Glonass 41
1 19750U 89001B 95306.64497756 .00000043 00000-0 10000-3 0 4537
2 19750 65.1380 93.1190 0008241 216.0616 143.8778 2.13101875 53023
GPS BII-01
1 19802U 89013A 95306.79443494 .00000071 00000-0 10000-3 0 1341
2 19802 55.2510 119.6928 0029030 174.1464 185.8970 2.00559886 49157
```

```
Akebono
1 19822U 89016A 95306.96604282 .00012017 00000-0 62841-3 0 5942
2 19822 75.1168 255.2642 3766386 277.2007 42.4945 7.88377389148744
Meteor 2-18
1 19851U 89018A 95303.00385320 .00000023 00000-0 78499-5 0 4331
2 19851 82.5146 105.4167 0012865 265.7575 94.2113 13.84398261336844
MOP-1
1 19876U 89020B 95299.91263106 .00000059 00000-0 10000-3 0 1475
2 19876 1.4792 72.8385 0008398 178.3286 122.2763 1.00270022 4339
TDRS 3
1 19883U 89021B 95303.59265938 -.00000282 00000-0 10000-3 0 1333
2 19883 0.1257 72.7593 0005078 152.8839 345.1424 1.00268326 2963
GPS BII-02
1 20061U 89044A 95306.13554081 -.00000043 00000-0 10000-3 0 1347
2 20061 54.3400 295.7983 0149048 216.2838 142.6506 2.00562703 46881
Nadezhda 1
1 20103U 89050A 95306.84092215 .00000028 00000-0 14338-4 0 5711
2 20103 82.9562 276.3267 0037286 329.2470 30.6502 13.73859313317466
GPS BII-03
1 20185U 89064A 95305.47408231 .00000072 00000-0 10000-3 0 1540
2 20185 54.9946 120.2191 0018110 346.5978 13.3827 2.00563656 45448
GMS 4
1 20217U 89070A 95302.58220972 -.00000379 00000-0 10000-3 0 2638
2 20217 1.3038 76.0215 0001497 356.2836 295.0749 1.00273464 23091
INTERCOSMOS 24
1 20261U 89080A 95303.39198075 .00000293 00000-0 87500-4 0 4508
2 20261 82.5932 58.1328 1241870 206.3928 146.8431 12.47291660277137
GPS BII-04
1 20302U 89085A 95306.01184243 -.00000061 00000-0 10000-3 0 1481
2 20302 53.3095 235.7736 0013494 152.6636 207.3798 2.00560059 44255
Meteor 3-3
1 20305U 89086A 95307.01339003 .00000044 00000-0 10000-3 0 4250
2 20305 82.5446 281.6342 0007602 132.8836 227.2935 13.04420674288585
COBE
1 20322U 89089A 95303.10687881 .00000317 00000-0 23064-3 0 1623
2 20322 98.9549 317.1069 0009495 323.0259 37.0251 14.03455877304518
Kvant-2
1 20335U 89093A 95307.12647714 .00004226 00000-0 62065-4 0 4226
2 20335 51.6455 181.8479 0003306 280.4019 79.9243 15.57915226337735
GPS BII-05
1 20361U 89097A 95304.52686394 -.00000027 00000-0 10000-3 0 9858
2 20361 55.8753 62.3640 0081044 128.1152 232.5079 2.00564862 33709
COSMOS 2054 (Altair-1)
1 20391U 89101A 95305.40496821 -.00000144 00000-0 10000-3 0 2403
2 20391 3.4019 64.9873 0003386 117.0545 348.2334 1.00271029 21703
SPOT 2
1 20436U 90005A 95304.22738716 .00000169 00000-0 10000-3 0 9907
2 20436 98.7229 16.4997 0001098 20.7262 339.3925 14.20033794299206
UO-14
1 20437U 90005B 95304.25425534 .00000023 00000-0 25958-4 0 1362
```

```
2 20437 98.5619 26.3949 0010870 153.7856 206.3875 14.29901532301191
UO-15
1 20438U 90005C 95306.73786992 -.00000009 00000-0 13639-4 0 9339
2 20438 98.5556 27.1473 0009932 151.3069 208.8666 14.29217210301435
PACSAT
1 20439U 90005D 95305.76024975 .00000024 00000-0 26334-4 0 9352
2 20439 98.5733 29.7345 0011069 150.5335 209.6471 14.29956317301420
DO-17
1 20440U 90005E 95305.24539455 .00000044 00000-0 33657-4 0 9359
2 20440 98.5756 29.7527 0011273 150.8714 209.3095 14.30097885301371
WO-18
1 20441U 90005F 95303.27137036 .00000015 00000-0 22759-4 0 9393
2 20441 98.5750 27.7677 0011552 157.8578 202.3103 14.30067983301093
LO-19
1 20442U 90005G 95304.75361742 .00000027 00000-0 27378-4 0 9341
2 20442 98.5765 29.6344 0012310 152.8556 207.3271 14.30172780301325
GPS BII-06
1 20452U 90008A 95306.91721329 .00000029 00000-0 10000-3 0 937
2 20452 54.0199 176.0170 0060498 84.8707 275.9081 2.00555036 42257
MOS-1B
1 20478U 90013A 95304.69904463 .00000090 00000-0 10000-3 0 8561
2 20478 99.1367 11.8209 0001326 89.6132 270.5181 13.94861093212564
DEBUT
1 20479U 90013B 95307.17121731 -.00000004 00000-0 73537-4 0 9356
2 20479 99.0632 10.0435 0539925 278.3845 75.6408 12.83335595268781
FO-20
1 20480U 90013C 95303.21245722 .00000001 00000-0 83485-4 0 8310
2 20480 99.0648 6.6578 0540069 287.7834 66.5059 12.83231577268261
MOS-1B R/B
1 20491U 90013D 95303.86291855 .00000424 00000-0 85504-3 0 1822
2 20491 99.0635 65.0409 0470682 113.6894 251.4331 13.02990972271868
LACE
1 20496U 90015A 95305.56328521 .00001465 00000-0 50513-4 0 5923
2 20496 43.1060 67.8478 0009607 8.3452 351.7681 15.35021357318680
Nadezhda 2
1 20508U 90017A 95306.76831172 .00000058 00000-0 46040-4 0 5706
2 20508 82.9538 50.9401 0043324 279.4226 80.2033 13.73500265284674
OKEAN 2
1 20510U 90018A 95303.40765857 .00000191 00000-0 22916-4 0 4527
2 20510 82.5219 80.2206 0019818 358.5576 1.5561 14.78539414305575
GPS BII-07
1 20533U 90025A 95305.32875305 -.00000035 00000-0 10000-3 0 1124
2 20533 54.7078 296.5044 0046134 76.8856 283.6335 2.00572006 40998
PegSat
1 20546U 90028A 95306.76281787 .00007425 00000-0 14613-3 0 8596
2 20546 94.1255 222.9085 0063531 161.2708 199.1088 15.45074288309862
HST
1 20580U 90037B 95305.39294525 .00000426 00000-0 26945-4 0 7322
2 20580 28.4696 249.1483 0006218 302.6869 57.3113 14.90961600104409
MACSAT 2
```

```
1 20608U 90043B 95306.67726996 .00000144 00000-0 21680-4 0 1360
2 20608 89.9322 175.3397 0107581 130.1520 230.9176 14.64873552292983
Glonass 44
1 20619U 90045A 95306.95810387 -.00000026 00000-0 10000-3 0 2390
2 20619 65.2528 331.7278 0025692 208.9945 150.9163 2.13102442 42460
Glonass 45
1 20620U 90045B 95306.13830318 -.00000026 00000-0 10000-3 0 2400
2 20620 65.2561 331.7515 0007760 48.2392 311.8821 2.13102550 42481
Glonass 46
1 20621U 90045C 95305.26672009 -.00000027 00000-0 10000-3 0 8345
2 20621 65.2752 331.8385 0011313 196.2299 163.7865 2.13101850 42461
Kristall
1 20635U 90048A 95307.12647714 .00004226 00000-0 62065-4 0 2140
2 20635 51.6455 181.8479 0003306 280.4019 79.9243 15.57915226308567
ROSAT
1 20638U 90049A 95305.28992372 .00000377 00000-0 43587-4 0 5045
2 20638 52.9907 249.7810 0013987 147.4144 212.7712 15.07287805297796
Meteor 2-19
1 20670U 90057A 95303.66876415 -.00000009 00000-0 -21270-4 0 9334
2 20670 82.5501 170.9641 0015773 176.4232 183.7044 13.84150057269855
CRRES
1 20712U 90065A 95305.90706335 .00000473 00000-0 60446-3 0 1806
2 20712 18.1440 343.3500 7192749 206.9714 82.5332 2.35628642 37739
GPS BII-08
1 20724U 90068A 95305.65125599 .00000070 00000-0 10000-3 0 9601
2 20724 54.8921 117.8434 0122630 175.5892 184.5614 2.00565025 36862
Feng Yun1-2
1 20788U 90081A 95307.05047280 -.00000027 00000-0 10000-4 0 6265
2 20788 98.8085 315.3665 0016477 55.2766 304.9867 14.01288789264287
Meteor 2-20
1 20826U 90086A 95306.84481393 .00000009 00000-0 -52221-5 0 9452
2 20826 82.5204 105.2342 0014901 75.1277 285.1536 13.83617154257409
GPS BII-09
1 20830U 90088A 95304.70306220 -.00000033 00000-0 10000-3 0 9721
2 20830 55.7969 60.3428 0067181 100.3532 260.4125 2.00558118 37488
GPS BIIA-10
1 20959U 90103A 95302.61428474 .00000058 00000-0 10000-3 0 9338
2 20959 55.0883 119.9831 0101580 230.4896 128.6578 2.00569638 36033
DMSP B5D2-5
1 20978U 90105A 95306.69380698 .00000117 00000-0 57024-4 0 3998
2 20978 98.6271 14.3624 0079725 120.8073 240.0967 14.32594402257143
Glonass 47
1 21006U 90110A 95305.76082080 .00000050 00000-0 10000-3 0 8070
2 21006 65.1103 92.4244 0057986 186.3994 173.5269 2.13102714 38147
Glonass 48
1 21007U 90110B 95302.66549679 .00000060 00000-0 10000-3 0 9307
2 21007 65.1303 92.5982 0036047 177.6933 182.3226 2.13101157 38063
Glonass 49
1 21008U 90110C 95305.84250922 .00000050 00000-0 00000+0 0 1453
2 21008 65.0960 92.4426 0008244 265.6820 94.2229 2.13098518 38122
```

```
AO-21
1 21087U 91006A 95306.90012289 .00000094 00000-0 82657-4 0 6462
2 21087 82.9395 129.9330 0036146 117.5703 242.9132 13.74560857238784
RS-12/13
1 21089U 91007A 95305.17473946 .00000067 00000-0 54839-4 0 8412
2 21089 82.9229 359.1848 0029243 147.7249 212.5694 13.74062012237586
MOP-2
1 21140U 91015B 95304.10027199 -.00000025 00000-0 10000-3 0 1145
2 21140 0.0911 31.8628 0005695 358.6198 44.1740 1.00279248 19300
Nadezhda 3
1 21152U 91019A 95306.88156057 .00000078 00000-0 67527-4 0 2612
2 21152 82.9226 314.1503 0040642 254.9313 104.7357 13.73525608232545
Glonass 50
1 21216U 91025A 95305.31044628 -.00000027 00000-0 10000-3 0 4527
2 21216 65.0079 331.4070 0006003 206.2665 153.7537 2.13102844 35649
Glonass 51
1 21217U 91025B 95306.31853025 -.00000027 00000-0 10000-3 0 8577
2 21217 64.9895 331.3749 0007693 212.8827 147.1289 2.13101549 35658
Glonass 52
1 21218U 91025C 95301.26792809 -.00000028 00000-0 10000-3 0 3328
2 21218 64.9920 331.5204 0007753 300.6477 59.3333 2.13102712 35556
GRO
1 21225U 91027B 95307.20545806 .00003023 00000-0 60099-4 0 3096
2 21225 28.4616 326.9467 0003421 164.7558 195.3181 15.43253305134821
Meteor 3-4
1 21232U 91030A 95306.14467027 .00000050 00000-0 10000-3 0 8445
2 21232 82.5449 174.0180 0014118 15.2615 344.8933 13.16469602217530
NOAA 12
1 21263U 91032A 95306.82008718 .00000077 00000-0 53497-4 0 6977
2 21263 98.5786 327.2673 0011950 213.0667 146.9765 14.22570761232134
OKEAN 3
1 21397U 91039A 95305.18141496 .00000248 00000-0 32291-4 0 1436
2 21397 82.5249 352.0933 0024811 62.9427 297.4305 14.76421584237571
GPS BIIA-11
1 21552U 91047A 95306.87424127 -.00000060 00000-0 10000-6 0 9077
2 21552 56.0906 58.0053 0067634 243.5189 115.7771 2.00556191 31712
ERS-1
1 21574U 91050A 95305.74565867 .00000032 00000-0 27960-4 0 2158
2 21574 98.5480 18.0916 0001121 66.6932 293.4369 14.32251826224746
UO-22
1 21575U 91050B 95305.17967097 .00000042 00000-0 28488-4 0 6417
2 21575 98.3821 13.0197 0006601 232.8509 127.2063 14.36997407225174
ORBCOMM-X
1 21576U 91050C 95304.20919915 .00000045 00000-0 30087-4 0 7363
2 21576 98.3803 10.3270 0002914 252.9967 107.0894 14.36407428224931
TUBSAT-A
1 21577U 91050D 95305.17143558 .00000033 00000-0 25620-4 0 6355
2 21577 98.3800 11.8160 0005453 236.4562 123.6110 14.36498724225106
SARA
1 21578U 91050E 95303.20593001 .00000312 00000-0 11471-3 0 8350
```

```
2 21578 98.4040 16.2149 0003989 236.7449 123.3345 14.39084921225110
TDRS 4
1 21639U 91054B 95303.00000000 .00000068 00000-0 10000-3 0 9606
2 21639 0.0433 65.6740 0001633 139.9215 17.9352 1.00271392109578
Meteor 3-5
1 21655U 91056A 95305.96621581 .00000051 00000-0 10000-3 0 8427
2 21655 82.5517 121.6575 0014365 24.0849 336.0927 13.16842784202639
UARS
1 21701U 91063B 95306.42252790 -.00000101 00000-0 12282-4 0 7141
2 21701 56.9815 302.7089 0005368 105.7361 254.4271 14.96446812226269
DMSP B5D2-6
1 21798U 91082A 95306.88280824 .00000017 00000-0 32499-4 0 495
2 21798 98.9590 318.9286 0012841 148.3085 211.8863 14.13925216202806
Glonass 53
1 21853U 92005A 95303.35677085 .00000060 00000-0 10000-3 0 470
2 21853 65.0472 92.1824 0007483 193.3613 166.6200 2.13102283 29205
Glonass 54
1 21854U 92005B 95303.64556169 .00000060 00000-0 10000-3 0 2069
2 21854 65.0497 92.1646 0015216 22.2285 337.8308 2.13103860 29194
Glonass 55
1 21855U 92005C 95305.11843823 .00000055 00000-0 00000+0 0 1990
2 21855 65.0535 92.1186 0008168 194.7203 165.2598 2.13101971 29218
JERS-1
1 21867U 92007A 95306.38752815 .00000062 00000-0 10000-4 0 7052
2 21867 97.7107 21.6695 0001538 80.1665 279.9103 14.98630991203746
GPS BIIA-12
1 21890U 92009A 95303.84346331 -.00000037 00000-0 10000-3 0 7164
2 21890 53.8720 236.1413 0056670 187.3725 172.5444 2.00566806 27025
GPS BIIA-13
1 21930U 92019A 95307.04278066 -.00000084 00000-0 10000-3 0 7033
2 21930 55.7242 357.7173 0035357 183.4784 176.5500 2.00560710 26017
EUVE
1 21987U 92031A 95305.15478021 .00000980 00000-0 35498-4 0 4953
2 21987 28.4312 282.5881 0009702 66.1962 293.9668 15.19507484188803
SAMPEX
1 22012U 92038A 95303.23406401 .00000691 00000-0 58240-4 0 6704
2 22012 81.6724 3.1362 0117322 205.7047 153.8307 14.91497822180804
GPS BIIA-14
1 22014U 92039A 95304.58942936 .00000007 00000-0 00000+0 0 6004
2 22014 54.8420 177.7430 0091581 320.4052 38.9081 2.00564710 17803
Glonass 56
1 22056U 92047A 95305.95616579 -.00000027 00000-0 00000+0 0 1099
2 22056 64.8408 331.4695 0006896 265.2421 94.7331 2.13103287 25325
Glonass 57
1 22057U 92047B 95305.31329637 -.00000028 00000-0 00000+0 0 995
2 22057 64.8506 331.5217 0007224 305.3578 54.6288 2.13102591 25289
Glonass 58
1 22058U 92047C 95304.31461061 -.00000029 00000-0 10000-3 0 551
2 22058 64.8275 331.5463 0008663 259.1888 100.7658 2.13103169 25314
TOPEX
```

```
1 22076U 92052A 95305.14570884 -.00000038 00000-0 10000-3 0 9170
2 22076 66.0410 328.4014 0007818 259.6734 100.3394 12.80930314150780
KO-23
1 22077U 92052B 95307.22039726 -.00000037 00000-0 10000-3 0 5329
2 22077 66.0838 304.6718 0001102 14.3229 345.7817 12.86293035151613
S80/T
1 22078U 92052C 95305.48498116 -.00000037 00000-0 10000-3 0 5294
2 22078 66.0849 307.0545 0002525 37.4466 322.6730 12.86576922151471
GPS BIIA-15
1 22108U 92058A 95307.04445966 -.00000064 00000-0 10000-3 0 6508
2 22108 54.1009 236.8178 0116262 153.7625 206.8433 2.00554151 23033
FREJA
1 22161U 92064A 95306.91567599 -.00000184 00000-0 -26360-4 0 5584
2 22161 62.9887 97.2588 0821804 358.7661 1.1312 13.21856044148388
LAGEOS II
1 22195U 92070B 95306.83045458 -.00000009 00000-0 10000-3 0 4435
2 22195 52.6371 135.3540 0137761 337.2806 22.1704 6.47294163 71556
GPS BIIA-16
1 22231U 92079A 95306.72985486 .00000023 00000-0 10000-3 0 6164
2 22231 54.6727 178.8623 0034565 283.2380 76.4638 2.00558942 21605
GPS BIIA-17
1 22275U 92089A 95304.88448921 .00000011 00000-0 10000-3 0 6433
2 22275 54.6315 176.4111 0040030 251.8499 107.8084 2.00569506 20979
TDRS 5
1 22314U 93003B 95307.16829528 -.00000293 00000-0 10000-3 0 5762
2 22314 2.1573 70.9636 0003746 180.0752 165.6028 1.00263965 10300
GPS BIIA-18
1 22446U 93007A 95304.95247618 -.00000034 00000-0 10000-3 0 6304
2 22446 54.3555 296.6981 0084282 353.3371 6.5544 2.00570687 19961
Glonass 59
1 22512U 93010A 95306.64322594 .00000039 00000-0 10000-3 0 7436
2 22512 65.0391 91.9326 0006188 176.5708 183.4208 2.13101962 20840
Glonass 60
1 22513U 93010B 95304.23583326 .00000059 00000-0 00000+0 0 8250
2 22513 65.0564 92.0163 0007834 184.7409 175.2535 2.13102318 20985
Glonass 61
1 22514U 93010C 95304.99855523 .00000055 00000-0 00000+0 0 8217
2 22514 65.0843 91.9824 0011610 181.9424 178.0395 2.13102255 21000
ASTRO-D
1 22521U 93011A 95304.78718287 .00000662 00000-0 40668-4 0 4475
2 22521 31.1051 87.4025 0056316 52.1851 308.3886 15.02532394147938
UFO F1
1 22563U 93015A 95303.07122276 .00000051 00000-0 00000+0 0 4689
2 22563 25.7572 292.2764 0009325 272.4689 85.0361 0.99249819 13791
GPS BIIA-19
1 22581U 93017A 95306.09218985 -.00000086 00000-0 10000-3 0 4740
2 22581 55.2266 357.2362 0057566 35.7807 324.6452 2.00569037 19045
ARSENE
1 22654U 93031B 95302.70194724 -.00000100 00000-0 10000-3 0 3369
2 22654 2.8182 79.8805 2885631 222.7781 110.8582 1.42203527 8303
```

```
GPS BIIA-20
1 22657U 93032A 95305.23158881 -.00000085 00000-0 10000-3 0 5430
2 22657 55.2346 357.1157 0073414 212.4137 147.1839 2.00559098 14351
RADCAL
1 22698U 93041A 95303.46727453 .00000066 00000-0 23485-4 0 4412
2 22698 89.5354 283.4473 0093000 359.1331 0.9684 14.21356768121656
GPS BIIA-21
1 22700U 93042A 95305.19520993 -.00000053 00000-0 10000-3 0 4672
2 22700 54.2722 237.6789 0042457 350.2963 9.6234 2.00568489 17157
NOAA 13
1 22739U 93050A 95305.86123174 -.00000063 00000-0 -99765-5 0 9211
2 22739 99.0080 254.9597 0010381 142.8549 217.3371 14.10945725114859
GPS BIIA-22
1 22779U 93054A 95303.78971084 -.00000028 00000-0 10000-3 0 5319
2 22779 54.4951 296.7876 0019989 255.0692 104.7485 2.00554249 15889
Meteor 2-21
1 22782U 93055A 95305.08666551 .00000064 00000-0 44779-4 0 4385
2 22782 82.5516 168.7078 0020775 261.2033 98.6774 13.83042066109469
UFO F2
1 22787U 93056A 95306.09780093 -.00000092 00000-0 00000+0 0 5568
2 22787 4.3881 325.4366 0003481 244.4702 298.4825 1.00266090 6547
SPOT 3
1 22823U 93061A 95306.24114061 -.00000044 00000-0 00000+0 0 4834
2 22823 98.7251 18.5340 0001174 53.8732 306.2554 14.20030116108881
STELLA
1 22824U 93061B 95305.19246758 -.00000031 00000-0 49334-5 0 4269
2 22824 98.6055 19.1901 0005637 176.0074 184.1152 14.27102747109276
AO-27
1 22825U 93061C 95306.23584530 .00000020 00000-0 25737-4 0 4299
2 22825 98.6072 20.6325 0007854 174.0075 186.1194 14.27677094109466
IO-26
1 22826U 93061D 95305.75885912 -.00000010 00000-0 13701-4 0 4281
2 22826 98.6078 20.2838 0008650 176.0859 184.0392 14.27784893109402
HEATHSAT
1 22827U 93061E 95305.20711404 .00000048 00000-0 37150-4 0 4897
2 22827 98.6052 19.6660 0009096 164.0958 196.0511 14.27912584109330
ITAMSAT
1 22828U 93061F 95305.16300813 .00000013 00000-0 22854-4 0 4067
2 22828 98.6039 19.7418 0009750 162.7010 197.4509 14.28117297 77424
PO-28
1 22829U 93061G 95304.75618358 .00000038 00000-0 32998-4 0 4201
2 22829 98.6006 19.3791 0009726 164.6585 195.4893 14.28098258109289
KO-25
1 22830U 93061H 95305.72731712 .00000004 00000-0 18836-4 0 4399
2 22830 98.5019 11.9601 0011842 137.4609 222.7491 14.28100306109421
GPS BIIA-23
1 22877U 93068A 95305.33386066 -.00000044 00000-0 10000-3 0 3389
2 22877 55.5279 58.3089 0026405 301.1487 58.5893 2.00568498 14808
METEOSAT 6
1 22912U 93073B 95306.59317822 -.00000102 00000-0 10000-3 0 3787
```

```
2 22912 0.5283 280.4403 0002143 328.4791 355.8685 1.00273499 5573
HST Array
1 22920U 90037C 95304.06238114 .00005617 00000-0 40074-3 0 3924
2 22920 28.4692 203.4794 0003442 212.6069 147.4243 15.02468523104754
Meteor 3-6
1 22969U 94003A 95304.82079007 .00000051 00000-0 10000-3 0 2070
2 22969 82.5548 62.3251 0016826 90.4782 269.8273 13.16732094 84863
TUBSAT-B
1 22970U 94003B 95306.82446783 .00000051 00000-0 10000-3 0 1993
2 22970 82.5554 60.8360 0017497 83.0470 277.2648 13.16826265 85137
GPS BIIA-24
1 23027U 94016A 95303.92086150 -.00000084 00000-0 10000-3 0 2759
2 23027 55.0736 359.1927 0066381 200.2260 159.5568 2.00564751 12084
Glonass 62
1 23043U 94021A 95304.13820505 -.00000030 00000-0 00000+0 0 2742
2 23043 64.7237 331.9291 0007372 201.0812 158.9406 2.13103017 12109
Glonass 63
1 23044U 94021B 95306.83636519 -.00000028 00000-0 00000+0 0 2457
2 23044 64.7139 331.8311 0031303 206.3597 153.5340 2.13103145 12168
Glonass 64
1 23045U 94021C 95304.19732130 -.00000030 00000-0 00000+0 0 2533
2 23045 64.7092 331.9343 0009718 30.0042 330.0977 2.13102426 12108
GOES 8
1 23051U 94022A 95304.92790153 -.00000270 00000-0 10000-3 0 4130
2 23051 0.2991 85.2988 0004100 128.9778 84.9811 1.00264930 13067
MSTI 2
1 23101U 94028A 95306.56841054 .00006883 00000-0 11639-3 0 2526
2 23101 97.0900 137.8806 0013580 86.0410 274.2396 15.51804035 83975
STRV-1A
1 23125U 94034B 95306.53443559 .00006858 00000-0 14523-2 0 2171
2 23125 7.5462 334.1026 7263199 233.3911 35.9604 2.31213668 10849
STRV-1B
1 23126U 94034C 95306.48113769 .00007770 00000-0 14178-2 0 1925
2 23126 7.5554 334.2857 7267722 232.9806 36.2890 2.30963557 10882
Nadezhda 4
1 23179U 94041A 95306.75174913 .00000097 00000-0 83992-4 0 1421
2 23179 82.9446 45.1612 0038082 40.4022 319.9948 13.75673484 65528
Glonass 65
1 23203U 94050A 95306.68131943 -.00000030 00000-0 00000+0 0 2116
2 23203 64.7738 211.7710 0007108 148.4525 211.6277 2.13101901 9554
Glonass 66
1 23204U 94050B 95305.97676164 -.00000033 00000-0 00000+0 0 2176
2 23204 64.7610 211.8205 0015019 346.4238 13.5750 2.13102065 9530
Glonass 67
1 23205U 94050C 95305.39030629 -.00000032 00000-0 00000+0 0 2037
2 23205 64.7732 211.8195 0001956 308.3680 51.6563 2.13102270 9529
DMSP B5D2-7
1 23233U 94057A 95306.51395466 .00000097 00000-0 76219-4 0 5474
2 23233 98.8613 3.2331 0013284 104.1757 256.0895 14.12650704 60680
OKEAN 1-7
```

```
1 23317U 94066A 95303.90769013 .00000135 00000-0 16990-4 0 1053
2 23317 82.5413 270.8513 0027601 106.8079 253.6154 14.73969879 56611
ELEKTRO
1 23327U 94069A 95300.27275183 -.00000107 00000-0 00000+0 0 974
2 23327 0.5292 258.1124 0003580 220.9028 90.3341 1.00272031 3659
RESURS 1-3
1 23342U 94074A 95306.16253873 .00001147 00000-0 20032-3 0 3768
2 23342 98.0003 3.2381 0001390 69.6341 313.3751 14.69786036 53310
Glonass 68
1 23396U 94076A 95304.76437424 .00000057 00000-0 00000+0 0 1631
2 23396 64.9939 92.0624 0030756 188.4359 171.5137 2.13102437 7350
Glonass 69
1 23397U 94076B 95305.40923914 .00000052 00000-0 00000+0 0 1699
2 23397 64.9847 92.0634 0011242 322.9672 36.9511 2.13102228 7361
Glonass 70
1 23398U 94076C 95303.88499496 .00000060 00000-0 00000+0 0 1771
2 23398 64.9742 92.0879 0001845 273.1761 86.8005 2.13101824 7342
LUCH (Altair-2)
1 23426U 94082A 95306.65102484 -.00000291 00000-0 00000+0 0 1942
2 23426 1.9110 271.5958 0001321 346.0315 113.2757 1.00267042 3222
RS-15
1 23439U 94085A 95304.20388452 -.00000039 00000-0 10000-3 0 886
2 23439 64.8197 35.0068 0166758 238.8804 119.5659 11.27524793 34853
NOAA 14
1 23455U 94089A 95306.82266956 .00000036 00000-0 44394-4 0 3795
2 23455 98.9160 248.3281 0009531 157.0184 203.1434 14.11544126 43379
ODERACS II A
1 23471U 95004C 95306.91228873 .00066760 12884-4 19742-3 0 2270
2 23471 51.6441 129.5646 0009611 272.6682 87.3234 15.92746608 43207
Glonass 71
1 23511U 95009A 95304.78372138 -.00000030 00000-0 00000+0 0 1147
2 23511 64.7372 332.1718 0008117 222.8053 137.1852 2.13103120 5080
Glonass 72
1 23512U 95009B 95303.96286028 -.00000031 00000-0 00000+0 0 1195
2 23512 64.7320 332.2149 0006811 303.7108 56.2744 2.13102365 5061
Glonass 73
1 23513U 95009C 95306.13309715 -.00000028 00000-0 00000+0 0 1317
2 23513 64.7351 332.1466 0014710 207.2451 152.7311 2.13102916 5113
SFU
1 23521U 95011A 95307.05878037 .00004578 00000-0 13744-3 0 1146
2 23521 28.4556 207.4701 0012852 354.8437 5.2048 15.31685338 35211
GMS 5
1 23522U 95011B 95306.24560451 -.00000302 00000-0 10000-3 0 711
2 23522 0.6777 304.0703 0001398 207.1462 118.3889 1.00267215 2164
DMSP B5D2-8
1 23533U 95015A 95306.87683757 .00000030 00000-0 40059-4 0 2774
2 23533 98.8365 307.3584 0007533 349.0772 11.0230 14.12709329 31534
Microlab 1
1 23547U 95017C 95303.51871392 .00000272 00000-0 94253-4 0 606
2 23547 69.9790 345.3264 0012012 157.9318 202.2330 14.45432777 30335
```

```
OFEQ 3
1 23549U 95018A 95306.77194375 .00023575 00000-0 65433-3 0 1417
2 23549 143.3675 286.9459 0242749 29.6540 331.7729 15.10402063 31908
GFZ-1
1 23558U 86017JE 95306.84238266 .00003949 00000-0 52562-4 0 728
2 23558 51.6524 179.2008 0007081 95.5448 264.6353 15.60821518554488
ERS-2
1 23560U 95021A 95306.74568189 .00000091 00000-0 50047-4 0 1312
2 23560 98.5461 19.0872 0001258 62.7548 297.3757 14.32254395 28015
Spektr
1 23579U 95024A 95307.12647714 .00004226 00000-0 62065-4 0 1733
2 23579 51.6455 181.8479 0003306 280.4019 79.9243 15.57915226 26047
GOES 9
1 23581U 95025A 95306.57258611 -.00000201 00000-0 10000-3 0 807
2 23581 0.2727 271.1129 0003526 339.0947 267.5828 1.00272184 1647
Helios 1A
1 23605U 95033A 95306.93529901 .00000175 00000-0 42493-4 0 1112
2 23605 98.0992 241.1597 0001124 66.5511 293.5804 14.63844471 17300
UPM SAT 1
1 23606U 95033B 95304.85370611 .00000069 00000-0 20868-4 0 836
2 23606 98.0794 239.4370 0005385 176.7714 183.3526 14.66903389 17092
CERISE
1 23607U 95033C 95305.24299782 .00000221 00000-0 47812-4 0 377
2 23607 98.0788 239.8635 0006763 183.4813 176.6344 14.67167420 17160
TDRS 6
1 23613U 95035B 95306.30590856 .00000114 00000-0 00000+0 0 778
2 23613 0.2040 84.1773 0002465 176.9225 99.5330 1.00274577 1106
Glonass 74
1 23620U 95037A 95305.44829643 -.00000032 00000-0 00000+0 0 625
2 23620 64.8338 211.6395 0018193 166.9699 193.1161 2.13102703 2139
Glonass 75
1 23621U 95037B 95305.15549728 -.00000031 00000-0 00000+0 0 705
2 23621 64.8400 211.6540 0017593 178.5622 181.4794 2.13102182 2122
Glonass 76
1 23622U 95037C 95304.27556959 -.00000025 00000-0 00000+0 0 648
2 23622 64.8311 211.6914 0036594 164.7243 195.4299 2.13102308 2100
Prognoz-M2
1 23632U 95039A 95306.24599238 -.00002999 00000-0 00000+0 0 155
2 23632 66.1860 255.5141 9089885 316.7368 9.1270 0.26335357 248
SICH-1
1 23657U 95046A 95303.85094204 .00000176 00000-0 23461-4 0 275
2 23657 82.5339 52.5614 0029543 76.7970 283.6530 14.73424787 8919
Soyuz TM-22
1 23665U 95047A 95307.12647714 .00004226 00000-0 62065-4 0 654
2 23665 51.6455 181.8479 0003306 280.4019 79.9243 15.57915226 9482
1995052A
1 23676U 95052A 95306.94126907 .00050122 -48478-6 36779-3 0 248
2 23676 82.9403 67.3790 0375234 348.7090 10.5884 15.16091481 4207
1995052B
1 23677U 95052B 95306.90509785 .00062769 -20863-6 38227-3 0 310
```

```
2 23677 82.9426 67.3300 0379733 349.3040 10.0235 15.18383954 4206
Progress M-29
1 23678U 95053A 95307.12647714 .00004226 00000-0 62065-4 0 295
2 23678 51.6455 181.8479 0003306 280.4019 79.9243 15.57915226 3963
1995053B
1 23679U 95053B 95283.51479976 .10010060 12476-4 42419-3 0 125
2 23679 51.6729 299.9679 0007889 94.0130 42.2228 16.43076460 264
1995054A
1 23680U 95054A 95306.27201729 -.00000129 00000-0 00000+0 0 303
2 23680 3.0427 276.2116 0006614 351.9718 307.5213 1.00276986 182
1995054D
1 23683U 95054D 95285.37956904 -.00000245 00000-0 10000-3 0 28
2 23683 3.1084 276.2352 0018072 357.2443 334.2168 1.00234693 08
1995054E
1 23684U 95054E 95305.89468555 .00002353 00000-0 79940-3 0 130
2 23684 47.4435 269.6266 7286049 5.7217 359.2697 2.26909860 482
1995054F
1 23685U 95054F 95305.93142210 .00000576 00000-0 53593-3 0 112
2 23685 47.5173 269.7128 7268194 5.5983 359.2684 2.26486896 485
1995055A
1 23686U 95055A 95297.84929528 -.00000033 00000-0 00000+0 0 119
2 23686 0.1558 201.6484 0291663 181.4046 321.2305 1.03555544 00
1995055B
1 23687U 95055B 95301.28990252 -.00000167 00000-0 00000+0 0 35
2 23687 4.7598 202.6014 7257737 190.8008 133.3875 2.20181286 190
STS 73
1 23688U 95056A 95307.21971007 .00142886 14123-4 20849-3 0 602
2 23688 39.0118 23.8479 0007351 6.9784 353.1084 16.04274631 2194
1995057A
1 23696U 95057A 95302.29736200 .00000042 00000-0 00000+0 0 132
2 23696 5.2812 322.3842 0216536 180.8696 190.5756 1.00680357 26
1995057B
1 23697U 95057B 95306.12420760 .00006665 00000-0 16878-2 0 62
2 23697 27.0115 317.5332 6717758 183.9442 165.0675 3.01327056 323
1995050C
1 23699U 95050C 95306.04023234 .58323595 -18345-5 94714-3 0 298
2 23699 82.2994 158.4204 0001386 288.2909 71.7199 16.48532632 2135
1995050D
1 23700U 95050D 95303.62359003 .24422139 -15151-5 24061-2 0 238
2 23700 82.2935 161.2627 0007338 328.1838 32.3641 16.38268279 5480
1995050E
1 23701U 95050E 95307.13174957 .01277357 60435-3 51141-2 0 238
2 23701 82.3098 157.7455 0123879 305.3518 53.6640 15.75538524 5974
1995050F
1 23702U 95050F 95307.21911018 .01350132 76825-3 43263-2 0 256
2 23702 82.3088 157.5472 0092864 303.8974 55.3486 15.84207303 5996
1995058A
1 23704U 95058A 95305.62020989 -.00000029 00000-0 10000-4 0 34
2 23704 71.0212 29.4202 0002024 81.7310 278.4471 14.12552991 112
1995058B
```

```
1 23705U 95058B 95305.90230737 -.00000047 00000-0 00000+0 0 45
2 23705 71.0116 28.8384 0005509 125.7558 234.4055 14.14135666 156
1995058C
1 23706U 95058C 95306.22635954 -.00000041 00000-0 00000+0 0 35
2 23706 71.0034 28.1654 0201493 68.8878 290.9410 13.71660163 194
1995058D
1 23707U 95058D 95306.22822545 -.00000041 00000-0 00000+0 0 30
2 23707 71.0004 28.1147 0205067 91.2927 271.1670 13.70142415 198
1995058E
1 23708U 95058E 95305.49637701 -.00000041 00000-0 00000+0 0 37
2 23708 71.0525 30.1202 0187536 72.4322 289.7228 13.74255643 132
1995058F
1 23709U 95058F 95306.88244730 -.00000041 00000-0 00000+0 0 49
2 23709 71.0424 27.3301 0199586 96.1566 266.2315 13.72042752 286
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

2257. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: Brian Zeiler <bdzeiler@students.wisc.edu>
Message-ID: <47f3bi$110c@news.doit.wisc.edu>
Source record: 23908
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

gksmiley@aol.com (GK Smiley) wrote:
>Brian, uh, hello. . . .Brian? I think what Oberg was saying is that it
>wasn't the Air Force group that championed the Tremonton films, but a Navy
>group. And you didn't even catch on that he had --again-- showed you up
>for a spouting ignoramus. You are so darned SINCERE that what you imagine
>happened REALLY happened, it's touching.

You're getting worse than Dean. At any rate, I found out tonight that BOTH Oberg and I are right. I was right that the analysis was performed under the direct command and control of Bluebook. Oberg was right because a Navy group of scientists analyzed the footage -- at the request of Bluebook.

Nevertheless, they ruled they were not birds. It's easy to rule out birds because of the perfect positioning relative to each other across a large portion of sky, which doesn't happen, but mostly because on a sunny day, it's easy to tell when something crossing a large portion of sky is self-luminescent or reflecting sunlight. Plus, NO BIRDS have such a high albedo. And Dr. J. Allen Hynek also said that the Robertson Panel hastily slapped the bird explanation on the film because, of course, it *had* to be something terrestrial, evidence to the contrary be damned.

Just like a gullible debunker nut to dredge up skeptic fantasies that were debunked decades ago by objective analysis.

--
Brian Zeiler

2258. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: jamesoberg@aol.com
Message-ID: <47g9lo$ldl@newsbf02.news.aol.com>
Source record: 23909
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Sure they were birds (IMHO) -- look at all the birdbrains that still are impressed with them. If you want to discuss this further, move it over to alt.alien.visitors where it has always belonged, and stop rampaging through a newsgroup that isn't interested.

2259. VHF Communications Magazine

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: Michael J Wooding <vhf-comm@g6iqm.demon.co.uk>
Message-ID: <665356493wnr@g6iqm.demon.co.uk>
Source record: 23910

Hi there,

Yes I am afraid its me again - but initiating my own thread!!!

I now I cannot compete with HRT - heaven forbid! - but for all those
who might be interested we have arrived on the Web!

Our Web pages can be found at:

http://www.taynet.co.uk/~gdx/ag/vhfcomm.htm

Initially our pages are quite simple, in order to guage response etc.
So, please let me have your comments (not too unkind please!) and
suggestions and I will see what can be done.

Even better - how about subscribing!!!!!!

73 ... Mike
--
Michael J Wooding vhf-comm@g6iqm.demon.co.uk
CompuServe: 100441,377
Tel: (0)1788 890365 Fax: (0)1788 891883
KM Publications, 5 Ware Orchard, Barby, Nr.Rugby, CV23 8UF, UK
VHF Communications Magazine - Especially Covering VHF, UHF and Microwaves

2260. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: Brian Zeiler <bdzeiler@students.wisc.edu>
Message-ID: <47gh20$mri@news.doit.wisc.edu>
Source record: 23911
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

gksmiley@aol.com (GK Smiley) wrote:
>Zeiler: <<Nevertheless, they ruled they were not birds.>>
>
>Brian, in words of one syllable, have somebody ELSE waste
>their time telling you that judges, not scientists, "rule" on
>things. By misuse of that word, you again show you haven't
>a clue about how science attempts to explicate reality.

If that's your best defense for the bird hypothesis, then the case is
closed on this newsgroup. Maybe it would make you happy if I said
"concluded" or "determined" instead of "ruled".

--
Brian Zeiler

2261. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: Brian Zeiler <bdzeiler@students.wisc.edu>
Message-ID: <47gh4a$mri@news.doit.wisc.edu>
Source record: 23912
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

gksmiley@aol.com (GK Smiley) wrote:
>Zeiler: << Oberg was right
>because a Navy group of scientists analyzed the footage...>>
>
>There you go again, you helpless, hapless naif. Where did
>Oberg ever say that Navy SCIENTISTS were involved. YOU
> made up that claim because YOU can't keep your boundless
> imagination distinguished from hard reality.

Sorry, but Bluebook had scientific consultants. These weren't drill
sergeants analyzing films.

--
Brian Zeiler

2262. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: kc1mn@aol.com
Message-ID: <47ghgk$nmf@newsbf02.news.aol.com>
Source record: 23913

I have been using the Multifax card and software for 3 years and am very, very satisfied. Good luck and enjoy whatever you choose. 73, keith

2263. ARLK059 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk059.1995@ampr.org>
Source record: 23914
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK059
ARLK059 Keplerian data

ZCZC SK84
QST de W1AW
Keplerian Bulletin 59 ARLK059
From ARRL Headquarters
Newington, CT November 4, 1995
To all radio amateurs

SB KEP ARL ARLK059
ARLK059 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-73
1 23688U 95056A 95307.58333333 -.00001730 54681-5 00000+0 0 628
2 23688 39.0130 21.4023 0007249 7.2737 295.9616 16.04283348 2240
STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95307.25471847 .00009350 00000-0 12914-3 0 03661
2 16609 51.6464 181.2045 0003301 279.1865 80.8772 15.57927130554631
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95307.08812857 .00000023 00000-0 85070-5 0 1293
2 18129 82.9250 316.4000 0013431 66.2758 293.9801 13.72358256419029
UO-11
1 14781U 84021B 95307.51326635 .00000111 00000-0 26488-4 0 8388
2 14781 97.7871 303.5531 0012931 94.8689 265.3993 14.69393749624365
RS-12/13
1 21089U 91007A 95307.21364728 .00000019 00000-0 41230-5 0 08527
2 21089 82.9229 357.6725 0029474 142.0839 218.2396 13.74061705237863
AO-13
1 19216U 88051B 95304.38706202 .00000239 00000-0 15756-3 0 1038
2 19216 57.4524 155.7574 7338361 22.7620 357.7609 2.09721719 25026
```

```
UO-14
1 20437U 90005B 95307.19320215 .00000026 00000-0 26964-4 0 01549
2 20437 98.5617 29.2845 0011043 145.2766 214.9139 14.29901860301614
RS-15
1 23439U 94085A 95307.21947869 -.00000039 00000-0 10000-3 0 01042
2 23439 64.8191 30.1300 0166677 238.4048 120.0511 11.27524743035195
AO-16
1 20439U 90005D 95307.22966712 .00000004 00000-0 18291-4 0 09440
2 20439 98.5733 31.1814 0011125 146.1483 214.0408 14.29956283301631
DO-17
1 20440U 90005E 95307.20442348 .00000033 00000-0 29776-4 0 09446
2 20440 98.5755 31.6827 0011369 145.1551 215.0383 14.30098095301656
WO-18
1 20441U 90005F 95307.18950892 .00000035 00000-0 30440-4 0 09590
2 20441 98.5749 31.6271 0011693 145.9398 214.2537 14.30068695301655
LO-19
1 20442U 90005G 95307.20227432 .00000055 00000-0 38076-4 0 09495
2 20442 98.5765 32.0477 0012183 145.6229 214.5741 14.30173481301674
FO-20
1 20480U 90013C 95307.18869177 -.00000044 00000-0 -16199-4 0 08559
2 20480 99.0646 9.8912 0539920 278.7643 75.2701 12.83231313268773
AO-21
1 21087U 91006A 95307.04570628 .00000094 00000-0 82657-4 0 06509
2 21087 82.9394 129.8254 0036073 117.1251 243.3583 13.74560841238801
UO-22
1 21575U 91050B 95307.19893629 .00000013 00000-0 18665-4 0 06537
2 21575 98.3820 14.9854 0006611 224.8641 135.2008 14.36997477225469
KO-23
1 22077U 92052B 95307.22039726 -.00000037 00000-0 10000-3 0 5329
2 22077 66.0838 304.6718 0001102 14.3229 345.7817 12.86293035151613
KO-25
1 22828U 93061F 95307.19481156 .00000056 00000-0 40059-4 0 04178
2 22828 98.6035 21.7425 0009741 156.7275 203.4339 14.28118008077719
IO-26
1 22826U 93061D 95307.23050775 .00000003 00000-0 18981-4 0 04362
2 22826 98.6077 21.7335 0008632 171.5369 188.5954 14.27785137109613
AO-27
1 22825U 93061C 95307.21701864 .00000009 00000-0 21250-4 0 04348
2 22825 98.6070 21.5981 0007991 170.6835 189.4484 14.27677123109607
PO-28
1 22829U 93061G 95307.20839455 .00000034 00000-0 31229-4 0 04388
2 22829 98.6006 21.7942 0009870 157.3302 202.8313 14.28098533109635

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
November 7, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2264. NORAD Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-11-04 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.815453834@cougar>
Source record: 23915

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated daily) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2265. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-05 00:00:00 UTC
From: ronemus@postoffice.ptd.net
Message-ID: <DHK5o2.BF9@postoffice.ptd.net>
Source record: 23775
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

gksmiley@aol.com (GK Smiley) wrote:

>Zeiler: << Oberg was right
>because a Navy group of scientists analyzed the footage...>>

>There you go again, you helpless, hapless naif. Where did
>Oberg ever say that Navy SCIENTISTS were involved. YOU
> made up that claim because YOU can't keep your boundless
> imagination distinguished from hard reality. Oberg said it
>was Navy analysts, or a Navy team, as I recall, and YOU
>jumped to the conclusions they were "scientists", and then
>attributed that misjudgment to Oberg. How many YEARS of
> practice is it going to take to make you a reliable, rational
>thinker? The only real scientist who looked at the Tremonton
>film later was William Hartmann, and from analysis and from
>examples of bird flight he personally observed, he concluded
>these were birds.

I suggest all conclusion jumpers be outfitted with bungee cords at all
times. :)

2266. Need Radio-FT-757 GXII

Newsgroup: rec.radio.amateur.space
Date: 1995-11-05 00:00:00 UTC
From: niteeye2@aol.com
Message-ID: <47hskg$52b@newsbf02.news.aol.com>
Source record: 23776

Help,

I am just starting in the ham world, and wish to buy or trade for an FT 757-GXII...
Please email me if you want to sale or trade one, I will trade a brand new night vision unit(cost $685.00) for it.

NITE EYE2@aol.com

Thanks...

2267. Re: Best SW Radio?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-05 00:00:00 UTC
From: "rec.radio.shortwave" <101323.1513@CompuServe.COM>
Message-ID: <47ikm5prt1@mhafc.production.compuserve.com>
Source record: 23777
Cross-posted to: rec.radio.amateur.space,rec.radio.shortwave

I own a SONY SW 77 and listen a lot of far situated channels, like
Africa Australia, and so on it a practical set that you can carry
with you on trips the built in antenna is not bad , I can listen
to radio amateurs also.For the price I find it OK, of copurse it
is not as good as ICOM 77 but it is cheaper and portable... tou
can program a 100 channels with their names appearing in clear.
ERIC CASSIS FRANCE

2268. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-05 00:00:00 UTC
From: gufon@ix.netcom.com
Message-ID: <47ii1p$jto@ixnews6.ix.netcom.com>
Source record: 23778
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <47g682$kg2@newsbf02.news.aol.com> gksmiley@aol.com (GK Smiley)
writes:
>
>Zeiler: <<Nevertheless, they ruled they were not birds.>>
>
>Brian, in words of one syllable, have somebody ELSE waste
>their time telling you that judges, not scientists, "rule" on
>things.

-GeeKy, please list the forces which cause you to feel compelled to harrass Brian. He didn't select the "judges" and apparently they were deemed appropriate at the time, for whatever reason. No one would miss you if you stopped responding as no one cares if you're here to begin with. Unless, of course you're speaking for Oberg in which case you should also stop as he's here to answer for himself.-

2269. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-05 00:00:00 UTC
From: gufon@ix.netcom.com
Message-ID: <47ii92$n3o@ixnews4.ix.netcom.com>
Source record: 23779
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <47g9lo$ldl@newsbf02.news.aol.com> jamesoberg@aol.com (JamesOberg)
writes:
>
>Sure they were birds (IMHO) -- look at all the birdbrains that still
are impressed with them.

-Everyone, that was an attempt at being witty. Officer Oby, you're
better at counting your words than providing the accompanying comedy.-

2270. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-05 00:00:00 UTC
From: skrepped@oslonett.no
Message-ID: <47i458$rj0@sinsen.oslonett.no>
Source record: 23780
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <47g682$kg1@newsbf02.news.aol.com>,
GK Smiley <gksmiley@aol.com> wrote:
>Zeiler: << Oberg was right
>because a Navy group of scientists analyzed the footage...>>
>
>There you go again, you helpless, hapless naif. Where did

>Oberg ever say that Navy SCIENTISTS were involved. YOU
>made up that claim because YOU can't keep your boundless
>imagination distinguished from hard reality. Oberg said it
>was Navy analysts, or a Navy team, as I recall, and YOU
>jumped to the conclusions they were "scientists", and then
>attributed that misjudgment to Oberg .... (snip)

Gentlemen, please, please stop this thread now or go away,
at least from sci.space.shuttle!

Yours sincerely,

J. Andersen
Norway (Home of trolls, UFO's etc.)

2271. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-05 00:00:00 UTC
From: rogerh@cris.com
Message-ID: <rogerh.497.0007A446@cris.com>
Source record: 23781

>I have been using the Multifax card and software for 3 years and am very,
>very satisfied. Good luck and enjoy whatever you choose. 73, keith

Just wondering why anyone would use "Multifax" in the advent of the incredible
weather servers found on the net?

Pete

2272. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Nov6.012659.19157@ke4zv.atl.ga.us>
Source record: 23782
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <1995Nov1.154312.2097@nb.rockwell.com> manfredi@engr04.comsys.rockwell.com writes:
>In article <475amr$6pi@unogate.unocal.com>, stgprao@sugarland.unocal.COM (Richard Ottolini) writes:
>>Then take our own solar system as a disappointing example.
>>Life on appears to be on one of thirty planet-size bodies.
>>Life larger than some slime only appear in the last 10% of
>>the earth's history, and things crawling on the visible land
>>5% of earth's history.
>
>I'm not sure what you're trying to say.
>
>The sensible way to look at this is that this is one solar system of
>100 billion in this galaxy alone. That's one in 100,000,000,000. And
>we know that there are 100s of billions of galaxies. We also now know
>that planets do exist out there, around other suns. At least some do.
>
>So, no matter how slim the chance for life is, with that kind of
>immensity one has to be awfully near-sighted to think there cannot be
>life elsewhere. The sheer numbers make it almost certain.

There are approximately 10^23, that's 1 followed by *23* zeros, ways for carbon and hydrogen atoms to combine. Only 4 of those combinations are precursors to self-replicating life. If life arose from a purely random combination of those elements, then "billions and billions" of stars aren't enough to make it likely it happened twice.

Now it *appears* that those precursor combinations are preferred states, so that the odds are actually much better, indeed almost a certainty. But we can't be *sure* of that from Earthly evidence because Earth's hydrocarbons have all been contaminated in the course of 4 billion years of life. We need to see a non-Earthly lifeform before we can be sure that the odds are actually good for life to arise elsewhere.

And even if life is likely elsewhere, we have no idea what the probability is for that life to have evolved intelligence and the handling of tools. We know it happened *once*, but we don't know what the odds are of it happening twice. It could be that the sequence of events that led to us is a 1 in 10^100 chance. If that's true, we're alone. If the odds are as good as 1 in 10^9, however, we likely aren't alone in the universe, but we may still be alone in this galaxy. If the odds are 1 in 10,

then the galaxy is teeming with life like us. I find that
rather unlikely, however. LIfe may be common, but life that
is tool using and intelligent doesn't seem as inevitable a
result of evolution.

More data points would allow us to extrapolate a curve, but
one data point tells us almost nothing. All it says is that
intelligent life is *possible*, but says nothing about whether
it is a 1 in 10^100 fluke, or a 1 to 1 dead certainty.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

2273. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: ae517@FreeNet.Carleton.CA
Message-ID: <DHMGC0.5pL@freenet.carleton.ca>
Source record: 23783

Pete (rogerh@cris.com) writes:
>>I have been using the Multifax card and software for 3 years and am very,
>>very satisfied. Good luck and enjoy whatever you choose. 73, keith
>
> Just wondering why anyone would use "Multifax" in the advent of the incredible
> weather servers found on the net?

I don't know about "dyed-in-the-wool" wxsat enthusiasts, but the same
question could be asked of amateur satellite users. Why bother when you
can pick up the phone? 'cuz it's FUN!

2274. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: alexlane@csn.net
Message-ID: <47l8ma$g9j@news-2.csn.net>
Source record: 23784
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Joe LeSesne (raver909@telerama.lm.com) wrote:

: I'll buy that but if it was simply space debris then why were there no
: further communication. You'd think that if that were the case then
: Houston would have responded with "Yeah that's part of a XYZ stage" or
: the Shuttle having identified it would have said, "Yeah that UFO was ice
: crystals from an experiment we did" etc..

Do you believe the NASA Select feed comprises all ground-to-air
communications during a Shuttle mission? If so, you seriously
underestimate the scope of the communications required for such a mission.

Cheers...
+---+
finger/email: alexlane@csn.net | voice: (970) 731-3051; fax -3058
Pagosa Springs, Colorado, USA | bbs: (970) 731-3064
PGP 2.7 fingerprint: 7F DB 06 E2 47 84 79 B4 32 3C A9 48 65 AA 5B C2
<A HREF="http://www.csn.net/~alexlane">Home page for Alex Lane</A>
+---+

2275. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: donr@mdsroc.com
Message-ID: <47l5qa$iat@mdsroc.com>
Source record: 23785

In article <47ghgk$nmf@newsbf02.news.aol.com>, kc1mn@aol.com says...
>
>I have been using the Multifax card and software for 3 years and am very,
>very satisfied. Good luck and enjoy whatever you choose. 73, keith

I have used the multifax card and receiver with excellent results. There
are some other systems that do work but not with the same resolution or
stability. For the extra bucks you can't go wrong. Try their BBS at:

1-(716) 425-8759

See them at DAYTON.

Beware the cheep solution.

--
Don Russ Microwave Data Systems, Rochester, NY
Advanced Development Engineer a California Microwave Co.
N2CZL@WB2PSI.wny.ny.usa.na donr@mdsroc.com

2276. WTB: SatTrack IV or Trackbox

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: rubenc@iglou2.iglou.com
Message-ID: <DHMr0y.M7v@iglou.com>
Source record: 23786
Cross-posted to: rec.radio.swap,rec.radio.amateur.space

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

2277. STS-74 Prelaunch KEPS?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: bourkee@aol.com
Message-ID: <47lg7a$1ld@newsbf02.news.aol.com>
Source record: 23787

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

2278. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: billh@gn2.getnet.com
Message-ID: <1995Nov6.205142.18076@schbbs.mot.com>
Source record: 23788

In article <rogerh.497.0007A446@cris.com>, <rogerh@cris.com> writes:

> Just wondering why anyone would use "Multifax" in the advent of the incredible
> weather servers found on the net?
>
>
>
> Pete

For me, it has been for the fun and challenge of doing it directly plus the extra things like color thermal overlays that my software allows me to do that I could not do with a downloaded image.

73,
Bill W7JSW

2279. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: rogerh@cris.com
Message-ID: <rogerh.500.000617C8@cris.com>
Source record: 23789

>In article <rogerh.497.0007A446@cris.com>, <rogerh@cris.com> writes:

>> Just wondering why anyone would use "Multifax" in the advent of the
>incredible
>> weather servers found on the net?
>>
Pete

>For me, it has been for the fun and challenge of doing it directly plus the
>extra things like color thermal overlays that my software allows me to do that
>I could not do with a downloaded image.

>73,
>Bill W7JSW

ok Bill, I can accept that...but...You CAN overlay and enhance any downloaded
pic from the net. BTW...IU/Purdue uni has ALL pics from Sat to nexrad etc and
many are already enhanced. I guess they took the fun out. :))

Pete

2280. Re: Eldico 1000F Linear Amp from the 1960's

Newsgroup: rec.radio.amateur.space
Date: 1995-11-06 00:00:00 UTC
From: buch@exis.net
Message-ID: <47m6n8$ao5@grouper.Exis.Net>
Source record: 23790

"John T. Young" <jtyoung@u.washington.edu> wrote:

>Anybody out there have one of these classics: Eldico SSB-1000F Linear
>amplifiers? I'm experiencing a peculiar problem with mine and would
>appreciate some insights. If you have any familiarity with this almost
>antique, please contact me. Many thanks, John, KI7JB.
>jtyoung@u.washington.edu

Maybe I can help. Is this the amplifier with a
pair of 4CX250's and a small 1 inch CRT for
monitoring the RF trapezoidal waveform?? I worked
as a student engineer for Eldico during the
summers of 1954,1955, and 1956. At the time I
assembled the first production prototype of an
amplifier as described which I remember being
shipped to General Curtis LeMay or Arthur Godfrey
for some early SSB demos to the USAF. What is
your specific question?? Why was this posted to a
space oriented newsgroup?? The amplifier is for
HF.

~*-.,_,.-*~'^'~*-.,_,.-*~'^'~*-.,_,.-*~'
Joe Buch N2JB
Editor, NASWA Journal Technical Topics
buch@exis.net
-*~'^'~*-.,_,.-*~'^'~*-.,_,.-*~'^'~*-.,_

2281. Re AO-13 400bps psk

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: Danie Brynard <danie.brynard@pixie.co.za>
Message-ID: <47mo8k$1r2@foible.pix.za>
Source record: 23791

I am looking for any information on the 400bps PSK modem beacon on
AO-13. Does somebody perhaps have a scanned file of one of the
articles that were published in the magazines a few years ago ?

Danie

2282. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: cas@ops1.bwi.wec.com
Message-ID: <cas.350.00595E68@ops1.bwi.wec.com>
Source record: 23792
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <1995Nov1.193846.5228@nb.rockwell.com> manfredi@engr04.comsys.rockwell.com (Albert E. Manfredi) writes:
>From: manfredi@engr04.comsys.rockwell.com (Albert E. Manfredi)
>Subject: Re: STS-73 Sees UFO
>Date: Wed, 1 Nov 1995 19:38:46 GMT

>In article <cas.331.00E314BF@ops1.bwi.wec.com>, cas@ops1.bwi.wec.com (Bob Casanova) writes:

>>We still have absolutely *no* data regarding how long it takes on the
>>average, nor on what percentage of planets it's likely to happen at all. A
>>sample of one is *not* statistically valid, except to show it's not impossible.

>True, all true. But we have more information than that.

>We know that the same chemistry we have here is also present elsewhere
>in the universe, from spectrographic data. We know that Carbon is a great
>element on which to base the complicated molecules needed to form life,
>because it has the +/- 4 valence and because it is still relatively light,
>which promotes stronger molecules.

>We know that carbon-based, complicated molecules (i.e. "organic") stay
>together in a certain temperature range.

>So we have certain parameters within which we can speculate that "life"
>might evolve (or, for those who must see this in a religious vein,
>environments in which God could create life).

>So, basically, the questions are these:

>1. Do we really believe that in the unfathomable vastness of the universe
>we are the _only_ planet with the attributes needed to support carbon-based
>molecules?

>2. Assuming that the answer to #1 is obvious to most people, do we really
>think that we are so unbelievably lucky to be the _only_ planet in trillions
>to have generated life forms?

Belief is outside the purview of science. You can believe that the probability of life is large, small, or anything in between, but the only real data you have comes from the solar system, and specifically from this planet. The fact that the same elements are present throughout the observable universe does *not* mean that the same results occurred everywhere, or even anywhere. Like you, I believe that life almost certainly exists elsewhere, but I refuse to try to justify that belief by attempting to generate probabilities from insufficient data. Since we have only speculation regarding the origin of life

here, there is no way we can project events here on to the universe at large.

>Bert
>manfredi@engr05.comsys.rockwell.com

Bob C.

* Good, fast, cheap! (Pick 2) *

2283. WinOrbit 2.7 (tracking software) available

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: Carl Gregory <cgregory@uiuc.edu>
Message-ID: <47o7i6$67b@vixen.cso.uiuc.edu>
Source record: 23793

The latest version of WinOrbit (2.7) is now available on oak.oakland.edu
and ftp.amsat.org. It may be available soon on ftp.seds.org, also.

This program is free (although a plug for donations to the AMSAT Phase
IIID program is included). A description of changes, and an overview of
the program, are given below:

New Features in version 2.7
----
* Full state vector information (including velocity components)
in both EFG and ECI coordinate systems. Import state vector
files.
* Alternate satellite information databases such as "The
Satellite Encyclopedia" may now be accessed directly.
* "Phase" information group in the Info Window is now the "Orbit"
group, and includes the Squint Angle.
* Crude calculation of spacecraft antenna and observer antenna
pattern loss. Groundplane, turnstile, isotropic, and
steerable antennas are supported.
* New window arrangement option: "Stack", in the Window Menu.
* The lines of latitude and longitude can now be turned off to
create cleaner maps for export.
* Improved timekeeping for real time mode on slow computers.

Bug fixes in 2.7
----
* Orbit number (Rev) and Mean Anomaly (MA) now updated properly
with SGP/SGP4 models.
* Updating of Keplerian Elements with SGP/SGP4 models improved.
* Fixed crash when Sun or Moon selected while using non-USA date
formats.
* Fixed bug preventing proper element update after propagation
to specified epoch.

Program Overview

WinOrbit is a program for computing artificial Earth-satellite
position and visibility, with the Amateur Radio satellite
operator in mind. It was written for the Microsoft Windows 3.1
operating system. WinOrbit is free (not shareware). The
latest version is 2.7.

The principal feature of the program is a series of tracking
windows, one per satellite, which display the current position of
the satellite and the observer on a simple world map, together
with information such as footprint, past ground track, bearing

(azimuth), distance, and elevation above the observer's horizon.

Additional features include:
* Simultaneous tracking of up to 20 satellites.
* Sun/Moon tracking built in.
* Real-time, pseudo-real-time, and manual calculation modes.
* "View from space" map presentation showing what a particular satellite sees.
* Selectable tracking detail, including doppler shift, free-space path loss, satellite and observer antenna pattern effects for a single satellite.
* Display sun position for eclipse determination, and other observers for mutual visibility.
* "Show DX" for all stations within the satellite footprint, and "what's up" for all satellites visible at observer QTH.
* 4 different orbital calculation algorithms (selectable).
* Tracking data (Keplerian element sets) read directly from standard, off-the-air bulletins in three different formats (up to 500 satellites). No pre-processing is needed, just grab a bulletin file, headers and all. Reads AMSAT, NASA or vector formats.
* Propagation of pre-launch keps and other element updates.
* Utility functions for modifying and comparing published element sets, including post-launch updating of pre-launch elements, and saving composite data files compiled from various sources.
* Observer (QTH) data (latitude, longitude) may be imported from a simple text database (up to 1000 locations). Entry by grid-square or mouse-on-map is possible.
* Flexible entry of latitude, longitude, date and time.
* Printing of tables of tracking data (Ephemerides) in several formats. Printing does not interrupt tracking. Output may be directed to disk file or printer.
* On-line help, including glossary and direct lookup of text information about all Amateur satellites from the map windows. All hamsats since Oscar I included.
* Standard Windows interface for all functions - no commands to memorize. Both mouse and keyboard can be used for most functions.
* DDE server interface to tracking-antenna hardware controllers.

This program is available via internet, by anonymous ftp from:
ftp.amsat.org in /amsat/software/windows/tracking/winorb27.zip
oak.oakland.edu /pub3/hamradio/pc/satellite/winorb27.zip
ftp.seds.org /pub/software/pc/sat/winorb27.zip

The Microsoft file VBRUN300.DLL is required. It is available separately (and free) from many of the same sources.

Future enhancements will include (depending upon interest):
Bug fixes (when reported by users)

Corrected/augmented satellite information supplied by users.
Enhanced satellite database maintenance features
Additional table formats (as requested by users)
Fancier map formats
Speedups

2284. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: donr@mdsroc.com
Message-ID: <47o7rg$l6m@mdsroc.com>
Source record: 23794

In article <rogerh.497.0007A446@cris.com>, rogerh@cris.com says...
>
>
>
>
>>I have been using the Multifax card and software for 3 years and am
very,
>>very satisfied. Good luck and enjoy whatever you choose. 73, keith
>
>Just wondering why anyone would use "Multifax" in the advent of the
incredible
>weather servers found on the net?

Why do people use CW when there are perfectly good phones on their walls?
Also the resolution is much better. We also like to image some areas not
covered in high resolution on servers. When have you seen sun glints off
rivers on the net? We are talking seeing ponds and citys. I have a great
image of a crater in Canada and infrared images of power plants in NY. On
the right pass I can image Greenland. It's just neet!
--
Don Russ Microwave Data Systems, Rochester, NY
Advanced Development Engineer a California Microwave Co.
N2CZL@WB2PSI.wny.ny.usa.na donr@mdsroc.com

2285. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: orcinus@netcom.com
Message-ID: <orcinusDHo1xB.3zF@netcom.com>
Source record: 23795
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Jim Weir (rst-engr@oro.net) wrote:

: >More data points would allow us to extrapolate a curve, but
: >one data point tells us almost nothing. All it says is that
: >intelligent life is *possible*, but says nothing about whether
: >it is a 1 in 10^100 fluke, or a 1 to 1 dead certainty.

: >Gary

: And upon what premise, sir, do you base your assumption that there is
: life on Earth?

Oh, there is life ... but is there *intelligent* life? :^)

```
--
---
\|/ \|/
* *
\_ _____--------. .--------_____ _/
== __ o__| |__o __ ==
----//---' `---\\----
```

2286. Re: Looking for the email addresses of Arthur C. Clark

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: pmedward@scifac.indstate.edu
Message-ID: <pmedward.3.815781099@scifac.indstate.edu>
Source record: 23796

In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name) writes:
>From: <userID>@ic.mankato.mn.us (Your Name)
>Subject: Looking for the email addresses of Arthur C. Clark
>Date: 3 Nov 1995 04:49:02 GMT
>Friends, I am looking for the email address of Prof. Arthur C. Clark
>(Father of telecommunication satellites) and Stallinger (Author of the
>book "Computer Communications".)
>Please inform me at my email address goli@ic.mankato.mn.usa.
>
>Thank you,
>Goli.

uhmm try

ACClark@heaven.com

'sorry couldn't resist

2287. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: mbv@ti.com
Message-ID: <47omj6$56q@superb.csc.ti.com>
Source record: 23797
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

>~~~~~~~~~~~>
>Gentlemen, please, please stop this thread now or go away,
>at least from sci.space.shuttle!
>
>Yours sincerely,
>
>J. Andersen
>Norway (Home of trolls, UFO's etc.)

~~~~~~
J., They don't even know that they are responding to the post on
more than one newsgroup. The header never changes from the first
posting. I have been seeing this thread on rec.radio.amateur.space
and three other newsgroups for days now. No one seems to know that
the newsgroup header can be edited and addressed only to the newsgroup
that they read when posting a response.
Please give us a break guys. *Edit your headers*

Ken mbv@ti.com
~~~~~~

2288. ARLK060 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk060.1995@ampr.org>
Source record: 23798
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060
From ARRL Headquarters
Newington, CT November 7, 1995
To all radio amateurs

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
```

```
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2289. Radarsat launch

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Message-ID: <47nodc$1hv$1@mhafn.production.compuserve.com>
Source record: 23799

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

2290. Moon track software

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Message-ID: <47noij$1hv$2@mhafn.production.compuserve.com>
Source record: 23800

I have need of source code for a moon track algorithm. I know
that programs such as Instant Track include moon tracking (az/el
angles) information; but I need the algorithm itself. Anyone know
where to look?

2291. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-07 00:00:00 UTC
From: manfredi@engr04.comsys.rockwell.com
Message-ID: <1995Nov7.193317.10289@nb.rockwell.com>
Source record: 23801
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <cas.350.00595E68@ops1.bwi.wec.com>, cas@ops1.bwi.wec.com (Bob Casanova) writes:

>Belief is outside the purview of science. You can believe that the probability
>of life is large, small, or anything in between, but the only real data you
>have comes from the solar system, and specifically from this planet. The fact
>that the same elements are present throughout the observable universe does
>*not* mean that the same results occurred everywhere, or even anywhere. Like
>you, I believe that life almost certainly exists elsewhere, but I refuse to
>try to justify that belief by attempting to generate probabilities from
>insufficient data. Since we have only speculation regarding the origin of life
>here, there is no way we can project events here on to the universe at large.

In the absence of real evidence of life elsewhere, of course, all one can do is speculate. It's not wrong to speculate; it's not even "unscientific." In fact, it's what leads to exploration.

I have four items to offer with respect to this issue:

1. We know that life on earth happened. Therefore we know that the probability of life forming is greater than 0. But we do not know of any limit to the size of the universe. So, speculating, we have a non-zero probability of life forming and a virtually limitless number of samples out there (i.e. "opportunities"). Makes it seem almost ludicrous to be pessimistic about this.

2. We know that chemical reactions happen elsewhere just as they do here. I mean, for instance, our sun does not operate on principles that are in any way unique. Nor are meteorological phenomena different here from what they are in other planets we know about. So that's more evidence that this solar system and planet are hardly going to end up being the unique one among trillions.

3. We know that water exists elsewhere in the universe (e.g. in comets), so that important ingredient is not unique to Earth.

4. And finally, to me this is a little bit like picking up a grain of sand on one beach, just one grain, and swearing that _this_ grain is fundamentally different from all other grains of sand in every beach on earth. Failing chemical analysis of even a single other grain, I suppose one might wonder if it were true. But most reasonable people would _speculate_ that bullshit, this grain is probably very similar to zillions of others.

Bert
manfredi@engr05.comsys.rockwell.com

2292. Updated Dove Sat. Decoder FREEWARE

Newsgroup: rec.radio.amateur.space
Date: 1995-11-08 00:00:00 UTC
From: forsberg@cts.com
Message-ID: <47pf5a$s9j@news2.cts.com>
Source record: 23802
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.packet,rec.radio.amateur.misc

I have just come out with a new version of my DOVE satellite
decoder program (V2.0). It will decode the telemetry data that comes
from the DOVE amateur radio satellite. In this release are numerous
bug fixes and some new graphing capabilities. It requires windows 3.1,
a packet TNC and a 2 meter rig. This program is FREEWARE and is
available from the following sources:

Internet FTP
ftp.amsat.org /amsat/software/windows/telemetry/dovedv20.zip

RadioSport BBS
619-279-3921 dovedv20.zip

Mail
In the US and Canada send $1 and I'll provide disk, mailer, and
postage. Please specifiy disk size (5.25, 3.5) and send to:
Bruce Forsberg
11178 Batavia Circle
San Diego, CA. 92126

2293. Re: Moon track software

Newsgroup: rec.radio.amateur.space
Date: 1995-11-08 00:00:00 UTC
From: Carl Gregory <cgregory@uiuc.edu>
Message-ID: <47r7kg$8hm@vixen.cso.uiuc.edu>
Source record: 23803

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

2294. RS robot QSL info please

Newsgroup: rec.radio.amateur.space
Date: 1995-11-08 00:00:00 UTC
From: I121171@amsat.org
Message-ID: <47r5gl$hi4@sgi.iunet.it>
Source record: 23804

Please again,
what is the QSL info for RS robots contacts ? Help !
Thanks in advance.
Maurice in Italy
I121171@amsat.org

2295. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-08 00:00:00 UTC
From: manfredi@engr04.comsys.rockwell.com
Message-ID: <1995Nov8.155834.24753@nb.rockwell.com>
Source record: 23805
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <1995Nov6.012659.19157@ke4zv.atl.ga.us>, gary@ke4zv.atl.ga.us (Gary Coffman) writes:

>There are approximately 10^23, that's 1 followed by *23* zeros,
>ways for carbon and hydrogen atoms to combine. Only 4 of those
>combinations are precursors to self-replicating life. If life
>arose from a purely random combination of those elements, then
>"billions and billions" of stars aren't enough to make it likely
>it happened twice.
>
>Now it *appears* that those precursor combinations are preferred
>states, so that the odds are actually much better, indeed almost
>a certainty.

Precisely. Haven't we found hydrocarbons on another planet already?

I think that in the future we'll look back at this period of fledgling space exploration and the doubts about other life existing and really feel we were being unbelievably silly. Virtually identical to thinking that the whole universe is built around Planet Earth. Most people (not all) have given up on that notion.

>More data points would allow us to extrapolate a curve, but
>one data point tells us almost nothing. All it says is that
>intelligent life is *possible*, but says nothing about whether
>it is a 1 in 10^100 fluke, or a 1 to 1 dead certainty.

We do have data points for other chemicals, of course. They exist out there just as they do here.

Bert
manfredi@engr05.comsys.rockwell.com

2296. TS-790A vs.FT-736R

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: rbickel@ccnet.com
Message-ID: <47s5o9$m71@ccnet2.ccnet.com>
Source record: 23806

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

2297. Navstar GPS Constellation Status (95-11-08)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: Richard Langley <lang@unb.ca>
Message-ID: <Pine.SUN.3.91.951109134840.19223A-100000@jupiter.sun.csd.unb.ca>
Source record: 23807
Cross-posted to: comp.infosystems.gis,rec.aviation.misc,rec.boats,rec.radio.amateur.space,sci.electronics,sci.engr.surveying,sci.geo.satellite-nav,sci.space.news

```
Navstar GPS Constellation Status
(95-11-08)

Blk NORAD Orbit Launch
II PRN Internat. Catalog Plane Date
Seq SVN Code ID Number Pos'n (UT) Clock Available/Decommissioned
-------------------------------------------------------------------------------
Block I
01 04 1978-020A 10684 78-02-22 78-03-29 85-07-17
02 07 1978-047A 10893 78-05-13 78-07-14 81-07-16
03 06 1978-093A 11054 78-10-06 78-11-13 92-05-18
04 08 1978-112A 11141 78-12-10 79-01-08 89-10-14
05 05 1980-011A 11690 80-02-09 80-02-27 83-11-28
06 09 1980-032A 11783 80-04-26 80-05-16 91-03-06
07 81-12-18 Launch failure
08 11 1983-072A 14189 83-07-14 83-08-10 93-05-04
09 13 1984-059A 15039 84-06-13 84-07-19 94-06-20
10 12 1984-097A 15271 A-1 84-09-08 Rb 84-10-03
11 03 1985-093A 16129 85-10-09 85-10-30 94-04-13

Block II
II-1 14 14 1989-013A 19802 E-1 89-02-14 Cs 89-04-15 05:02 UT
II-2 13 02 1989-044A 20061 B-3 89-06-10 Cs 89-08-10 20:46 UT
II-3 16 16 1989-064A 20185 E-3 89-08-18 Cs 89-10-14 20:21 UT
II-4 19 19 1989-085A 20302 A-4 89-10-21 Rb 89-11-23 03:13 UT
II-5 17 17 1989-097A 20361 D-3 89-12-11 Cs 90-01-06 03:30 UT
II-6 18 18 1990-008A 20452 F-3 90-01-24 Cs 90-02-14 22:26 UT
II-7 20 20 1990-025A 20533 B-2 90-03-26 Rb 90-04-18 23:13 UT
II-8 21 21 1990-068A 20724 E-2 90-08-02 Cs 90-08-22 15:00 UT
II-9 15 15 1990-088A 20830 D-2 90-10-01 Cs 90-10-15 00:39 UT

Block IIA
II-10 23 23 1990-103A 20959 E-4 90-11-26 Cs 90-12-10 23:45 UT
II-11 24 24 1991-047A 21552 D-1 91-07-04 Rb 91-08-30 04:44 UT
II-12 25 25 1992-009A 21890 A-2 92-02-23 Cs 92-03-24 11:00 UT
II-13 28 28 1992-019A 21930 C-2 92-04-10 Cs 92-04-25 20:32 UT
II-14 26 26 1992-039A 22014 F-2 92-07-07 Cs 92-07-23 19:43 UT
II-15 27 27 1992-058A 22108 A-3 92-09-09 Cs 92-09-30 20:08 UT
II-16 32 01 1992-079A 22231 F-1 92-11-22 Rb 92-12-11 14:49 UT
II-17 29 29 1992-089A 22275 F-4 92-12-18 Cs 93-01-05 16:39 UT
II-18 22 22 1993-007A 22446 B-1 93-02-03 Cs 93-04-04 05:20 UT
II-19 31 31 1993-017A 22581 C-3 93-03-30 Rb 93-04-13 20:53 UT
II-20 37 07 1993-032A 22657 C-4 93-05-13 Cs 93-06-12 16:15 UT
```

```
II-21 39 09 1993-042A 22700 A-1 93-06-26 Cs 93-07-20 12:54 UT
II-22 35 05 1993-054A 22779 B-4 93-08-30 Cs 93-09-28 19:29 UT
II-23 34 04 1993-068A 22877 D-4 93-10-26 Cs 93-11-22 18:20 UT
II-24 36 06 1994-016A 23027 C-1 94-03-10 Cs 94-03-28 14:20 UT

Notes
-----
1. NORAD Catalog Number is also known as U.S. Space Command (USSPACECOM) object
number and NASA catalog number.
2. No orbital plane position = satellite no longer operational.
3. Clock: Rb = Rubidium; Cs = Cesium.
4. Selective Availability (S/A) had been enabled on Block II satellites during
part of 1990; S/A off between about 10 August 1990 and 1 July 1991 due to
Gulf crisis; standard level re-implemented on 15 November 1991; occasionally
off for test and other purposes. Currently, PRN15 and PRN28 appear to have
little or no S/A imposed.
5. Anti-spoofing (A-S) was activated on 94-01-31 at 00:00 UT on all Block II
satellites (ref. NANU 050-94042); occasionally off for test and other
purposes. A-S was turned off on all satellites at 20:00 UT on 95-04-19 and
back on on 95-05-10; off again between 95-06-19 and 95-07-10; and between
95-10-10 and 95-10-31. A-S has been off on PRN28 since 95-02-21.
6. PRN number of SVN32 was changed from 32 to 01 on 93-01-28.
7. PRN05 and PRN06 are equipped with corner-cube reflectors for satellite laser
ranging (SLR). SLR tracking of the satellites will permit onboard clock
errors and satellite ephemeris errors in GPS tracking to be differentiated.
8. The decommissioning date for PRN06/SVN03 is the date of termination of
operations of this satellite (ref. USNO) and is about 3 weeks later than
other published dates for "deactivation".
9. PRN12 is in declining health, primarily due to power supply problems. It
will be decommissioned within the next year. Before it is disposed of, the
satellite will undergo a period of end-of-life testing to help the Air Force
Space Command (AFSC) develop better ways to operate future GPS satellites.
10. The AFSC Constellation Status Assessment Team has recommended that the next
launch, into the C-plane, be made in April 1996.

compiled by:
================================================================================
Richard B. Langley Internet: LANG@UNB.CA or SE@UNB.CA
Geodetic Research Laboratory BITnet: LANG@UNB or SE@UNB
Dept. of Geodesy and Geomatics Engineering Phone: (506) 453-5142
University of New Brunswick FAX: (506) 453-4943
Fredericton, N.B., Canada E3B 5A3 Telex: 014-46202
Fredericton? Where's that? See: http://degaulle.hil.unb.ca/NB/fredericton.html
================================================================================
```

2298. INTERESTING NEW WWW PAGE

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: donb@Direct.CA
Message-ID: <47s8m9$3ul@grid.direct.ca>
Source record: 23808
Cross-posted to:
rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.amateur.swap

Hello to all who read this message.

I am letting you all know about a new WWW page which is Ham Radio,
scanner &
satellite T.V. related.

The page is at "http://www.burnabyradio.com/ham/brc.html"

We are: Burnaby Radio Communications Ltd.
4257 E. Hastings Street
Burnaby, B.C. Canada
V5C 2J5
Phone: (604)298-5444
Fax: (604)298-5455
BBS: (604)298-3283

WWW: http://www.burnabyradio.com/ham/brc.html

Please visit us!!!

Thanks.

Don Boekenkruger
donb@burnabyradio.com

2299. WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: mbv@ti.com
Message-ID: <47t3nr$kao@superb.csc.ti.com>
Source record: 23809

Does anyone know if there is a way to get these guys to edit their
newsgroup header so that the responses to the SPAMED post don't
end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

2300. Re: MIR HAM-ing on 2m/70cm ???

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: Peter.Delmotte@mech.kuleuven.ac.be
Message-ID: <47td53$4l9@chaos.kulnet.kuleuven.ac.be>
Source record: 23810

In article <47sh6r$ob7@nervous.pdb.sni.de>, kebsch@pdb.sni.de says...
>
>Hi,
>
>approx. each day I am checking the announced frequencies, when MIR is
>flying over Europe. Until now I don't have heard anything. Is anyone
>out there who had a QSO (Phonie-FM) with DP1MIR?
>
>73 de Waldemar, DK3VN

Hi Waldemar,

I had a packet-QSO with R0MIR on 145.550 MHz somewhere last june.
It took me a while to get through with my portable, but it can be done!
However, R0MIR isn't always on the air. They periodically shut down
their ham gear (to conserve power I guess).

73 de Peter, ON1ACY.

2301. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: sp9bch@krakow.ampr.ORG
Message-ID: <31340@krakow.ampr.org>
Source record: 23811

```
help
quit
```

2302. Re: TS-790A vs.FT-736R

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Nov9.193352.8389@ke4zv.atl.ga.us>
Source record: 23812

In article <47s5o9$m71@ccnet2.ccnet.com> rbickel@ccnet.com (Robert Bickel) writes:
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm
>sure its got to be some feature thats just not quite right with the Kenwood.
>Thanks for your comments.
>Robert KO6PL

The TS-790A has several *glaring* faults, but the worst one for satellite
use is that you can't use the narrow filters in the subband receiver.
That's the receiver you *use* when listening to the satellite because
you're transmitting on the main band unit. Major oops! Also, to make
it track tune in sat mode, you have to *hold the SAT button in*, major
oops. And the thermal design really sucks, the 70cm output module gets
very hot under normal use. The main unit receiver is pretty good, but
you don't use it for satellite.

The FT-736R is a bit long in the tooth, and can't do independent
dual band receive, but for satellite use it is still the champ.
It works the way you *need* it to work.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

2303. Learning Machine!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: fred@zygon.COM
Message-ID: <Pine.SUN.3.91.951109094613.2893A-100000@willie.zygon.com>
Source record: 23813

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

2304. Re: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: jaminge@pb2esac.esac.pacbell.com
Message-ID: <47u0ko$p0l@gw.PacBell.COM>
Source record: 23814

In article <47t3nr$kao@superb.csc.ti.com>, Ken Durham <mbv@ti.com> wrote:
> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?
>
Maybe a new newsgroup: rec.radio.amateur.space.cadets ;-)

--

John A Minger KE6DTC Opinions expressed are those of the author
Los Angeles, CA and not those of anyone or anything else.

2305. Mods for Icom IC-736

Newsgroup: rec.radio.amateur.space
Date: 1995-11-09 00:00:00 UTC
From: yingst@knighted.com
Message-ID: <47u44i$les@crier.knighted.com>
Source record: 23815

Does anyone have any mods for the ICOM IC-736? I'm looking for a way to
turn the pre-amp back on below 1.6 Mhz.
Icom turns it off even though it the light says it's on.
I would like to listen for some lowfer stations 1750 meter band
(160-190 kc. 1 watt into a 50 ft antenna). I'm also looking for a way to
improve the recieve audio.
The recieve audio sounds flat and distant, lacking highs & lows.
With the notch filter ON the audio sounds a little better,
but it still could use some improvement.
They re-shape the audio through the notch filter,
and it actually has a nicer sound with the notch filter on
(Has more highs & lows).
I had a IC-737 that had the same problem with the audio,
just not sounding quite right. I am also interested in any other mods
for the Icom IC-736. Please send any replies to yingst@knighted.com Note:
If you post a reply into this newsgroup I proably wont get it,
my internet provider only holds news for 1 day. Thank You. Harry
N6VUJ

2306. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: ax823092@oak.cats.ohiou.edu
Message-ID: <DHt286.30x@boss.cs.ohiou.edu>
Source record: 23717
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

The idea (detailed below) that we can assume much about whether life exists on other planets based on two premises (life exists on earth, so it is possible, and the universe is big) is ridiculous. Think about the beach analogy. Imagine that it is a pebbly rather than sandy beach you are sitting on. You reach down and the first thing you pick up happens to be a dime. Would you assume that the beach was made of dimes? Of course not. You could only begin to draw any type of conclusion if you started thinking about a number of possiblities. Granted, where astronomy is concerned these must be ROUGH estimates. But a margin of error of any less 50% gets us closer to the answer of a yes/no question.

If the best estimates yield a prediction of between 50 and 100,000,000 other planets with life (made-up numbers) 50 being the extreme conservative number, we've got an answer.

I am reminded of a gentleman who knew the letter if not the spirit of statistics. He read one day before making a trip by plane that the probability of of someone bringing a bomb onto a plane was 1:250,000. While this was low, he wasn't satified. He brought his own bomb on the trip, certain that the probability of there being TWO bombs on the plane was 1:62,500,000,000--a much safer risk.

>In article <cas.350.00595E68@ops1.bwi.wec.com>, cas@ops1.bwi.wec.com (Bob Casan
>ova) writes:
>
>>Belief is outside the purview of science. You can believe that the probability
>
>>of life is large, small, or anything in between, but the only real data you
>>have comes from the solar system, and specifically from this planet. The fact
>>that the same elements are present throughout the observable universe does
>>*not* mean that the same results occurred everywhere, or even anywhere. Like
>>you, I believe that life almost certainly exists elsewhere, but I refuse to
>>try to justify that belief by attempting to generate probabilities from
>>insufficient data. Since we have only speculation regarding the origin of life
>
>>here, there is no way we can project events here on to the universe at large.
>
>In the absence of real evidence of life elsewhere, of course, all one can
>do is speculate. It's not wrong to speculate; it's not even "unscientific."
>In fact, it's what leads to exploration.
>
>I have four items to offer with respect to this issue:
>
>1. We know that life on earth happened. Therefore we know that the

>probability of life forming is greater than 0. But we do not know of
>any limit to the size of the universe. So, speculating, we have a non-
>zero probability of life forming and a virtually limitless number of
>samples out there (i.e. "opportunities"). Makes it seem almost ludicrous
>to be pessimistic about this.
>
>2. We know that chemical reactions happen elsewhere just as they do here.
>I mean, for instance, our sun does not operate on principles that are in
>any way unique. Nor are meteorological phenomena different here from
>what they are in other planets we know about. So that's more evidence that
>this solar system and planet are hardly going to end up being the unique
>one among trillions.
>
>3. We know that water exists elsewhere in the universe (e.g. in comets),
>so that important ingredient is not unique to Earth.
>
>
>4. And finally, to me this is a little bit like picking up a grain of
>sand on one beach, just one grain, and swearing that _this_ grain is
>fundamentally different from all other grains of sand in every beach
>on earth. Failing chemical analysis of even a single other grain, I
>suppose one might wonder if it were true. But most reasonable people
>would _speculate_ that bullshit, this grain is probably very similar to
>zillions of others.
>
>Bert
>manfredi@engr05.comsys.rockwell.com
--
--
Tony Xenos Craig A. Butz
10 Hocking Street 2498 Mineral Road
Athens, Ohio 45701 New Marshfield, Ohio 45766-9747

2307. Re: WinOrbit 2.7 (tracking software) available

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: Jean-Philippe Donnio <jpdonnio@info.unicaen.fr>
Message-ID: <47vlem$c8d@caers3.unicaen.fr>
Source record: 23718

Carl Gregory <cgregory@uiuc.edu> wrote:

>New Features in version 2.7
>--------------------------

>* Alternate satellite information databases such as "The
> Satellite Encyclopedia" may now be accessed directly.

Just a correction to WinOrbit's help file: TSE's web site is now
http://www.tele-satellit.com/tse/

You may also get the package from
ftp://ftp.tele-satellit.com/pub/tse/tse032.zip

WinOrbit together with TSE is really great! Give it a try!

--
Jean-Philippe Donnio
univ: jpdonnio@info.unicaen.fr http://www.info.unicaen.fr/~jpdonnio/
work: jpdonnio@tele-satellit.com http://tele-satellit.com/tse/tag.html
home: jpdonnio@dialup.francenet.fr

2308. fed Log

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: dcimp@aol.com
Message-ID: <47vkrj$kov@newsbf02.news.aol.com>
Source record: 23719

Anyone know where I can get a copy of "Fed Log"?

2309. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511102006.PAA04645@ncrhub5.attgis.com>
Source record: 23720

```
Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)
```

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054

```
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------
```

End of Ham-Space Digest V95 #312
****

2310. Looking for the email addresses of Arthur C. Clark

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: ai557@ccn.cs.dal.ca
Message-ID: <480hf1$gtc@ra.isisnet.com>
Source record: 23721

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

2311. ARLS022 Next shuttle all licensed

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls022.1995@ampr.org>
Source record: 23722
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS022
ARLS022 Next shuttle all licensed

ZCZC AS02
QST de W1AW
Space Bulletin 022 ARLS022
From ARRL Headquarters
Newington, CT November 10, 1995
To all radio amateurs

SB SPACE ARL ARLS022
ARLS022 Next shuttle all licensed

Space Shuttle mission STS-74 is scheduled for lift-off at 1255 UTC on Saturday, November 11, with all five crew members holding Amateur Radio licenses.

NASA astronaut James Halsell, KC5RNI, and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ, both received their licenses in recent days, and both plan to participate in Shuttle Amateur Radio EXperiment (SAREX) activities during the STS-74 mission.

Halsell is the shuttle's pilot, and Hadfield is a mission specialist.

Shuttle Atlantis's commander for STS-74 is Ken Cameron, KB5AWP, who used Amateur Radio from Atlantis during STS-37 in April 1991 and from Discovery during STS-56 in April 1993. This will be the third mission Cameron has flown where the entire crew are licensed radio amateurs.

Other STS-74 crew members are Mission Specialist Jerry Ross, N5SCW, who was also a member of STS-37, and who operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR, who used ham radio aboard Columbia during STS-58 in October/November 1993.

For more information on the SAREX program, visit the SAREX home page on the World Wide Web at

http://www.nasa.gov/sarex/sarexmainpage.html
NNNN
/EX

2312. ARLS021 Shuttle Countdown Continues

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls021.1995@ampr.org>
Source record: 23723
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021
From ARRL Headquarters
Newington, CT November 10, 1995
To all radio amateurs

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on schedule today for liftoff on Saturday, November 11. The seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing

is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a

greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org

World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

2313. Re: Moon track software

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: Guenter Koellner <KOELLNER@SCN.DE>
Message-ID: <30A3771C.7000@SCN.DE>
Source record: 23724

hello,

I implemented lately a tracking algorythm in C language on a
80C535. Its controlling my 6 times 33ele on 70cm and did its job
well during the ARRL EME contest last weekend. The code is
standard C, source available.

This C code was converted from a TURBU-PASCAL source. So this
source is also availabe.

You should mail me a short mail if you need it.

vy 73, Guenter, DL4MEA@DB0KCP.#BAY.DEU.EU (AX.25)
KOELLNER@SCN.DE (Internet)
HTTP://WWW.SCN.DE/~KOELLNER (WWW)
UO-22, KO-23 & KO-25 (Pacsats)

2314. Re: STS-74 Prelaunch KEPS?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-10 00:00:00 UTC
From: garym@crash.cts.com
Message-ID: <garym.816013676@crash.cts.com>
Source record: 23725

In <47lg7a$1ld@newsbf02.news.aol.com> bourkee@aol.com (BourkeE) writes:
>Where can I get pre-launch Keps or two-line data for STS-74???

I haven't seen any released yet, but when they are you can get them from

ftp: ftp.cts.com dir: pub/garym/elements
or
<http://www.cts.com/browse/garym/elements>

--GaryM

2315. RE: TS-790A vs.FT-736R

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: Jim.Hansen@stpete.honeywell.COM
Message-ID: <30A40ED7@vax-flcgr.stpete.honeywell.com>
Source record: 23726

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

2316. Re: !! WWW & (new) FTP Radio Site !!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: amsoft@epix.net
Message-ID: <NEWTNews.816132497.8707.amsoft@486dx4_120>
Source record: 23727
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

FTP to the MAY 95 AmSoft CD-ROM at:
ftp://hamster.business.uwo.ca/cdrom/
be sure to download & read "files.dir" first

DO NOT put a dash between the word CDROM at the end of the URL

Thank you, and happy downloading. Thanks to Mark Bramwell VE3PZR
for provideing the only authorized access on the Internet to the
AmSoft CD-ROM library.

2317. Rules of ham DUMB.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <4835cg$ks1@alterdial.UU.NET>
Source record: 23728
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Ham operator Jokes:

1. What is the thinnest book in the world?
What hams know about women.

2. How does a ham take a bubble bath?
He eats beans for dinner.

3. What's a ham's idea of foreplay?
A half hour of contesting.

4. How can you tell if a ham is sexually excited?
If he's still breathing.

5. How many hams does it take to change a roll of toilet paper?
We don't know...it has never happened.

6. What's a ham's idea of helping with the housework?
Lifting his leg so you can vacuum.

7. What does a ham consider a seven course meal?
A hot dog and a six pack of beer.

2318. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511111538.KAA11511@ncrhub5.attgis.com>
Source record: 23729

```
Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------
```

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472

```
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #312
******************************
```

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and
rec.readio.amateur.space are all in the message header. Best approach is to
send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header
during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then
against the issue. Be bold, be brave and make radical statements. Just make
sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO
dweebs will respond in alt.ufo.abducted to your message containing not address
back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

2319. RE: TS-790A vs.FT-736R

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: bsmith@msn.com
Message-ID: <482si1$b0h@news.internetmci.com>
Source record: 23730

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

2320. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: Cal Deal <caldeal@gate.net>
Message-ID: <482tdm$fro@news.gate.net>
Source record: 23731
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

Please move your UFO discussion to an appropriate
location.

2321. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511112013.PAA17663@ncrhub5.attgis.com>
Source record: 23732

```
Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------
```

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org

Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044

```
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #312
******************************
```

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and
rec.readio.amateur.space are all in the message header. Best approach is to
send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header
during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then
against the issue. Be bold, be brave and make radical statements. Just make
sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO
dweebs will respond in alt.ufo.abducted to your message containing not address
back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the
same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers)
writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name)
writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.
>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--
+-----------------------------------+-------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+-------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to stop the thread from showing up on YOUR screen. Your comment about "a great waste of bandwidth" shows an incredible ignorance of how the net works. If your concerned about bandwidth go take your soapbox to the alt. hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the one you already have to kill threads that you find offensive then you will not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on schedule today for liftoff on Saturday, November 11. The seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio

amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International

Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time,

and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-

page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

2322. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: jamesoberg@aol.com
Message-ID: <4832b8$sck@newsbf02.news.aol.com>
Source record: 23733
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

It appears that the AOL filter into newsgroups doesn't allow us to do it.
Is there some other way except just not responding at all -- or is THAT
the best way?

2323. Re: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-1111950134020001@206.12.26.44>
Source record: 23734

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the
one you already have to kill threads that you find offensive then you will
not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

2324. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: videodog@cybergate.com
Message-ID: <4834om$17c@opal.CyberGate.COM>
Source record: 23735
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> says:
>
>Please move your UFO discussion to an appropriate
>location.
>
>

This is an appropriate place to discuss the space shuttle and UFO's!

Joe

2325. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-1111950131490001@206.12.26.44>
Source record: 23736
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
stop the thread from showing up on YOUR screen. Your comment about "a
great waste of bandwidth" shows an incredible ignorance of how the net
works. If your concerned about bandwidth go take your soapbox to the alt.
hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

2326. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511112243.RAA20367@ncrhub5.attgis.com>
Source record: 23737

```
Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
```

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST

Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list

Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW

Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.

Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060

```
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #312
******************************

------------------------------

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm
```

NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and rec.readio.amateur.space are all in the message header. Best approach is to send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then against the issue. Be bold, be brave and make radical statements. Just make sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO dweebs will respond in alt.ufo.abducted to your message containing not address back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale. Currently using a SASI Sattracker with tuner for my IC820, but its not supported by WISP. Have a DSP2232 sitting here collecting dust til I get the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the
same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers)
writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name)
writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.
>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--

+-----------------------------------+-------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+-------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
stop the thread from showing up on YOUR screen. Your comment about "a
great waste of bandwidth" shows an incredible ignorance of how the net
works. If your concerned about bandwidth go take your soapbox to the alt.

hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the
one you already have to kill threads that you find offensive then you will
not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on
schedule today for liftoff on Saturday, November 11. The
seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle
Amateur Radio EXperiment (SAREX). The project has flown on 19
previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously
used ham radio from Atlantis during STS-37 in April 1991 and from
the Shuttle Discovery during STS-56 in April 1993. This will be the
third mission Ken has flown where the entire crew are licensed radio
amateurs. The other members include Mission Specialist Jerry Ross,
N5SCW, who was also member of STS-37 SAREX crew, and operated ham
radio aboard the STS-55 Columbia mission in April/May 1993; and

Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under
Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know
that programs such as Instant Track include moon tracking (az/el
angles) information; but I need the algorithm itself. Anyone know
where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

2327. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: mjensen@phoenix.net
Message-ID: <483b8f$ho6@gryphon.phoenix.net>
Source record: 23738
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

Joe Thor (videodog@cybergate.com) wrote:
: >
: >Please move your UFO discussion to an appropriate
: >location.
: >

: This is an appropriate place to discuss the space shuttle and UFO's!

Where in sci.space.shuttle does it say ufo? This is not an appropriate
forum for UFO discussions. sci.space.ufo, if it existed, would be, but
since several other ufo newsgroups exist, I suggest taking the
discussion there instead.

: Joe

Mike
--

Through the router, over the firewall, down the cable.. nothing but net!
Don't be so open minded your brains fall out.

2328. Re: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: ghansen@accessone.com
Message-ID: <ghansen.327.30A41398@accessone.com>
Source record: 23739

It happens because the UFO freaks omong other space groups and
rec.readio.amateur.space are all in the message header. Best approach is to
send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header
during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then
against the issue. Be bold, be brave and make radical statements. Just make
sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO
dweebs will respond in alt.ufo.abducted to your message containing not address
back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

2329. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: wave@mindspring.com
Message-ID: <482ejf$ogo@firehose.mindspring.com>
Source record: 23740
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

Do these UFO's have ham radio stations on them?
I have MIR confirmed , but that's about it.

73's

2330. Re: MIR HAM-ing on 2m/70cm ???

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: mora@bb.fido.de
Message-ID: <MSGID_242=3A6000=2F106.41=40fidonet_be512c02@Fido.DE>
Source record: 23741

Hallo Waldemar!

kebsch.pad@sni.de wrote:

kp> approx. each day I am checking the announced frequencies, when MIR is
kp> flying over Europe. Until now I don't have heard anything. Is anyone
kp> out there who had a QSO (Phonie-FM) with DP1MIR?

Didn't your hear the Packet-Transmissions from R0MIR on 145.550 MHz either?

I heard them almost every day here in northern Germany in the past two
weeks. It was a rather strong signal.

Last time I heard Mir was today at 11:30 UTC.

I read something about Thomas Reiters problems with the HAM-equipment in
the 'Deutschlandrundspruch' released by the German amateur radio league
DARC. It is in german language. Let me know, if I shall e-mail it to
you.

The first QSOs with German stations were made by Thomas (DP0MIR) on Oct.29
at 145.800MHz.

--
Bye Internet : mora@bb.fido.de
- Juergen - Fido(C&L) : 2:2449/422.41

2331. Re: MIR HAM-ing on 2m/70cm ???

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: mora@bb.fido.de
Message-ID: <MSGID_242=3A6000=2F106.41=40fidonet_be512c0b@Fido.DE>
Source record: 23742

Hallo Waldemar!

kebsch.pad@sni.de wrote:

kp> Is anyone out there who had a QSO (Phonie-FM) with DP1MIR?

The following excerpt of the Space-News from Oct.30 may be interesting
for you (and others) too:

* EUROMIR 95 - FAX FROM DP0MIR *
==========
The following fax from Thomas, DP0MIR (DF4TR) was received on 12-Oct-95
by Thomas, DL2MDE, of the Ham Radio Group at Deutsche Forschungsanstalt.
Here he describes the actual situation onboard concerning ham-activities,
and comments by the German Ham Radio Group are also included.

"Now HAM-radio: this is a sad story! The old station" (Icom 228) "is
working, but only in simplex mode. Apparetly there is a way of channel-
switching (i.e. one frequency for transmitting and another one for
receiving), but I have no clue how to select or activate this - and of
course, there is NO F...DOCUMENTATION ON BOARD, neither for the old
station nor for the new one!!!" (TM733)

We from DF0VR try to send several information on board
but have problems with packet radio (see below) !!
Direct ways also do not solve the difficulties !!

"Two weeks ago on Sunday I installed the new station and a few days later
the new power supply (everything extremely improvised - cables hanging
around, cables I soldered together...)."

He does whatever is possible, several stations from W, VK,
ZL, G confirmed this fact to us. Sometimes Thomas also
switched on the digital voice memory.

"The new station is working in the voice mode, but the modems cannot be
initialized- one of the new modems has a connector for the 2nd serial
port of the computer, which doesn't fit (two "mamas");

There is an antenna switch supposed to be onboard - we can't find it;
There is a 'duplexer-box', which allows to run the new station in the
two frequency bands (145+430 MHz) over one antenna - we can't find it;

Radio Amateurs already ask us since we are here, when the new station will
be installed and when we can run in duplex mode and when they can use the
70 cm band (430 MHz) and, and, and...

Then the guys in Oberpfaffenhofen request a special frequency for making packet-transfer, but Sergei and Juri don't like to change the frequency which is almost the whole day (145.55), because the whole rest of the world is communication with us - or better - with the packet-controller on this frequency".

Skeds between DP0MIR and DF0VR on dedicated frequencies are needed to transmit special information for the installation of equipment, international frequency agreements, ham operation onboard, skeds for school stations... If you should listen to such a contact please don't try to speak with Thomas. This information transfer is of interest for all of us!!!!!!

"Last week I had a contact with a guy in southern Germany- not one of the OBI-guys" (OBI = call of radio beacon from Oberpfaffenhofen)", who seemed to be already a little bit embarrassed, because the new equipment is not yet running. And then he asked me, if I am feeling better in the meantime! I told him, that I feel absolutely great, and asked why I should feel better. He told me, he had heard that I was quite ill, but am on my way of recovery! No comment on this s*** (sorry!).

For some nights we had selected the frequency which was requested by OBI- I even set up a message for Kieselbach" (Thomas, DL2MDE) "on the controller - but they say, they cannot connect! The whole world can connect to our station, but apparently the signals from Germany are reflected or attenuated in a magic way. I am feeling bad for these guys, because they seem to have some expectations, which we can't fulfill yet. I think it would be certainly good to have the uplink-capability from OBI, but at the moment it looks not so bright."

In the last time visibility of MIR for DF0VR was only in the night time (TsUP-time). We tried to connect to R0MIR-1, but at this time we only heard the packet beacon from MIR. Connecting was not possible. We have information that tonights the AF level onboard is reduced. In our opinion this AF level is not sufficient to connect to the BBS. Presently we try to inform Thomas about this fact.

[Info via Thomas, DL2MDE, and Joerg, DL3LUM]

--
Bye Internet : mora@bb.fido.de
- Juergen - Fido(C&L) : 2:2449/422.41

2332. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: <>
Message-ID: <256_9511121611@panda.org>
Source record: 23743

From: ve7zvz@dowco.com (Scott Leaf)
Subject: Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
Organization: Mountain DX Club VA7SM

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> wrote:

-> Please move your UFO discussion to an appropriate
-> location.

Learn how to use a 'KILL' file to stop the thread from showing up on YOUR screen if you find it so offensive. We dont need censorship on the Net.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To Boldy VHF Where No Man Has VHFed Before"
--
|Fidonet: Scott Leaf 1:330/317
|Internet: Scott.Leaf@Scott.Leaf@*user@*site.*domain.org.org
| Standard disclaimer: The views of this user are strictly their own.
| PandA's Den BBS FidoNet < > internet gateway - email info@panda.org

2333. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-11 00:00:00 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1995Nov11.205332.20820@ke4zv.atl.ga.us>
Source record: 23744

In article <ve7zvz-11119501314900001@206.12.26.44> ve7zvz@dowco.com (Scott Leaf) writes:
>In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
>(Glenn Hansen) wrote:
>
>-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
>
>-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
>-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
>-> Newsgroups. These are all the places your UFO stuff is going to. We at
>-> rec.radio.amateur.space are not interested.
>->
>
>Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
>stop the thread from showing up on YOUR screen. Your comment about "a
>great waste of bandwidth" shows an incredible ignorance of how the net
>works. If your concerned about bandwidth go take your soapbox to the alt.
>hierarchy.

Indeed. Since the notes are crossposted, only one copy is sent to
each system, not a copy for each group in the header. No extra
bandwidth is consumed. Now since the thread seems to have evolved
into a SETI discussion, it is also on charter for this group because
amateurs are participating in the SETI search.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

2334. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: wjake@VOA.GOV
Message-ID: <DHxynp.JMs@VOA.GOV>
Source record: 23667

In article <ve7zvz-11119501314900001@206.12.26.44> ve7zvz@dowco.com (Scott Leaf) writes:
>In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
>(Glenn Hansen) wrote:
>
>-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
>
>-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
>-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
>-> Newsgroups. These are all the places your UFO stuff is going to. We at
>-> rec.radio.amateur.space are not interested.
>->
>
>Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
>stop the thread from showing up on YOUR screen. Your comment about "a
>great waste of bandwidth" shows an incredible ignorance of how the net
>works. If your concerned about bandwidth go take your soapbox to the alt.
>hierarchy.
>
>--
>Scott Leaf VE7ZVZ
>ve7zvz@dowco.com
>Port Coquitlam, British Columbia, Canada

And why don't you both keep your silly argument out of sci.space.*?

****
* WJaKe - William J. Keaton wjake@voa.gov *
* VOA - The Voice of America VDJS27A@prodigy.com *
* Opinions - Mine Only http://pages.prodigy.com/VA/wjake/home.html *
****

2335. WTB: FT 726 or FT 736

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: Joseph Yakoski <jyakoski@epix.net>
Message-ID: <Pine.SUN.3.91.951112162043.7276A-100000@peach.epix.net>
Source record: 23668

Hello to you all. I am looking for a Yaesu FT 726 or a FT 736 for my
brother. If anyone has anything to sell, e-mail to me at
jyakoski@epix.net
Thank You..
Joseph Yakoski N3JNX

2336. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511122203.RAA14712@ncrhub5.attgis.com>
Source record: 23669

```
Received: by chwhert.switzerland.ncr.com; 12 Nov 95 23:07:51 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id QAA14226; Sun, 12 Nov 1995 16:55:38 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 16:55:12 EST
Received: by mail.ucsd.edu; id KAA06211
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 10:44:00 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id KAA06197
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 10:43:58 -0800 for ham-space-ddist
Message-Id: <199511121843.KAA06197@mail.ucsd.edu>
Date: Sun, 12 Nov 95 10:43:57 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #321
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 321

Today's Topics:
(none) (2 msgs)
ARLK061 Keplerian data
MIR HAM-ing on 2m/70cm ???
Mods for Icom IC-736
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 12 Nov 95 15:03:30 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
```

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 16:07:37 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id JAA07107; Sun, 12 Nov 1995 09:55:28 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 09:55:09 EST
Received: by mail.ucsd.edu; id EAA07296
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA07288
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511121230.EAA07288@mail.ucsd.edu>
Date: Sun, 12 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #319
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 319

Today's Topics:
ARLS022 Next shuttle all licensed
fed Log
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 1995 20:24:46 -0500
From: w1aw@arrl.org
Subject: ARLS022 Next shuttle all licensed

SB SPACE @ ARL $ARLS022
ARLS022 Next shuttle all licensed

ZCZC AS02
QST de W1AW
Space Bulletin 022 ARLS022

Date: 10 Nov 1995 08:42:11 -0500
From: dcimp@aol.com (DCimp)
Subject: fed Log

Anyone know where I can get a copy of "Fed Log"?

Date: 11 Nov 1995 15:13:51 GMT
From: wave@mindspring.com (Pieter Ibelings)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Do these UFO's have ham radio stations on them?
I have MIR confirmed , but that's about it.

73's

Date: (null)
From: (null)

SB SPACE ARL ARLS022
ARLS022 Next shuttle all licensed

Space Shuttle mission STS-74 is scheduled for lift-off at 1255 UTC
on Saturday, November 11, with all five crew members holding Amateur
Radio licenses.

NASA astronaut James Halsell, KC5RNI, and Canadian Space Agency
astronaut Chris Hadfield, KC5RNJ, both received their licenses in
recent days, and both plan to participate in Shuttle Amateur Radio
EXperiment (SAREX) activities during the STS-74 mission.

Halsell is the shuttle's pilot, and Hadfield is a mission
specialist.

Shuttle Atlantis's commander for STS-74 is Ken Cameron, KB5AWP, who
used Amateur Radio from Atlantis during STS-37 in April 1991 and
from Discovery during STS-56 in April 1993. This will be the third
mission Cameron has flown where the entire crew are licensed radio
amateurs.

Other STS-74 crew members are Mission Specialist Jerry Ross, N5SCW,
who was also a member of STS-37, and who operated ham radio aboard
the STS-55 Columbia mission in April/May 1993; and Mission
Specialist Bill McArthur, KC5ACR, who used ham radio aboard Columbia
during STS-58 in October/November 1993.

For more information on the SAREX program, visit the SAREX home page
on the World Wide Web at

http://www.nasa.gov/sarex/sarexmainpage.html
NNNN
/EX

End of Ham-Space Digest V95 #319
****

Date: 12 Nov 95 18:43:39 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 19:47:44 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id NAA10159; Sun, 12 Nov 1995 13:35:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 13:35:09 EST
Received: by mail.ucsd.edu; id HAA19040
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:38 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id HAA19021
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:36 -0800 for ham-space-ddist
Message-Id: <199511121544.HAA19021@mail.ucsd.edu>
Date: Sun, 12 Nov 95 07:44:34 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #320
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 320

Today's Topics:
(none)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 07:01:16 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 08:08:16 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id BAA01557; Sun, 12 Nov 1995 01:56:06 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 01:55:39 EST
Received: by mail.ucsd.edu; id TAA22333
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:57 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id TAA22317
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:55 -0800 for ham-space-ddist
Message-Id: <199511120333.TAA22317@mail.ucsd.edu>
Date: Sat, 11 Nov 95 19:33:54 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #318
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 318

Today's Topics:
(none)
* SpaceNews 06-Nov-95 *
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP. (2 msgs)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 03:33:31 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 04:33:30 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id WAA13713; Sat, 11 Nov 1995 22:21:22 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 22:21:15 EST
Received: by mail.ucsd.edu; id RAA07260
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:23 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU

Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id RAA07239
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:21 -0800 for ham-space-ddist
Message-Id: <199511120109.RAA07239@mail.ucsd.edu>
Date: Sat, 11 Nov 95 17:09:18 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #317
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 317

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WinOrbit 2.7 (tracking software) available

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 01:08:53 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 02:10:49 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id TAA22988; Sat, 11 Nov 1995 19:58:37 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 19:56:49 EST
Received: by mail.ucsd.edu; id OAA19651
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:15 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id OAA19627
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:14 -0800 for ham-space-ddist
Message-Id: <199511112244.OAA19627@mail.ucsd.edu>
Date: Sat, 11 Nov 95 14:44:11 PST

From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #316
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 316

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 22:43:48 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the
algorithms in the book - there are several timescales, described
elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood
TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm
sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13

```
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
```

November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

End of Ham-Space Digest V95 #312
****

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and
rec.readio.amateur.space are all in the message header. Best approach is to
send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header
during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then
against the issue. Be bold, be brave and make radical statements. Just make
sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO
dweebs will respond in alt.ufo.abducted to your message containing not address
back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the
same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers)
writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name)
writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.

>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--
+-----------------------------------+-------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+-------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
stop the thread from showing up on YOUR screen. Your comment about "a
great waste of bandwidth" shows an incredible ignorance of how the net
works. If your concerned about bandwidth go take your soapbox to the alt.
hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the
one you already have to kill threads that you find offensive then you will
not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on
schedule today for liftoff on Saturday, November 11. The

seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW

William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under

''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know
that programs such as Instant Track include moon tracking (az/el
angles) information; but I need the algorithm itself. Anyone know
where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

Date: 11 Nov 1995 19:26:46 GMT
From: Cal Deal <caldeal@gate.net>
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Please move your UFO discussion to an appropriate
location.

Date: 11 Nov 1995 19:12:01 GMT
From: bsmith@msn.com (Bob Smith)
Subject: TS-790A vs.FT-736R

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

End of Ham-Space Digest V95 #316
****

Date: 11 Nov 1995 21:32:06 GMT
From: videodog@cybergate.com (Joe Thor)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> says:
>
>Please move your UFO discussion to an appropriate
>location.
>
>

This is an appropriate place to discuss the space shuttle and UFO's!

Joe

Date: 10 Nov 1995 13:52:22 GMT
From: Jean-Philippe Donnio <jpdonnio@info.unicaen.fr>
Subject: WinOrbit 2.7 (tracking software) available

Carl Gregory <cgregory@uiuc.edu> wrote:

>New Features in version 2.7
>---------------------------

>* Alternate satellite information databases such as "The
> Satellite Encyclopedia" may now be accessed directly.

Just a correction to WinOrbit's help file: TSE's web site is now
http://www.tele-satellit.com/tse/

You may also get the package from
ftp://ftp.tele-satellit.com/pub/tse/tse032.zip

WinOrbit together with TSE is really great! Give it a try!

--
Jean-Philippe Donnio
univ: jpdonnio@info.unicaen.fr http://www.info.unicaen.fr/~jpdonnio/
work: jpdonnio@tele-satellit.com http://tele-satellit.com/tse/tag.html
home: jpdonnio@dialup.francenet.fr

End of Ham-Space Digest V95 #317
****

Date: 8 Nov 1995 20:17:15 -0500
From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *
Date: 8 Nov 1995 20:17:15 -0500
Organization: Rutgers University
Message-ID: <47rkqr$oof@pilot.njin.net>

SB NEWS @ AMSAT $SPC1106
* SpaceNews 06-Nov-95 *

BID: $SPC1106

=========
SpaceNews
=========

MONDAY NOVEMBER 6, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* STS-74 NEWS *
===============
NASA managers have set Nov. 11, 1995, as the official launch date for the STS-74 mission -- the second in a series of missions between the U.S. Space Shuttle and the Russian Space Station Mir. The primary purpose of the Space Shuttle Atlantis STS-74 mission is the installation of a docking module that will improve clearance between the Shuttle and Mir's solar arrays during subsequent dockings. Atlantis' crew also will return to Earth experiment samples, equipment for repair and analysis and products manufactured on the station.

The Nov. 11 launch of Atlantis is planned for approximately 7:56 AM EST (1256 UTC) from Kennedy Space Center's Launch Complex 39-A. The actual launch time may vary by a few minutes based on calculations of Mir's precise location in space at the time of liftoff. The available launch period, or "window" to launch Atlantis, is approximately seven minutes each day.

The STS-74 mission is scheduled to last approximately eight days. Docking with Mir will occur on the fourth day of the flight. An on-time launch and nominal mission duration would have Atlantis and her crew returning to Earth on Nov. 19 with a landing at Kennedy Space Center's Shuttle Landing Facility, Florida, at approximately 1:28 p.m. EST (1828 UTC).

The STS-74 mission will be the 15th mission for Atlantis and the 73rd for the Space Shuttle system.

STS-74 data at a glance:

VEHICLE: Atlantis/OV-104
LOCATION: Pad 39A
TARGET LAUNCH DATE/TIME: Nov. 11 at about 7:56 AM EST (1256 UTC)

LAUNCH WINDOW: 6 minutes, 57 seconds
TARGET MIR DOCKING DATE: Nov. 14
TARGET KSC LANDING DATE/TIME: Nov. 19 at about 1 PM EST (1800 UTC)
MISSION DURATION: 8 days, 5 hours, 4 minutes
CREW SIZE: 5 (All licensed Amateur Radio Operators)
ORBITAL ALTITUDE and INCLINATION: 196-245 statute miles/51.6 degrees

[Info via NASA]

* NEW INFO SERVER AVAILABLE *
==========
An anonymous FTP server has been made available by a French Scientific Center for the purpose of disseminating information of interest to those involved in Amateur Astronomy and Amateur Space activitites. The server provides the following information services:

Kelso database (amateur, weather, synchro, manned spacecraft)
Molczan database (1000 2Line orbital elements)
NASA database (MIR and exotic satellites)
AMSAT database (Shuttle vectors)
SpaceNews (KD2BD)
ANS (from amsat.org, in English and French language)

Ephemerid (Solar planetary satellites (project))

Access at: Internet FTP anonymous (TCP/IP)
Address: alphalma.cnrs-mrs.fr (192.134.96.21)
Login: anonymous
Password: your e-mail address or call, please.
Directory name: astro

(This is an experimental test European database).

Sysop: fb1rci@lma.cnrs-mrs.fr

[Info via FB1RCI]

* MIR NEWS *
==========
Mir status as of 30-Oct-95

The current Mir crew is busy getting used to their new environment. Packet activity on 2-meters was temporarily interrupted due to a problem with the audio feed into the PacCom TNC. This problem has been resolved and 2-Meter packet is now fully operational. Some fine tuning of the TNC's parameters are still taking place to optimize 1200 baud data throughput.

The "USERS" counter has been set to 7. This means that 7 people can connect to Mir's keyboard at the same time. However if no one is at the keyboard on Mir, then all of the data sent goes into the bit bucket. It is recommended to stay OFF the keyboard ports unless someone from Mir is actually typing on the keyboard (Port call sign R0MIR). Excessive traffic on the keyboard port just causes interference to the user of the BBS (Port call sign R0MIR-1). Do not expect anyone to be at the keyboard after 21:00

UTC. This is one of the many parameters being adjusted.

The status of the 440 FM packet/voice is beginning to look better. The new dual band transceiver (Kenwood TM733 European version) is now on Mir. Arrangements are being made to deliver the missing Amateur Radio related parts to Mir in the near future (coax cables, manuals, cavity filter, etc). The cavity filters are required to allow simultaneous operation on both 2-meters (Icom 228) and on 70-cm (Kenwood TM733). Sources indicate the externally mounted dual band antenna was installed 6 months ago.

The Mir crew has two new Russian made 1200 baud TNCs. The TNCs are controlled by a Russian made Terminal Software program. Thomas has indicated that he has not be able to get the new TNCs to "initialize". There are people in Germany and Russia working on this problem.

The Mir station is still running on 145.550 MHz simplex for voice and packet communications. There may be a frequency change in the future, but there is no confirmed date for the frequency change.

During the weekend of 28-Nov-95, Sergi was active on voice and keyboard. Thomas was very active on voice working with key stations in the USA, fine tuning Amateur Radio related activities. Down link signal quality is very good, and the old noisy ventilation fan has been replaced (Do you remember the loud fan noises heard last summer everytime Mir used voice?).

The Mir crew sleeps from approximately 21:00 UTC till approximately 05:00 UTC (5pm-1am EST). Most of the Mir passes over the USA are during the sleeping period of the crew. The Mir Space station will be visible in the evening sky for the next few weeks. Please update your tracking programs, and look for Mir passes 30 - 120 minutes after local sunset.

Remember, only 1 station can connect to MIR's PMS (R0MIR-1) at a time, ALL others must wait. And please stay off the R0MIR keyboard port, unless it is active with communications from a Cosmonaut.

[Info via G. Miles Mann, WF1F]

* OSCAR NEWS *
==========
Pacsat AO-16: normal BBS.

Dove DO-17:

Last week:
Software, hardware and sound testing in progress
DOVE Command Team (WD0E)

This week:
10/29/95
Software load complete. S-band is on and should stay on. Accurate measurements of it's frequency (2401.220 MHz) appreciated to wd0e@amsat.org
DOVE Command Team (WD0E)

[telemetry dwell 30 secs]

Weber WO-18: normal operations

Lusat LO-19: normal BBS operations

Itamsat IO-26: nothing heard on either D/L 03-Nov-95 [vk7zo]

[Info via Graham, VK7ZO]

* FEEDBACK/INPUT WELCOMED *
==========
Comments and input for SpaceNews should be directed to the editor (John, KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org, magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

Date: 11 Nov 1995 23:22:55 GMT
From: mjensen@phoenix.net (Mike Jensen)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Joe Thor (videodog@cybergate.com) wrote:
: >
: >Please move your UFO discussion to an appropriate
: >location.
: >

: This is an appropriate place to discuss the space shuttle and UFO's!

Where in sci.space.shuttle does it say ufo? This is not an appropriate forum for UFO discussions. sci.space.ufo, if it existed, would be, but since several other ufo newsgroups exist, I suggest taking the discussion there instead.

: Joe

Mike
--

Through the router, over the firewall, down the cable.. nothing but net!

Don't be so open minded your brains fall out.

Date: Sun, 12 Nov 1995 01:20:11 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> wrote:

-> Please move your UFO discussion to an appropriate
-> location.

Learn how to use a 'KILL' file to stop the thread from showing up on YOUR
screen if you find it so offensive. We dont need censorship on the Net.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To Boldy VHF Where No Man Has VHFed Before"

End of Ham-Space Digest V95 #318
****

End of Ham-Space Digest V95 #320
****

Date: 12 Nov 1995 10:45:57 -0500
From: w1aw@arrl.org
Subject: ARLK061 Keplerian data

SB KEP @ ARL $ARLK061
ARLK061 Keplerian data

ZCZC SK86
QST de W1AW
Keplerian Bulletin 61 ARLK061

Date: 9 Nov 1995 17:18:27 GMT
From: Peter.Delmotte@mech.kuleuven.ac.be (Peter Delmotte)
Subject: MIR HAM-ing on 2m/70cm ???

In article <47sh6r$ob7@nervous.pdb.sni.de>, kebsch@pdb.sni.de says...
>
>Hi,
>

>approx. each day I am checking the announced frequencies, when MIR is
>flying over Europe. Until now I don't have heard anything. Is anyone
>out there who had a QSO (Phonie-FM) with DP1MIR?
>
>73 de Waldemar, DK3VN

Hi Waldemar,

I had a packet-QSO with R0MIR on 145.550 MHz somewhere last june.
It took me a while to get through with my portable, but it can be done!
However, R0MIR isn't always on the air. They periodically shut down
their ham gear (to conserve power I guess).

73 de Peter, ON1ACY.

Date: 9 Nov 1995 23:50:42 GMT
From: yingst@knighted.com (Harry Yingst)
Subject: Mods for Icom IC-736

Does anyone have any mods for the ICOM IC-736? I'm looking for a way to
turn the pre-amp back on below 1.6 Mhz.
Icom turns it off even though it the light says it's on.
I would like to listen for some lowfer stations 1750 meter band
(160-190 kc. 1 watt into a 50 ft antenna). I'm also looking for a way to
improve the recieve audio.
The recieve audio sounds flat and distant, lacking highs & lows.
With the notch filter ON the audio sounds a little better,
but it still could use some improvement.
They re-shape the audio through the notch filter,
and it actually has a nicer sound with the notch filter on
(Has more highs & lows).
I had a IC-737 that had the same problem with the audio,
just not sounding quite right. I am also interested in any other mods
for the Icom IC-736. Please send any replies to yingst@knighted.com Note:
If you post a reply into this newsgroup I proably wont get it,
my internet provider only holds news for 1 day. Thank You. Harry
N6VUJ

Date: Thu, 9 Nov 1995 19:33:52 GMT
From: gary@ke4zv.atl.ga.us (Gary Coffman)
Subject: TS-790A vs.FT-736R

In article <47s5o9$m71@ccnet2.ccnet.com> rbickel@ccnet.com (Robert Bickel) writes:
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm
>sure its got to be some feature thats just not quite right with the Kenwood.
>Thanks for your comments.
>Robert KO6PL

The TS-790A has several *glaring* faults, but the worst one for satellite use is that you can't use the narrow filters in the subband receiver. That's the receiver you *use* when listening to the satellite because you're transmitting on the main band unit. Major oops! Also, to make it track tune in sat mode, you have to *hold the SAT button in*, major oops. And the thermal design really sucks, the 70cm output module gets *very* hot under normal use. The main unit receiver is pretty good, but *you don't use it* for satellite.

The FT-736R is a bit long in the tooth, and can't do independent dual band receive, but for satellite use it is still the champ. It works the way you *need* it to work.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

Date: (null)
From: (null)

SB KEP ARL ARLK061
ARLK061 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95313.86156770 .00003998 00000-0 58925-4 0 3081
2 16609 51.6451 148.0817 0003574 304.4745 55.5910 15.57982282555662
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95312.04588371 .00000040 00000-0 27245-4 0 01351
2 18129 82.9245 312.7342 0013329 54.0088 306.2297 13.72358626419701
UO-11
1 14781U 84021B 95312.00762864 .00000185 00000-0 39090-4 0 08425
2 14781 97.7871 307.8396 0012997 81.2952 278.9721 14.69396068625026
RS-12/13
1 21089U 91007A 95313.18472939 .00000038 00000-0 24104-4 0 8435
2 21089 82.9230 353.2460 0030062 125.8627 234.5324 13.74061957238684

```
AO-13
1 19216U 88051B 95312.96962799 .00000049 00000-0 18599-3 0 1088
2 19216 57.4296 154.0272 7346381 23.2353 357.6953 2.09725300 25200
UO-14
1 20437U 90005B 95313.21104328 .00000008 00000-0 19745-4 0 1385
2 20437 98.5617 35.2020 0011274 127.7188 232.5021 14.29902293302477
RS-15
1 23439U 94085A 95312.62980964 -.00000039 00000-0 10000-3 0 900
2 23439 64.8177 21.3820 0166782 237.5072 120.9633 11.27524533 35801
AO-16
1 20439U 90005D 95312.19769396 .00000017 00000-0 23609-4 0 09444
2 20439 98.5733 36.0735 0011380 131.3227 228.8935 14.29956970302342
DO-17
1 20440U 90005E 95312.10199304 .00000004 00000-0 18366-4 0 09465
2 20440 98.5752 36.5063 0011577 130.8060 229.4116 14.30098549302351
WO-18
1 20441U 90005F 95312.22711386 -.00000010 00000-0 13131-4 0 9417
2 20441 98.5747 36.5887 0011957 131.1486 229.0722 14.30068876302379
LO-19
1 20442U 90005G 95313.77866589 .00000012 00000-0 21505-4 0 9364
2 20442 98.5765 38.5280 0012531 126.2320 234.0023 14.30173898302618
FO-20
1 20480U 90013C 95312.17852060 -.00000057 00000-0 -47015-4 0 8338
2 20480 99.0641 13.9479 0539795 267.4453 86.4773 12.83231287269411
AO-21
1 21087U 91006A 95313.45137067 .00000094 00000-0 82657-4 0 6484
2 21087 82.9386 125.0833 0036574 100.1595 260.3690 13.74561131239680
UO-22
1 21575U 91050B 95313.67450737 .00000040 00000-0 27791-4 0 6435
2 21575 98.3820 21.2935 0006833 203.0488 157.0401 14.36998521226397
KO-23
1 22077U 92052B 95312.04093367 -.00000037 00000-0 10000-3 0 05360
2 22077 66.0826 294.5777 0001385 10.3582 349.7458 12.86293162152238
KO-25
1 22828U 93061F 95313.71059574 -.00000002 00000-0 16512-4 0 4087
2 22828 98.6027 28.1583 0010032 136.8018 223.3945 14.28118441 78643
IO-26
1 22826U 93061D 95312.13600329 .00000011 00000-0 21967-4 0 04393
2 22826 98.6069 26.5631 0008812 156.3426 203.8162 14.27785634110314
AO-27
1 22825U 93061C 95312.12288431 -.00000001 00000-0 17211-4 0 04350
2 22825 98.6069 26.4292 0008136 155.2622 204.8926 14.27677562110308
PO-28
1 22829U 93061G 95313.23382290 .00000082 00000-0 50443-4 0 4223
2 22829 98.6022 27.7314 0010003 138.0376 222.1565 14.28099902110490

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
November 14, 1995, at 2330z on Baudot and AMTOR.
NNNN
```

/EX

End of Ham-Space Digest V95 #321
****

2337. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: Postmaster@chwhert.Switze
Message-ID: <ac7_9511122201@panda.org>
Source record: 23670

```
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
Organization: ucsd usenet gateway

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 19:47:44 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com
(8.7.1/8.7.1) with UUCP id NAA10159; Sun, 12 Nov 1995 13:35:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 13:35:09 EST
Received: by mail.ucsd.edu; id HAA19040
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:38 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id HAA19021
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:36 -0800 for ham-space-ddist
Message-Id: <199511121544.HAA19021@mail.ucsd.edu>
Date: Sun, 12 Nov 95 07:44:34 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #320
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 320

Today's Topics:
(none)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 12 Nov 95 07:01:16 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
```

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 08:08:16 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com
(8.7.1/8.7.1) with UUCP id BAA01557; Sun, 12 Nov 1995 01:56:06 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 01:55:39 EST
Received: by mail.ucsd.edu; id TAA22333
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:57 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id TAA22317
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:55 -0800 for ham-space-ddist
Message-Id: <199511120333.TAA22317@mail.ucsd.edu>
Date: Sat, 11 Nov 95 19:33:54 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #318
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 318

Today's Topics:
(none)
* SpaceNews 06-Nov-95 *
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP. (2
msgs)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 03:33:31 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 04:33:30 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com
(8.7.1/8.7.1) with UUCP id WAA13713; Sat, 11 Nov 1995 22:21:22 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 22:21:15 EST
Received: by mail.ucsd.edu; id RAA07260
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:23 -0800 for ham-space-list

Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id RAA07239
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:21 -0800 for ham-space-ddist
Message-Id: <199511120109.RAA07239@mail.ucsd.edu>
Date: Sat, 11 Nov 95 17:09:18 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #317
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 317

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WinOrbit 2.7 (tracking software) available

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 01:08:53 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 02:10:49 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com
(8.7.1/8.7.1) with UUCP id TAA22988; Sat, 11 Nov 1995 19:58:37 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 19:56:49 EST
Received: by mail.ucsd.edu; id OAA19651
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:15 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id OAA19627
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:14 -0800 for ham-space-ddist
Message-Id: <199511112244.OAA19627@mail.ucsd.edu>

Date: Sat, 11 Nov 95 14:44:11 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #316
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 316

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 22:43:48 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com
(8.7.1/8.7.1) with UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com
(8.7.1/8.7.1) with UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com
(8.7.1/8.7.1) with UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>

Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com
(8.7.1/8.7.1) with UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
--
|Fidonet: Postmaster@chwhert.Switze 1:330/317
|Internet: Postmaster@chwhert.Switze
| Standard disclaimer: The views of this user are strictly their own.
| PandA's Den BBS FidoNet < > internet gateway - email info@panda.org

2338. 03:(none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: Postmaster@chwhert.Switze
Message-ID: <ac8_9511122201@panda.org>
Source record: 23671

From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
Organization: ucsd usenet gateway

hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the
one you already have to kill threads that you find offensive then you will
not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on
schedule today for liftoff on Saturday, November 11. The
seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT

World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA

NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know
that programs such as Instant Track include moon tracking (az/el
angles) information; but I need the algorithm itself. Anyone know
where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

Date: 11 Nov 1995 19:26:46 GMT
From: Cal Deal <caldeal@gate.net>
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO
LOOP.

Please move your UFO discussion to an appropriate
location.

Date: 11 Nov 1995 19:12:01 GMT
From: bsmith@msn.com (Bob Smith)
Subject: TS-790A vs.FT-736R

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

End of Ham-Space Digest V95 #316
****

Date: 11 Nov 1995 21:32:06 GMT
From: videodog@cybergate.com (Joe Thor)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> says:
>
>Please move your UFO discussion to an appropriate
>location.
>
>

This is an appropriate place to discuss the space shuttle and UFO's!

Joe

Date: 10 Nov 1995 13:52:22 GMT
From: Jean-Philippe Donnio <jpdonnio@info.unicaen.fr>
Subject: WinOrbit 2.7 (tracking software) available

Carl Gregory <cgregory@uiuc.edu> wrote:

>New Features in version 2.7
>---------------------------

>* Alternate satellite information databases such as "The
> Satellite Encyclopedia" may now be accessed directly.

Just a correction to WinOrbit's help file: TSE's web site is now
http://www.tele-satellit.com/tse/

You may also get the package from
ftp://ftp.tele-satellit.com/pub/tse/tse032.zip

WinOrbit together with TSE is really great! Give it a try!

--
Jean-Philippe Donnio
univ: jpdonnio@info.unicaen.fr http://www.info.unicaen.fr/~jpdonnio/
work: jpdonnio@tele-satellit.com http://tele-satellit.com/tse/tag.html
home: jpdonnio@dialup.francenet.fr

End of Ham-Space Digest V95 #317
****

Date: 8 Nov 1995 20:17:15 -0500
From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *
Date: 8 Nov 1995 20:17:15 -0500
Organization: Rutgers University
Message-ID: <47rkqr$oof@pilot.njin.net>

SB NEWS @ AMSAT $SPC1106
* SpaceNews 06-Nov-95 *

BID: $SPC1106

=========
SpaceNews
=========

MONDAY NOVEMBER 6, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* STS-74 NEWS *
===============
NASA managers have set Nov. 11, 1995, as the official launch date for the
STS-74 mission -- the second in a series of missions between the U.S. Space
Shuttle and the Russian Space Station Mir. The primary purpose of the Space
Shuttle Atlantis STS-74 mission is the installation of a docking module that
will improve clearance between the Shuttle and Mir's solar arrays during
subsequent dockings. Atlantis' crew also will return to Earth experiment
samples, equipment for repair and analysis and products manufactured on the
station.

The Nov. 11 launch of Atlantis is planned for approximately 7:56 AM EST
(1256 UTC) from Kennedy Space Center's Launch Complex 39-A. The actual
launch time may vary by a few minutes based on calculations of Mir's precise
location in space at the time of liftoff. The available launch period, or
--
|Fidonet: Postmaster@chwhert.Switze 1:330/317
|Internet: Postmaster@chwhert.Switze
| Standard disclaimer: The views of this user are strictly their own.
| PandA's Den BBS FidoNet < > internet gateway - email info@panda.org

2339. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: <>
Message-ID: <ac9_9511122201@panda.org>
Source record: 23672

From: wjake@VOA.GOV (William J. Keaton)
Subject: Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
Organization: Voice of America

In article <ve7zvz-1111950131490001@206.12.26.44> ve7zvz@dowco.com (Scott Leaf) writes:
>In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
>(Glenn Hansen) wrote:
>
>-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
>
>-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a

>-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
>-> Newsgroups. These are all the places your UFO stuff is going to. We at
>-> rec.radio.amateur.space are not interested.
>->
>
>Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
>stop the thread from showing up on YOUR screen. Your comment about "a
>great waste of bandwidth" shows an incredible ignorance of how the net
>works. If your concerned about bandwidth go take your soapbox to the alt.
>hierarchy.
>
>--
>Scott Leaf VE7ZVZ
>ve7zvz@dowco.com
>Port Coquitlam, British Columbia, Canada

And why don't you both keep your silly argument out of sci.space.*?

```
*****************************************************************************
*
* WJaKe - William J. Keaton wjake@voa.gov
*
* VOA - The Voice of America VDJS27A@prodigy.com
*
* Opinions - Mine Only http://pages.prodigy.com/VA/wjake/home.html
*
*****************************************************************************
*
--
|Fidonet: William J. Keaton 1:330/317
```

|Internet: William.J..Keaton@William.J..Keaton@*user@*site.*domain.org.org
| Standard disclaimer: The views of this user are strictly their own.
| PandA's Den BBS FidoNet < > internet gateway - email info@panda.org

2340. Re: Rules of ham DUMB.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: "Dennis A. Mason" <damason>
Message-ID: <483ogf$4j5@sanews.uswc.uswest.com>
Source record: 23745
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

well burt sounds like you are very educated.

2341. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: rawiley@blue.weeg.uiowa.edu
Message-ID: <rawiley.816154305@blue.weeg.uiowa.edu>
Source record: 23746
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

.

I think they can be fixed, see below;

>-> Burt Fisher Jokes:
>->
>-> 1. What is the thinnest book in the world?
>-> What Burt Fisher knows about women.
>->
>-> 2. How does Burt Fisher take a bubble bath?
>-> He eats beans for dinner.
>->
>-> 3. What's Burt Fisher's idea of foreplay?
>-> A half hour of contesting.
>->
>-> 4. How can you tell if Burt Fisher is sexually excited?
>-> If he's still breathing.
>->
>-> 5. Can Burt Fisher change a roll of toilet paper?
>-> We don't know...it has never happened.
>->
>-> 6. What's Burt Fisher idea of helping with the housework?
>-> Lifting his leg so you can vacuum.
>->
>-> 7. What does Burt Fisher consider a seven course meal?
>-> A hot dog and a six pack of beer.

Yeah, I know Burt gets off on seeing his name
posted, but I couldn't resist.

NE0R

2342. Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-1111951828010001@206.12.26.40>
Source record: 23747
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <4835cg$ks1@alterdial.UU.NET>, Burt Fisher <k1oik@ccsnet.com> wrote:

-> Ham operator Jokes:
->
-> 1. What is the thinnest book in the world?
-> What hams know about women.
->
-> 2. How does a ham take a bubble bath?
-> He eats beans for dinner.
->
-> 3. What's a ham's idea of foreplay?
-> A half hour of contesting.
->
-> 4. How can you tell if a ham is sexually excited?
-> If he's still breathing.
->
-> 5. How many hams does it take to change a roll of toilet paper?
-> We don't know...it has never happened.
->
-> 6. What's a ham's idea of helping with the housework?
-> Lifting his leg so you can vacuum.
->
-> 7. What does a ham consider a seven course meal?
-> A hot dog and a six pack of beer.

Not only are they not funny they are not even original, your going to have
to find better material Burt! :)

73's

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To Boldy VHF Where No Man Has VHFed Before"

2343. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511120108.UAA23160@ncrhub5.attgis.com>
Source record: 23748

```
Received: by chwhert.switzerland.ncr.com; 12 Nov 95 02:10:49 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id TAA22988; Sat, 11 Nov 1995 19:58:37 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 19:56:49 EST
Received: by mail.ucsd.edu; id OAA19651
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:15 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id OAA19627
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:14 -0800 for ham-space-ddist
Message-Id: <199511112244.OAA19627@mail.ucsd.edu>
Date: Sat, 11 Nov 95 14:44:11 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #316
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 316

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 11 Nov 95 22:43:48 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
```

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU

Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249

sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>

Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404

```
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #312
******************************

------------------------------

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

*NEW* Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
```

http://ids.net/~rmw/news.html
NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm

>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have
not played much with a TS-790A. So if anyone knows more about the TS-790A,
It wont hurt my feelings if someone contradicts me in regards to the
TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted
LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high
end VHF/UHF radios. The FT-736R came out before anyone else had anything
similar. This fact in it's self accounts for why there are some many more
of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their
newsgroup header so that the responses to the SPAMED post don't
end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and
rec.readio.amateur.space are all in the message header. Best approach is to
send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header
during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then
against the issue. Be bold, be brave and make radical statements. Just make
sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO
dweebs will respond in alt.ufo.abducted to your message containing not address
back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the

same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers)
writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name)
writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.
>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--
+-----------------------------------+---------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+---------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
stop the thread from showing up on YOUR screen. Your comment about "a
great waste of bandwidth" shows an incredible ignorance of how the net
works. If your concerned about bandwidth go take your soapbox to the alt.
hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the
one you already have to kill threads that you find offensive then you will
not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on
schedule today for liftoff on Saturday, November 11. The
seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle
Amateur Radio EXperiment (SAREX). The project has flown on 19
previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously
used ham radio from Atlantis during STS-37 in April 1991 and from
the Shuttle Discovery during STS-56 in April 1993. This will be the
third mission Ken has flown where the entire crew are licensed radio
amateurs. The other members include Mission Specialist Jerry Ross,
N5SCW, who was also member of STS-37 SAREX crew, and operated ham
radio aboard the STS-55 Columbia mission in April/May 1993; and
Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard
the Shuttle Columbia during STS-58 in October/November 1993. Two of
the crew members have just recently earned Amateur Radio licenses.
They are NASA astronaut James Halsell, KC5RNI and Canadian Space
Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the
shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts
with 5 schools from around the US. SAREX general voice contacts are
expected to commence after a rendezvous and docking with the Russian

Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking

missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know that programs such as Instant Track include moon tracking (az/el angles) information; but I need the algorithm itself. Anyone know where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

Date: 11 Nov 1995 19:26:46 GMT
From: Cal Deal <caldeal@gate.net>
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Please move your UFO discussion to an appropriate
location.

Date: 11 Nov 1995 19:12:01 GMT
From: bsmith@msn.com (Bob Smith)
Subject: TS-790A vs.FT-736R

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

End of Ham-Space Digest V95 #316
****

2344. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: pbarry@perth.DIALix.oz.au
Message-ID: <483hiepci1@perth.DIALix.oz.au>
Source record: 23749
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Anthony John Xenos (ax823092@oak.cats.ohiou.edu) probably wrote:
:
: The idea (detailed below) that we can assume much about whether life exists on
: other planets based on two premises (life exists on earth, so it is possible,
: and the universe is big) is ridiculous. Think about the beach analogy.
: Imagine that it is a pebbly rather than sandy beach you are sitting on. You
: reach down and the first thing you pick up happens to be a dime. Would you
: assume that the beach was made of dimes? Of course not. You could only begin
[deleted] ^^^^^^^^^^^^^

Maybe not, but it sure WOULD be reasonable to conclude that the chances
of finding another dime on a large beach is very high, as is the
possibility of finding another civilized planet in a large universe.

paul

2345. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-1111951819520001@206.12.26.40>
Source record: 23750
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> wrote:

-> Please move your UFO discussion to an appropriate
-> location.

Learn how to use a 'KILL' file to stop the thread from showing up on YOUR
screen if you find it so offensive. We dont need censorship on the Net.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To Boldy VHF Where No Man Has VHFed Before"

2346. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511120333.WAA25143@ncrhub5.attgis.com>
Source record: 23751

```
Received: by chwhert.switzerland.ncr.com; 12 Nov 95 04:33:30 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id WAA13713; Sat, 11 Nov 1995 22:21:22 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 22:21:15 EST
Received: by mail.ucsd.edu; id RAA07260
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:23 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id RAA07239
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:21 -0800 for ham-space-ddist
Message-Id: <199511120109.RAA07239@mail.ucsd.edu>
Date: Sat, 11 Nov 95 17:09:18 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #317
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 317

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WinOrbit 2.7 (tracking software) available

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 12 Nov 95 01:08:53 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
```

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 02:10:49 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id TAA22988; Sat, 11 Nov 1995 19:58:37 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 19:56:49 EST
Received: by mail.ucsd.edu; id OAA19651
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:15 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id OAA19627
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:14 -0800 for ham-space-ddist
Message-Id: <199511112244.OAA19627@mail.ucsd.edu>
Date: Sat, 11 Nov 95 14:44:11 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #316
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 316

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 22:43:48 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu

Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST

From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU

Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l

earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN

G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218

```
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #312
******************************

------------------------------

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

*NEW* Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
*NEW* Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

------------------------------
```

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have
not played much with a TS-790A. So if anyone knows more about the TS-790A,
It wont hurt my feelings if someone contradicts me in regards to the
TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and rec.readio.amateur.space are all in the message header. Best approach is to send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then against the issue. Be bold, be brave and make radical statements. Just make sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO dweebs will respond in alt.ufo.abducted to your message containing not address back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the
same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers) writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name) writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.
>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--
+-----------------------------------+---------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+---------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
stop the thread from showing up on YOUR screen. Your comment about "a
great waste of bandwidth" shows an incredible ignorance of how the net
works. If your concerned about bandwidth go take your soapbox to the alt.
hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?

-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the one you already have to kill threads that you find offensive then you will not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on schedule today for liftoff on Saturday, November 11. The seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing

is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a

greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org

World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know that programs such as Instant Track include moon tracking (az/el angles) information; but I need the algorithm itself. Anyone know where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

Date: 11 Nov 1995 19:26:46 GMT
From: Cal Deal <caldeal@gate.net>
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Please move your UFO discussion to an appropriate
location.

Date: 11 Nov 1995 19:12:01 GMT
From: bsmith@msn.com (Bob Smith)
Subject: TS-790A vs.FT-736R

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

End of Ham-Space Digest V95 #316
****

Date: 11 Nov 1995 21:32:06 GMT
From: videodog@cybergate.com (Joe Thor)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> says:
>
>Please move your UFO discussion to an appropriate
>location.
>
>

This is an appropriate place to discuss the space shuttle and UFO's!

Joe

Date: 10 Nov 1995 13:52:22 GMT
From: Jean-Philippe Donnio <jpdonnio@info.unicaen.fr>
Subject: WinOrbit 2.7 (tracking software) available

Carl Gregory <cgregory@uiuc.edu> wrote:

>New Features in version 2.7
>--------------------------

>* Alternate satellite information databases such as "The
> Satellite Encyclopedia" may now be accessed directly.

Just a correction to WinOrbit's help file: TSE's web site is now
http://www.tele-satellit.com/tse/

You may also get the package from
ftp://ftp.tele-satellit.com/pub/tse/tse032.zip

WinOrbit together with TSE is really great! Give it a try!

--
Jean-Philippe Donnio
univ: jpdonnio@info.unicaen.fr http://www.info.unicaen.fr/~jpdonnio/
work: jpdonnio@tele-satellit.com http://tele-satellit.com/tse/tag.html
home: jpdonnio@dialup.francenet.fr

End of Ham-Space Digest V95 #317
****

2347. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <484lpg$21a@alterdial.UU.NET>
Source record: 23752
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

ve7zvz@dowco.com (Scott Leaf) wrote:
>In article <4835cg$ks1@alterdial.UU.NET>, Burt Fisher <k1oik@ccsnet.com>
>-> 7. What does a ham consider a seven course meal?
>-> A hot dog and a six pack of beer.
>
>Not only are they not funny they are not even original, your going to have
>to find better material Burt! :)

They are half original.
I guess since the jokes are based on truisms they are not that funny.

```
#================#=========================================================#
| Burt Fisher | Teacher of video, broadcasting and electronics |
| Amateur call | South Dennis, Ma. (Cape Cod) |
| K1OIK | The less you say, the more people will remember |
#================#=========================================================#
| k1oik@ccsnet.com fisher@meol.mass.edu |
#=============================================================================#
```

2348. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <484lsa$21a@alterdial.UU.NET>
Source record: 23753
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

```
rawiley@blue.weeg.uiowa.edu (R. Wiley) wrote:
>.
>
>I think they can be fixed, see below;
>
>>-> 7. What does Burt Fisher consider a seven course meal?
>>-> A hot dog and a six pack of beer.
>
>
>Yeah, I know Burt gets off on seeing his name
>posted, but I couldn't resist.
>
>
>NE0R

I must admit you nailed me good.

#================#=========================================================#
| Burt Fisher | Teacher of video, broadcasting and electronics |
| Amateur call | South Dennis, Ma. (Cape Cod) |
| K1OIK | The less you say, the more people will remember |
#================#=========================================================#
| k1oik@ccsnet.com fisher@meol.mass.edu |
#=====================================================================#
```

2349. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: time@tir.com
Message-ID: <484oqi$2r1@ramp2.lisp.com>
Source record: 23754
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Burt, why dont you just go away someplace else. Your the only one who
enjoys your "so called" wit. We all think your a jerk. You must lead
an awfully sheltered dull life if this is all you can find to do for
fun...

Burt Fisher <k1oik@ccsnet.com> wrote:

>ve7zvz@dowco.com (Scott Leaf) wrote:
>>In article <4835cg$ks1@alterdial.UU.NET>, Burt Fisher <k1oik@ccsnet.com>
>>-> 7. What does a ham consider a seven course meal?
>>-> A hot dog and a six pack of beer.
>>
>>Not only are they not funny they are not even original, your going to have
>>to find better material Burt! :)

>They are half original.
>I guess since the jokes are based on truisms they are not that funny.

>#================#==#
>| Burt Fisher | Teacher of video, broadcasting and electronics |
>| Amateur call | South Dennis, Ma. (Cape Cod) |
>| K1OIK | The less you say, the more people will remember |
>#================#==#
>| k1oik@ccsnet.com fisher@meol.mass.edu |
>#===#

2350. Re: Do it for the log.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: donk@a.crl.com
Message-ID: <30a6439c.3935195@165.113.1.21>
Source record: 23755
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

Burt Fisher <k1oik@ccsnet.com> wrote:

>To: Multiple recipients of list HAM-L <HAM-L@TREARN.BITNET>

And countless others, it turns out :-)

>How many times have you heards folks say that they wanted the other
>guy's name, QTH, etc. for the log? My log couldn't care less about
>that information. Whenever I ask, it's because I want to know.

Hey, guys, why was this posted in puzzles, running, skiing, and half a dozen other groups? Ham related I can understand, but PLEASE look at the cross-posted groups!

BTW, I picked this up in rec.running, but I always wanted the name also--and of course I wrote it IN the log (where else, back in the old pre-computer days?) 73. N6IM

Don Kirkman donk@a.crl.com
Cerritos, CA
If I had a life I'd be having a mid-life crisis

2351. Re: Rules of ham DUMB.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: tubegod@cml.com
Message-ID: <ragnaroek1995Nov12.150534.4295@news2.compulink.com>
Source record: 23756
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

Burt Fisher (k1oik@ccsnet.com) wrote:
: Ham operator Jokes:

Hi Burt! I really miss your *perspective* on amateur radio over there on
the RIME network.

: 1. What is the thinnest book in the world?
: What hams know about women.

I heard "Italian War Heroes" myself.

: 2. How does a ham take a bubble bath?
: He eats beans for dinner.

Yeah, I heard "How does a redneck take a......"

: 3. What's a ham's idea of foreplay?
: A half hour of contesting.

I heard "Brace yourself Martha"

: 4. How can you tell if a ham is sexually excited?
: If he's still breathing.

This one is very old......

: 5. How many hams does it take to change a roll of toilet paper?
: We don't know...it has never happened.

The version I head was "Men" and not just hams.

: 6. What's a ham's idea of helping with the housework?
: Lifting his leg so you can vacuum.

Once again, I had heard "men"

: 7. What does a ham consider a seven course meal?
: A hot dog and a six pack of beer.

Once again, I had heard "men".

Burt, you're gonna have to do a little better than this!

Cheers!

Andy

```
--------------------------------------------------------------------------
: ComputerLink Online (416)233-5410 104 lines, SLIP, 9600 - 28,800 bps :
--------------------------------------------------------------------------
```

2352. Still Need Sinadder info/manual

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: stelpony@ix.netcom.com
Message-ID: <485tjb$bg@ixnews5.ix.netcom.com>
Source record: 23757
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

Hi fellow hams:

Still looking for info on Sinadder Model #S-101. Also willing to trade a goodie from the qrp junque box for good data. OR willing to pay costs for repro's.

Tnx,

John, N5INZ

2353. Re: THE Burt

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: timhynde@ix.netcom.com
Message-ID: <485uds$na4@ixnews2.ix.netcom.com>
Source record: 23758
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Burt Fisher <k1oik@ccsnet.com> writes:

> Frequently I hear hams say, THE name HERE is_____.
>How often do you say when you meet someone (assuming your name
>is Charlie), THE name HERE is Charlie? You never do that right? After
>to do so is so impersonal and asinine that you would not want
>to seem like a fool-then why do it on the air? Just because you
>are a ham is no excuse not to be personal. Of course you could
>really sound like THE jerk of the year by saying, THE first
>personal here is Charlie (at least if you are not personal-you are
>using the word-albeit it in an extremely impersonal way).
>Also why say "here", is your name any different when you are "there?"
>
>73 from we here (not there) at K1OIK where THE name are Burt.
>---------------------------------46492684123405--

Burt:

Did it ever occour to you that meeting someone in person is differnt
than meeting them on the air? In my 15 brief years as a ham and SWL I
have never heard a conversation, amateur or commercial that resembled
one I would have with someone face to face.

I dont remember ever telling anyone I was talking to face to face that
their voice was just above the noise level.

Furthermore I dont expect my radio contact to use perfect grammar or
say and do the things I do in order to enjoy communicating with him.

By the way Burt, whats this got to do with building and experimenting
this is rec.radio.amateur.homebrew isnt it?

Regards,

Tim Hynde ka8ddz

2354. Re: Rules of ham DUMB.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: randolw@ix.netcom.com
Message-ID: <483p6s$kk4@ixnews5.ix.netcom.com>
Source record: 23759
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In <4835cg$ks1@alterdial.UU.NET> Burt Fisher <k1oik@ccsnet.com> writes:

>
>Ham operator Jokes:
>
>1. What is the thinnest book in the world?
> What hams know about women.
>
>2. How does a ham take a bubble bath?
> He eats beans for dinner.
>
>3. What's a ham's idea of foreplay?
> A half hour of contesting.
>
>4. How can you tell if a ham is sexually excited?
> If he's still breathing.
>
>5. How many hams does it take to change a roll of toilet paper?
> We don't know...it has never happened.
>
>6. What's a ham's idea of helping with the housework?
> Lifting his leg so you can vacuum.
>
>7. What does a ham consider a seven course meal?
> A hot dog and a six pack of beer.

What kinda beer? Can or bottle?

2355. Radio Meteor Obs Bull. October 1995 Orionids

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: steyaert@vvs.innet.be
Message-ID: <steyaert.31.30A5C9E8@vvs.innet.be>
Source record: 23760

Radio Meteor Observation Bulletin No. 27 Nov 1995

1. FORWARD SCATTER METEOR OBSERVATIONS

Observer: Thomas Ashcraft
Location: Santa Fe, New Mexico, USA (35 42' N, 105 57' W)
Frequencies: 89.5 MHz, 91.1 MHz, 91.9 MHz, 94.7 MHz, 98.1 MHz, 99.1 MHz
Transmitters: Multiple transmitters received.
Receivers: Sangean ATS-803A, Technics SA-160, Sony HP-160,
Hallicrafters SX-62B.
Antennas: Using four separate six element directional FM Yagi's
Ant. Elev: Experimenting with different elevations
Obs. method: Strip charting full time for fireballs and anomalous meteor
activity. Listening and counting in real time or during audio
tape playback. I make a second by second count and also note
duration of each reflection and any significant qualities.
WWV universal time is also recorded on the audio tapes.

October 1995

. In October I recorded the Orionids to stereo VHS tape and have all hours
recorded when the shower radiant was above my local horizon from October
18 to October 24. There are over 130 hours of audio tape including baseline
sporadic counts and I will keep these tapes until I can process them
properly. If there is a meteor scientist interested in plotting these tapes,
they may be available. Please feel free to e-mail me (address see below).

Thomas Ashcraft

Observer: Maurice De Meyere
Location: Deurle, Belgium (3 37' E, 51 00' N)
Frequency: 66.51 MHz
Transmitter locations (all stations of more than 10 kW):
Siedlce Poland, 66.41 MHz, 25 kW
Pardubice Czech Rep 66.44 MHz, 30 kW
Hradec Kralove Czech Rep 66.44 MHz, 30 kW
Sibiu Romania 66.44 MHz, 40 kW
Poznan Poland 66.56 MHz, 38 kW
Baia Mare Romania 66.56 MHz, 35 kW
Budapest Hungary 66.62 MHz, 100 kW

Antenna: crossed Yagi, 4 elements, astronomical azimuth 270 o (= East),
elevation 27 o
Antenna amplifier: 25 dB max level 90 dBmuV
Receiver: commercial, Progresson 447A, TESLA, Bratislava

The receiver was calibrated with a Marconi TF2008 signal
generator. Sensitivity: 5 muV (modulation frequency
1000 Hz, frequency sweep 38 kHz) at (S+N)/N = 20 dB

Observing method: automated setup, 150 samples/second, 8 bit resolution.
[Time and details of all individual meteor reflections are stored
on file in the University of Ghent format (Prometeos), and are
available for further analysis. Reduction software for DOS and
Windows available].

October 1995

Raw counts of reflections with a duration of at least 0.027 s
during one hour interval starting at UT:

Oct	UT										
1995	20h	21	22	23	00	01	02	03	04	05	06	07
1- 2	31	54	54	67	74	65	64	84	73	76	55	60
2- 3	25	67	65	59	69	67	62	62	81	87	92	77
3- 4	26	67	-	-	-	-	-	-	-	-	-	-
4- 5	36	45	66	55	74	59	104	76	63	71	64	84
5- 6	-	-	-	-	-	-	-	-	-	-	-	-
6- 7	-	-	-	-	-	-	-	-	-	-	-	-
7- 8	-	-	-	-	-	-	-	-	-	-	-	-
8- 9	-	-	-	-	-	-	-	-	-	-	-	-
9-10	26	43	35	72	62	69	74	76	55	67	65	36
10-11	48	146	84	53	76	78	79	67	60	47	45	34
11-12	48	37	78	43	61	71	52	60	50	44	232?	60
12-13	30	81	68	57	64	74	55	83	57	48	63	87
13-14	25	37	61	69	62	70	65	74	93	76	71	44
14-15	33	41	54	57	65	84	59	73	55	50	95	49
15-16	21	77	64	47	82	67	93	64	62	73	77	43
16-17	33	77	68	68	75	69	93	69	66	77	77	47
17-18	47	64	84	64	64	68	76	112	133	134	98	66
18-19	33	36	80	67	79	74	60	87	80	72	82	51
19-20	45	71	72	70	88	68	97	96	71	78	94	66
20-21	21	63	53	64	73	71	86	102	103	87	97	84
21-22	22	41	79	83	75	106	100	97	136	135	127	77
22-23	-	-	-	-	-	-	-	-	-	-	-	-
23-24	24	44	46	69	70	84	96	111	118	101	95	58
24-25	33	54	133	91	96	90	92	103	101	86	89	73
25-26	42	55	65	86	103	87	110	88	83	90	65	68
26-27	34	56	75	61	83	82	95	86	78	82	88	94
27-28	40	54	65	72	77	89	104	87	88	74	93	53
28-29	21	51	71	64	60	68	87	68	79	80	80	49
29-30	42	67	91	56	68	65	80	69	94	77	88	47
30-31	24	44	52	66	72	60	64	77	80	62	70	63
31-01	98	124	69	68	76	88	83	92	93	73	80	91
1995	20h	21	22	23	00	01	02	03	04	05	06	07

Oct | UT

Notes:

. Some transmitters are not broadcasting between 2h-5h local time
(Sat-Sun 3h-6h local time) or sometimes longer. (When winter hour is
in use: local time = UT + 1h).

. ? possibly sporadic-E, to be checked.

. good Orionid activity on Oct 17-18, and between Oct 21-25.
The Orionid radiant rises at 20h30m, and sets at 11h15m.
Best forward scatter conditions for this setup between 5h and 7h UT.

Maurice De Meyere / Chris Steyaert

Observer: Werfried Kuneth
Location: Villach, Austria (46 37' N, 13 53' E)
Frequency: 59.250 MHz, SSB mode
Transmitter location: 150 kW TV video carrier from Bucaresti, distance
950 km, east. Sometimes other TV video carriers are selected.
Antenna: dipole with reflector, direction east.
Receiver: AOR AR-8000. No modifications, 6dB attenuator at input.
Observing method: the audio signal is fed into a real time FFT display
(FFTDSP program from AF9Y) on the PC where 640 channels of 2Hz width
are recorded and stored continuously. Every meteor reflection produces
a distinct whistle, which is recorded easily by the real time FFT
program.
From the saved .GIF files only reflections of at least 15 seconds are
taken for the relative count:

October 1995

Long meteor reflection counts in
one hour intervals starting at UT:

Day | 05h00 UT 06h00 UT
Oct.95 |
---
09 | 2 3
10 | 8 9
11 | - -
12 | 4 6
13 | 6 6
14 | 9 8
15 | 6 13 (with several long radio fireballs)
16 | 13 12
17 | 9 5
18 | 8 7
19 | 8 7
20 | 10 12
21 | 9 9

22 | 14 18 (with several long radio fireballs)
23 | 8 9
24 | 7 10
25 | 10 7
26 | 9 8
27 | 12 9
28 | 5 6
29 | 7 5
30 | >5 -
31 | 9 7

. for reference: a 15+ s duration count of 18 is about 40% of the 1995 radio Perseids peak.

. At 05h00 to 07h00 UT the calculated OF (observability function) is highest, I did only count at the OF peak hours, just to see, if the Orionids peak comes in at the right date.

. Local time conversion: one hour ahead of UT (06h00 UT is 07h00 local).

2. ABOUT THE RMOB

The RMOB is an independent initiative of some workers in the field of radio meteor scatter observations and data reduction. It started in August 1993 in order to spread rapidly the Perseid results via E-mail. Since then, it has appeared monthly, and has gradually been expanded.

Typically it contains: summaries of recent observations, first results of stream activity by radio methods, relations between radio and optical meteors, references to other publications in the field of meteor astronomy and radio scatter techniques, announcements of meetings, short questions and answers, non-commercial (second hand) sale of radio equipment, available software.

Contributors are mentioned, and interested persons are asked to contact them directly.

RMOB can be copied freely in unabridged and unmodified form. Extracts should indicate the source (Radio Meteor Obs Bulletin, month and year).

If you want to subscribe (or unsubscribe) to the E-mail distribution list, please send a message to C. Steyaert.
Those not having access to E-mail can obtain a printed copy free of charge from J. Van Wassenhove (current or back-issues).

3. CONTRIBUTORS / USEFUL ADDRESSES

Thomas Ashcraft
Radio Fireball Observatory
Santa Fe, New Mexico
E-mail: 72632.1427@compuserve.com

Maurice De Meyere
Hullekensstraat 24, B 9831 Deurle, Belgium

tel: +32 (9) 282 35 26
Call: ON4NU, packet: ON4NU@ON4AWP
E-mail: via Chris Steyaert

Werfried Kuneth
Villach, Austria
Call: OE8FNK
E-mail: 100021.514@compuserve.com

Chris Steyaert, VVS
Kruisven 66, B 2400 Mol, Belgium
tel: +32 (14) 31 51 04
E-mail: steyaert@vvs.innet.be
Compuserve: 72650,3513

Jeroen Van Wassenhove, VVS
's Gravenstraat 66, B 9810 Nazareth, Belgium
tel: +32 (9) 385 61 09
E-mail: 100101.734@compuserve.com

Paul Vauterin, University of Ghent, Astronomical Observatory
E-mail: paul@izar.rug.ac.be

--
Christian Steyaert (RMOB9511) 11 Nov 1995
--

2356. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511120700.CAA02009@ncrhub5.attgis.com>
Source record: 23761

```
Received: by chwhert.switzerland.ncr.com; 12 Nov 95 08:08:16 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id BAA01557; Sun, 12 Nov 1995 01:56:06 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 01:55:39 EST
Received: by mail.ucsd.edu; id TAA22333
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:57 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id TAA22317
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:55 -0800 for ham-space-ddist
Message-Id: <199511120333.TAA22317@mail.ucsd.edu>
Date: Sat, 11 Nov 95 19:33:54 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #318
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 318

Today's Topics:
(none)
* SpaceNews 06-Nov-95 *
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP. (2 msgs)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 12 Nov 95 03:33:31 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
```

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 04:33:30 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id WAA13713; Sat, 11 Nov 1995 22:21:22 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 22:21:15 EST
Received: by mail.ucsd.edu; id RAA07260
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:23 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id RAA07239
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:21 -0800 for ham-space-ddist
Message-Id: <199511120109.RAA07239@mail.ucsd.edu>
Date: Sat, 11 Nov 95 17:09:18 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #317
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 317

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WinOrbit 2.7 (tracking software) available

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 01:08:53 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 02:10:49 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id TAA22988; Sat, 11 Nov 1995 19:58:37 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 19:56:49 EST
Received: by mail.ucsd.edu; id OAA19651
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:15 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU

Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id OAA19627
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:14 -0800 for ham-space-ddist
Message-Id: <199511112244.OAA19627@mail.ucsd.edu>
Date: Sat, 11 Nov 95 14:44:11 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #316
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 316

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 22:43:48 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST

From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk

STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an
incredible new multi-media technology that uses a special digital headset that forces your
mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even
read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail.
Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138

```
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
```

```
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #312
******************************

------------------------------

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

*NEW* Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
*NEW* Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

------------------------------

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
```

>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and rec.readio.amateur.space are all in the message header. Best approach is to send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then against the issue. Be bold, be brave and make radical statements. Just make sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO dweebs will respond in alt.ufo.abducted to your message containing not address back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale. Currently using a SASI Sattracker with tuner for my IC820, but its not supported by WISP. Have a DSP2232 sitting here collecting dust til I get

the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the
same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers) writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name) writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.
>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--
+-----------------------------------+--------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+--------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
stop the thread from showing up on YOUR screen. Your comment about "a
great waste of bandwidth" shows an incredible ignorance of how the net
works. If your concerned about bandwidth go take your soapbox to the alt.
hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the
one you already have to kill threads that you find offensive then you will
not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on schedule today for liftoff on Saturday, November 11. The seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people,

particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD)
re-transmit live, shuttle air-to-ground audio over the amateur
frequencies from their club station, WA3NAN. To listen-in, tune to
Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295,
21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a
very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on
SAREX. This document may be obtained electronically from many of the
popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know
that programs such as Instant Track include moon tracking (az/el
angles) information; but I need the algorithm itself. Anyone know
where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

Date: 11 Nov 1995 19:26:46 GMT
From: Cal Deal <caldeal@gate.net>
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Please move your UFO discussion to an appropriate
location.

Date: 11 Nov 1995 19:12:01 GMT
From: bsmith@msn.com (Bob Smith)
Subject: TS-790A vs.FT-736R

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

End of Ham-Space Digest V95 #316
****

Date: 11 Nov 1995 21:32:06 GMT
From: videodog@cybergate.com (Joe Thor)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> says:
>
>Please move your UFO discussion to an appropriate
>location.
>
>

This is an appropriate place to discuss the space shuttle and UFO's!

Joe

Date: 10 Nov 1995 13:52:22 GMT
From: Jean-Philippe Donnio <jpdonnio@info.unicaen.fr>
Subject: WinOrbit 2.7 (tracking software) available

Carl Gregory <cgregory@uiuc.edu> wrote:

>New Features in version 2.7
>---------------------------

>* Alternate satellite information databases such as "The
> Satellite Encyclopedia" may now be accessed directly.

Just a correction to WinOrbit's help file: TSE's web site is now
http://www.tele-satellit.com/tse/

You may also get the package from
ftp://ftp.tele-satellit.com/pub/tse/tse032.zip

WinOrbit together with TSE is really great! Give it a try!

--
Jean-Philippe Donnio
univ: jpdonnio@info.unicaen.fr http://www.info.unicaen.fr/~jpdonnio/
work: jpdonnio@tele-satellit.com http://tele-satellit.com/tse/tag.html
home: jpdonnio@dialup.francenet.fr

End of Ham-Space Digest V95 #317
****

Date: 8 Nov 1995 20:17:15 -0500
From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *
Date: 8 Nov 1995 20:17:15 -0500
Organization: Rutgers University
Message-ID: <47rkqr$oof@pilot.njin.net>

SB NEWS @ AMSAT $SPC1106
* SpaceNews 06-Nov-95 *

BID: $SPC1106

=========
SpaceNews
=========

MONDAY NOVEMBER 6, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* STS-74 NEWS *
===============
NASA managers have set Nov. 11, 1995, as the official launch date for the
STS-74 mission -- the second in a series of missions between the U.S. Space
Shuttle and the Russian Space Station Mir. The primary purpose of the Space
Shuttle Atlantis STS-74 mission is the installation of a docking module that
will improve clearance between the Shuttle and Mir's solar arrays during
subsequent dockings. Atlantis' crew also will return to Earth experiment
samples, equipment for repair and analysis and products manufactured on the
station.

The Nov. 11 launch of Atlantis is planned for approximately 7:56 AM EST
(1256 UTC) from Kennedy Space Center's Launch Complex 39-A. The actual
launch time may vary by a few minutes based on calculations of Mir's precise
location in space at the time of liftoff. The available launch period, or
"window" to launch Atlantis, is approximately seven minutes each day.

The STS-74 mission is scheduled to last approximately eight days. Docking with Mir will occur on the fourth day of the flight. An on-time launch and nominal mission duration would have Atlantis and her crew returning to Earth on Nov. 19 with a landing at Kennedy Space Center's Shuttle Landing Facility, Florida, at approximately 1:28 p.m. EST (1828 UTC).

The STS-74 mission will be the 15th mission for Atlantis and the 73rd for the Space Shuttle system.

STS-74 data at a glance:

VEHICLE: Atlantis/OV-104
LOCATION: Pad 39A
TARGET LAUNCH DATE/TIME: Nov. 11 at about 7:56 AM EST (1256 UTC)
LAUNCH WINDOW: 6 minutes, 57 seconds
TARGET MIR DOCKING DATE: Nov. 14
TARGET KSC LANDING DATE/TIME: Nov. 19 at about 1 PM EST (1800 UTC)
MISSION DURATION: 8 days, 5 hours, 4 minutes
CREW SIZE: 5 (All licensed Amateur Radio Operators)
ORBITAL ALTITUDE and INCLINATION: 196-245 statute miles/51.6 degrees

[Info via NASA]

* NEW INFO SERVER AVAILABLE *
==========
An anonymous FTP server has been made available by a French Scientific Center for the purpose of disseminating information of interest to those involved in Amateur Astronomy and Amateur Space activitites. The server provides the following information services:

Kelso database (amateur, weather, synchro, manned spacecraft)
Molczan database (1000 2Line orbital elements)
NASA database (MIR and exotic satellites)
AMSAT database (Shuttle vectors)
SpaceNews (KD2BD)
ANS (from amsat.org, in English and French language)

Ephemerid (Solar planetary satellites (project))

Access at: Internet FTP anonymous (TCP/IP)
Address: alphalma.cnrs-mrs.fr (192.134.96.21)
Login: anonymous
Password: your e-mail address or call, please.
Directory name: astro

(This is an experimental test European database).

Sysop: fb1rci@lma.cnrs-mrs.fr

[Info via FB1RCI]

* MIR NEWS *
==========
Mir status as of 30-Oct-95

The current Mir crew is busy getting used to their new environment. Packet activity on 2-meters was temporarily interrupted due to a problem with the audio feed into the PacCom TNC. This problem has been resolved and 2-Meter packet is now fully operational. Some fine tuning of the TNC's parameters are still taking place to optimize 1200 baud data throughput.

The "USERS" counter has been set to 7. This means that 7 people can connect to Mir's keyboard at the same time. However if no one is at the keyboard on Mir, then all of the data sent goes into the bit bucket. It is recommended to stay OFF the keyboard ports unless someone from Mir is actually typing on the keyboard (Port call sign R0MIR). Excessive traffic on the keyboard port just causes interference to the user of the BBS (Port call sign R0MIR-1). Do not expect anyone to be at the keyboard after 21:00 UTC. This is one of the many parameters being adjusted.

The status of the 440 FM packet/voice is beginning to look better. The new dual band transceiver (Kenwood TM733 European version) is now on Mir. Arrangements are being made to deliver the missing Amateur Radio related parts to Mir in the near future (coax cables, manuals, cavity filter, etc). The cavity filters are required to allow simultaneous operation on both 2-meters (Icom 228) and on 70-cm (Kenwood TM733). Sources indicate the externally mounted dual band antenna was installed 6 months ago.

The Mir crew has two new Russian made 1200 baud TNCs. The TNCs are controlled by a Russian made Terminal Software program. Thomas has indicated that he has not be able to get the new TNCs to "initialize". There are people in Germany and Russia working on this problem.

The Mir station is still running on 145.550 MHz simplex for voice and packet communications. There may be a frequency change in the future, but there is no confirmed date for the frequency change.

During the weekend of 28-Nov-95, Sergi was active on voice and keyboard. Thomas was very active on voice working with key stations in the USA, fine tuning Amateur Radio related activities. Down link signal quality is very good, and the old noisy ventilation fan has been replaced (Do you remember the loud fan noises heard last summer everytime Mir used voice?).

The Mir crew sleeps from approximately 21:00 UTC till approximately 05:00 UTC (5pm-1am EST). Most of the Mir passes over the USA are during the sleeping period of the crew. The Mir Space station will be visible in the evening sky for the next few weeks. Please update your tracking programs, and look for Mir passes 30 - 120 minutes after local sunset.

Remember, only 1 station can connect to MIR's PMS (R0MIR-1) at a time, ALL others must wait. And please stay off the R0MIR keyboard port, unless it is active with communications from a Cosmonaut.

[Info via G. Miles Mann, WF1F]

* OSCAR NEWS *
==========
Pacsat AO-16: normal BBS.

Dove DO-17:

Last week:
Software, hardware and sound testing in progress
DOVE Command Team (WD0E)

This week:
10/29/95
Software load complete. S-band is on and should stay on. Accurate
measurements of it's frequency (2401.220 MHz) appreciated to wd0e@amsat.org
DOVE Command Team (WD0E)

[telemetry dwell 30 secs]

Weber WO-18: normal operations

Lusat LO-19: normal BBS operations

Itamsat IO-26: nothing heard on either D/L 03-Nov-95 [vk7zo]

[Info via Graham, VK7ZO]

* FEEDBACK/INPUT WELCOMED *
==========
Comments and input for SpaceNews should be directed to the editor (John,
KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org, magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

Date: 11 Nov 1995 23:22:55 GMT
From: mjensen@phoenix.net (Mike Jensen)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Joe Thor (videodog@cybergate.com) wrote:
: >
: >Please move your UFO discussion to an appropriate
: >location.
: >

: This is an appropriate place to discuss the space shuttle and UFO's!

Where in sci.space.shuttle does it say ufo? This is not an appropriate
forum for UFO discussions. sci.space.ufo, if it existed, would be, but
since several other ufo newsgroups exist, I suggest taking the
discussion there instead.

: Joe

Mike
--

Through the router, over the firewall, down the cable.. nothing but net!
Don't be so open minded your brains fall out.

Date: Sun, 12 Nov 1995 01:20:11 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> wrote:

-> Please move your UFO discussion to an appropriate
-> location.

Learn how to use a 'KILL' file to stop the thread from showing up on YOUR
screen if you find it so offensive. We dont need censorship on the Net.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To Boldy VHF Where No Man Has VHFed Before"

End of Ham-Space Digest V95 #318
****

2357. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511121503.KAA07331@ncrhub5.attgis.com>
Source record: 23762

```
Received: by chwhert.switzerland.ncr.com; 12 Nov 95 16:07:37 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id JAA07107; Sun, 12 Nov 1995 09:55:28 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 09:55:09 EST
Received: by mail.ucsd.edu; id EAA07296
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA07288
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511121230.EAA07288@mail.ucsd.edu>
Date: Sun, 12 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #319
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 319

Today's Topics:
ARLS022 Next shuttle all licensed
fed Log
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 10 Nov 1995 20:24:46 -0500
From: w1aw@arrl.org
Subject: ARLS022 Next shuttle all licensed
```

SB SPACE @ ARL $ARLS022
ARLS022 Next shuttle all licensed

ZCZC AS02
QST de W1AW
Space Bulletin 022 ARLS022

Date: 10 Nov 1995 08:42:11 -0500
From: dcimp@aol.com (DCimp)
Subject: fed Log

Anyone know where I can get a copy of "Fed Log"?

Date: 11 Nov 1995 15:13:51 GMT
From: wave@mindspring.com (Pieter Ibelings)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Do these UFO's have ham radio stations on them?
I have MIR confirmed , but that's about it.

73's

Date: (null)
From: (null)

SB SPACE ARL ARLS022
ARLS022 Next shuttle all licensed

Space Shuttle mission STS-74 is scheduled for lift-off at 1255 UTC
on Saturday, November 11, with all five crew members holding Amateur
Radio licenses.

NASA astronaut James Halsell, KC5RNI, and Canadian Space Agency
astronaut Chris Hadfield, KC5RNJ, both received their licenses in
recent days, and both plan to participate in Shuttle Amateur Radio
EXperiment (SAREX) activities during the STS-74 mission.

Halsell is the shuttle's pilot, and Hadfield is a mission
specialist.

Shuttle Atlantis's commander for STS-74 is Ken Cameron, KB5AWP, who
used Amateur Radio from Atlantis during STS-37 in April 1991 and
from Discovery during STS-56 in April 1993. This will be the third
mission Cameron has flown where the entire crew are licensed radio
amateurs.

Other STS-74 crew members are Mission Specialist Jerry Ross, N5SCW,
who was also a member of STS-37, and who operated ham radio aboard
the STS-55 Columbia mission in April/May 1993; and Mission
Specialist Bill McArthur, KC5ACR, who used ham radio aboard Columbia

during STS-58 in October/November 1993.

For more information on the SAREX program, visit the SAREX home page
on the World Wide Web at

http://www.nasa.gov/sarex/sarexmainpage.html
NNNN
/EX

End of Ham-Space Digest V95 #319
****

2358. ARLK061 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk061.1995@ampr.org>
Source record: 23763
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK061
ARLK061 Keplerian data

ZCZC SK86
QST de W1AW
Keplerian Bulletin 61 ARLK061
From ARRL Headquarters
Newington, CT November 11, 1995
To all radio amateurs

SB KEP ARL ARLK061
ARLK061 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95313.86156770 .00003998 00000-0 58925-4 0 3081
2 16609 51.6451 148.0817 0003574 304.4745 55.5910 15.57982282555662
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95312.04588371 .00000040 00000-0 27245-4 0 01351
2 18129 82.9245 312.7342 0013329 54.0088 306.2297 13.72358626419701
UO-11
1 14781U 84021B 95312.00762864 .00000185 00000-0 39090-4 0 08425
2 14781 97.7871 307.8396 0012997 81.2952 278.9721 14.69396068625026
RS-12/13
1 21089U 91007A 95313.18472939 .00000038 00000-0 24104-4 0 8435
2 21089 82.9230 353.2460 0030062 125.8627 234.5324 13.74061957238684
AO-13
1 19216U 88051B 95312.96962799 .00000049 00000-0 18599-3 0 1088
2 19216 57.4296 154.0272 7346381 23.2353 357.6953 2.09725300 25200
UO-14
1 20437U 90005B 95313.21104328 .00000008 00000-0 19745-4 0 1385
2 20437 98.5617 35.2020 0011274 127.7188 232.5021 14.29902293302477
```

```
RS-15
1 23439U 94085A 95312.62980964 -.00000039 00000-0 10000-3 0 900
2 23439 64.8177 21.3820 0166782 237.5072 120.9633 11.27524533 35801
AO-16
1 20439U 90005D 95312.19769396 .00000017 00000-0 23609-4 0 09444
2 20439 98.5733 36.0735 0011380 131.3227 228.8935 14.29956970302342
DO-17
1 20440U 90005E 95312.10199304 .00000004 00000-0 18366-4 0 09465
2 20440 98.5752 36.5063 0011577 130.8060 229.4116 14.30098549302351
WO-18
1 20441U 90005F 95312.22711386 -.00000010 00000-0 13131-4 0 9417
2 20441 98.5747 36.5887 0011957 131.1486 229.0722 14.30068876302379
LO-19
1 20442U 90005G 95313.77866589 .00000012 00000-0 21505-4 0 9364
2 20442 98.5765 38.5280 0012531 126.2320 234.0023 14.30173898302618
FO-20
1 20480U 90013C 95312.17852060 -.00000057 00000-0 -47015-4 0 8338
2 20480 99.0641 13.9479 0539795 267.4453 86.4773 12.83231287269411
AO-21
1 21087U 91006A 95313.45137067 .00000094 00000-0 82657-4 0 6484
2 21087 82.9386 125.0833 0036574 100.1595 260.3690 13.74561131239680
UO-22
1 21575U 91050B 95313.67450737 .00000040 00000-0 27791-4 0 6435
2 21575 98.3820 21.2935 0006833 203.0488 157.0401 14.36998521226397
KO-23
1 22077U 92052B 95312.04093367 -.00000037 00000-0 10000-3 0 05360
2 22077 66.0826 294.5777 0001385 10.3582 349.7458 12.86293162152238
KO-25
1 22828U 93061F 95313.71059574 -.00000002 00000-0 16512-4 0 4087
2 22828 98.6027 28.1583 0010032 136.8018 223.3945 14.28118441 78643
IO-26
1 22826U 93061D 95312.13600329 .00000011 00000-0 21967-4 0 04393
2 22826 98.6069 26.5631 0008812 156.3426 203.8162 14.27785634110314
AO-27
1 22825U 93061C 95312.12288431 -.00000001 00000-0 17211-4 0 04350
2 22825 98.6069 26.4292 0008136 155.2622 204.8926 14.27677562110308
PO-28
1 22829U 93061G 95313.23382290 .00000082 00000-0 50443-4 0 4223
2 22829 98.6022 27.7314 0010003 138.0376 222.1565 14.28099902110490

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
November 14, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2359. Request for help w/portable satcom

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: csp@clark.net
Message-ID: <485bgh$qu@clarknet.clark.net>
Source record: 23764

I am planning a hiking and backpacking trip and would like to try portable packet ops via satellite. I am familiar with packet but have never done any sat work. Is it feasbile to do satellite packet in the field with a handheld and "portable" antenna? Any suggestions/advice would be much appreciated. Thanks.

Craig Peterson, N3DCT
csp@clark.net

2360. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-12 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511121843.NAA10489@ncrhub5.attgis.com>
Source record: 23765

```
Received: by chwhert.switzerland.ncr.com; 12 Nov 95 19:47:44 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id NAA10159; Sun, 12 Nov 1995 13:35:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 13:35:09 EST
Received: by mail.ucsd.edu; id HAA19040
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:38 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id HAA19021
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:36 -0800 for ham-space-ddist
Message-Id: <199511121544.HAA19021@mail.ucsd.edu>
Date: Sun, 12 Nov 95 07:44:34 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #320
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 320

Today's Topics:
(none)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 12 Nov 95 07:01:16 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 08:08:16 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id BAA01557; Sun, 12 Nov 1995 01:56:06 -0500 (EST)
```

Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 01:55:39 EST
Received: by mail.ucsd.edu; id TAA22333
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:57 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id TAA22317
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:55 -0800 for ham-space-ddist
Message-Id: <199511120333.TAA22317@mail.ucsd.edu>
Date: Sat, 11 Nov 95 19:33:54 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #318
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 318

Today's Topics:
(none)
* SpaceNews 06-Nov-95 *
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP. (2 msgs)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 03:33:31 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 04:33:30 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id WAA13713; Sat, 11 Nov 1995 22:21:22 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 22:21:15 EST
Received: by mail.ucsd.edu; id RAA07260
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:23 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List

Received: by mail.ucsd.edu; id RAA07239
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:21 -0800 for ham-space-ddist
Message-Id: <199511120109.RAA07239@mail.ucsd.edu>
Date: Sat, 11 Nov 95 17:09:18 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #317
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 317

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WinOrbit 2.7 (tracking software) available

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 01:08:53 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 02:10:49 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id TAA22988; Sat, 11 Nov 1995 19:58:37 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 19:56:49 EST
Received: by mail.ucsd.edu; id OAA19651
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:15 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id OAA19627
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:14 -0800 for ham-space-ddist
Message-Id: <199511112244.OAA19627@mail.ucsd.edu>
Date: Sat, 11 Nov 95 14:44:11 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU

Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #316
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 316

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 22:43:48 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the
algorithms in the book - there are several timescales, described
elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13

```
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
```

November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

End of Ham-Space Digest V95 #312
****

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and
rec.readio.amateur.space are all in the message header. Best approach is to
send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header
during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then
against the issue. Be bold, be brave and make radical statements. Just make
sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO
dweebs will respond in alt.ufo.abducted to your message containing not address
back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the
same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers)
writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name)
writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.

>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--
+-----------------------------------+---------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+---------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
stop the thread from showing up on YOUR screen. Your comment about "a
great waste of bandwidth" shows an incredible ignorance of how the net
works. If your concerned about bandwidth go take your soapbox to the alt.
hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the
one you already have to kill threads that you find offensive then you will
not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on
schedule today for liftoff on Saturday, November 11. The

seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW

William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time, and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under

''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know
that programs such as Instant Track include moon tracking (az/el
angles) information; but I need the algorithm itself. Anyone know
where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

Date: 11 Nov 1995 19:26:46 GMT
From: Cal Deal <caldeal@gate.net>
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Please move your UFO discussion to an appropriate
location.

Date: 11 Nov 1995 19:12:01 GMT
From: bsmith@msn.com (Bob Smith)
Subject: TS-790A vs.FT-736R

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

End of Ham-Space Digest V95 #316
****

Date: 11 Nov 1995 21:32:06 GMT
From: videodog@cybergate.com (Joe Thor)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> says:
>
>Please move your UFO discussion to an appropriate
>location.
>
>

This is an appropriate place to discuss the space shuttle and UFO's!

Joe

Date: 10 Nov 1995 13:52:22 GMT
From: Jean-Philippe Donnio <jpdonnio@info.unicaen.fr>
Subject: WinOrbit 2.7 (tracking software) available

Carl Gregory <cgregory@uiuc.edu> wrote:

>New Features in version 2.7
>---------------------------

>* Alternate satellite information databases such as "The
> Satellite Encyclopedia" may now be accessed directly.

Just a correction to WinOrbit's help file: TSE's web site is now
http://www.tele-satellit.com/tse/

You may also get the package from
ftp://ftp.tele-satellit.com/pub/tse/tse032.zip

WinOrbit together with TSE is really great! Give it a try!

--
Jean-Philippe Donnio
univ: jpdonnio@info.unicaen.fr http://www.info.unicaen.fr/~jpdonnio/
work: jpdonnio@tele-satellit.com http://tele-satellit.com/tse/tag.html
home: jpdonnio@dialup.francenet.fr

End of Ham-Space Digest V95 #317
****

Date: 8 Nov 1995 20:17:15 -0500
From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *
Date: 8 Nov 1995 20:17:15 -0500
Organization: Rutgers University
Message-ID: <47rkqr$oof@pilot.njin.net>

SB NEWS @ AMSAT $SPC1106
* SpaceNews 06-Nov-95 *

BID: $SPC1106

=========
SpaceNews
=========

MONDAY NOVEMBER 6, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* STS-74 NEWS *
===============
NASA managers have set Nov. 11, 1995, as the official launch date for the STS-74 mission -- the second in a series of missions between the U.S. Space Shuttle and the Russian Space Station Mir. The primary purpose of the Space Shuttle Atlantis STS-74 mission is the installation of a docking module that will improve clearance between the Shuttle and Mir's solar arrays during subsequent dockings. Atlantis' crew also will return to Earth experiment samples, equipment for repair and analysis and products manufactured on the station.

The Nov. 11 launch of Atlantis is planned for approximately 7:56 AM EST (1256 UTC) from Kennedy Space Center's Launch Complex 39-A. The actual launch time may vary by a few minutes based on calculations of Mir's precise location in space at the time of liftoff. The available launch period, or "window" to launch Atlantis, is approximately seven minutes each day.

The STS-74 mission is scheduled to last approximately eight days. Docking with Mir will occur on the fourth day of the flight. An on-time launch and nominal mission duration would have Atlantis and her crew returning to Earth on Nov. 19 with a landing at Kennedy Space Center's Shuttle Landing Facility, Florida, at approximately 1:28 p.m. EST (1828 UTC).

The STS-74 mission will be the 15th mission for Atlantis and the 73rd for the Space Shuttle system.

STS-74 data at a glance:

VEHICLE: Atlantis/OV-104
LOCATION: Pad 39A
TARGET LAUNCH DATE/TIME: Nov. 11 at about 7:56 AM EST (1256 UTC)

LAUNCH WINDOW: 6 minutes, 57 seconds
TARGET MIR DOCKING DATE: Nov. 14
TARGET KSC LANDING DATE/TIME: Nov. 19 at about 1 PM EST (1800 UTC)
MISSION DURATION: 8 days, 5 hours, 4 minutes
CREW SIZE: 5 (All licensed Amateur Radio Operators)
ORBITAL ALTITUDE and INCLINATION: 196-245 statute miles/51.6 degrees

[Info via NASA]

* NEW INFO SERVER AVAILABLE *
==========
An anonymous FTP server has been made available by a French Scientific Center for the purpose of disseminating information of interest to those involved in Amateur Astronomy and Amateur Space activitites. The server provides the following information services:

Kelso database (amateur, weather, synchro, manned spacecraft)
Molczan database (1000 2Line orbital elements)
NASA database (MIR and exotic satellites)
AMSAT database (Shuttle vectors)
SpaceNews (KD2BD)
ANS (from amsat.org, in English and French language)

Ephemerid (Solar planetary satellites (project))

Access at: Internet FTP anonymous (TCP/IP)
Address: alphalma.cnrs-mrs.fr (192.134.96.21)
Login: anonymous
Password: your e-mail address or call, please.
Directory name: astro

(This is an experimental test European database).

Sysop: fb1rci@lma.cnrs-mrs.fr

[Info via FB1RCI]

* MIR NEWS *
==========
Mir status as of 30-Oct-95

The current Mir crew is busy getting used to their new environment. Packet activity on 2-meters was temporarily interrupted due to a problem with the audio feed into the PacCom TNC. This problem has been resolved and 2-Meter packet is now fully operational. Some fine tuning of the TNC's parameters are still taking place to optimize 1200 baud data throughput.

The "USERS" counter has been set to 7. This means that 7 people can connect to Mir's keyboard at the same time. However if no one is at the keyboard on Mir, then all of the data sent goes into the bit bucket. It is recommended to stay OFF the keyboard ports unless someone from Mir is actually typing on the keyboard (Port call sign R0MIR). Excessive traffic on the keyboard port just causes interference to the user of the BBS (Port call sign R0MIR-1). Do not expect anyone to be at the keyboard after 21:00

UTC. This is one of the many parameters being adjusted.

The status of the 440 FM packet/voice is beginning to look better. The new dual band transceiver (Kenwood TM733 European version) is now on Mir. Arrangements are being made to deliver the missing Amateur Radio related parts to Mir in the near future (coax cables, manuals, cavity filter, etc). The cavity filters are required to allow simultaneous operation on both 2-meters (Icom 228) and on 70-cm (Kenwood TM733). Sources indicate the externally mounted dual band antenna was installed 6 months ago.

The Mir crew has two new Russian made 1200 baud TNCs. The TNCs are controlled by a Russian made Terminal Software program. Thomas has indicated that he has not be able to get the new TNCs to "initialize". There are people in Germany and Russia working on this problem.

The Mir station is still running on 145.550 MHz simplex for voice and packet communications. There may be a frequency change in the future, but there is no confirmed date for the frequency change.

During the weekend of 28-Nov-95, Sergi was active on voice and keyboard. Thomas was very active on voice working with key stations in the USA, fine tuning Amateur Radio related activities. Down link signal quality is very good, and the old noisy ventilation fan has been replaced (Do you remember the loud fan noises heard last summer everytime Mir used voice?).

The Mir crew sleeps from approximately 21:00 UTC till approximately 05:00 UTC (5pm-1am EST). Most of the Mir passes over the USA are during the sleeping period of the crew. The Mir Space station will be visible in the evening sky for the next few weeks. Please update your tracking programs, and look for Mir passes 30 - 120 minutes after local sunset.

Remember, only 1 station can connect to MIR's PMS (R0MIR-1) at a time, ALL others must wait. And please stay off the R0MIR keyboard port, unless it is active with communications from a Cosmonaut.

[Info via G. Miles Mann, WF1F]

* OSCAR NEWS *
==========
Pacsat AO-16: normal BBS.

Dove DO-17:

Last week:
Software, hardware and sound testing in progress
DOVE Command Team (WD0E)

This week:
10/29/95
Software load complete. S-band is on and should stay on. Accurate measurements of it's frequency (2401.220 MHz) appreciated to wd0e@amsat.org
DOVE Command Team (WD0E)

[telemetry dwell 30 secs]

Weber WO-18: normal operations

Lusat LO-19: normal BBS operations

Itamsat IO-26: nothing heard on either D/L 03-Nov-95 [vk7zo]

[Info via Graham, VK7ZO]

* FEEDBACK/INPUT WELCOMED *
==========
Comments and input for SpaceNews should be directed to the editor (John, KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org, magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

Date: 11 Nov 1995 23:22:55 GMT
From: mjensen@phoenix.net (Mike Jensen)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Joe Thor (videodog@cybergate.com) wrote:
: >
: >Please move your UFO discussion to an appropriate
: >location.
: >

: This is an appropriate place to discuss the space shuttle and UFO's!

Where in sci.space.shuttle does it say ufo? This is not an appropriate forum for UFO discussions. sci.space.ufo, if it existed, would be, but since several other ufo newsgroups exist, I suggest taking the discussion there instead.

: Joe

Mike
--

Through the router, over the firewall, down the cable.. nothing but net!

Don't be so open minded your brains fall out.

Date: Sun, 12 Nov 1995 01:20:11 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> wrote:

-> Please move your UFO discussion to an appropriate
-> location.

Learn how to use a 'KILL' file to stop the thread from showing up on YOUR
screen if you find it so offensive. We dont need censorship on the Net.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To Boldy VHF Where No Man Has VHFed Before"

End of Ham-Space Digest V95 #318
****

End of Ham-Space Digest V95 #320
****

2361. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <4867e4$l55@alterdial.UU.NET>
Source record: 23673
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

time@tir.com (Tim English) wrote:
>Burt, why dont you just go away someplace else. Your the only one who
>enjoys your "so called" wit. We all think your a jerk. You must lead
>an awfully sheltered dull life if this is all you can find to do for

Then why do I get frequent messages that appreciate my comments?

```
#================#=========================================================#
| Burt Fisher | Teacher of video, broadcasting and electronics |
| Amateur call | South Dennis, Ma. (Cape Cod) |
| K1OIK | The less you say, the more people will remember |
#================#=========================================================#
| k1oik@ccsnet.com fisher@meol.mass.edu |
#=============================================================================#
```

2362. Re: THE Burt

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <48682v$l55@alterdial.UU.NET>
Source record: 23674
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

timhynde@ix.netcom.com (Tim Hynde ka8ddz/qrp Rochester, MI) wrote:

>Did it ever occour to you that meeting someone in person is differnt
>than meeting them on the air? In my 15 brief years as a ham and SWL I
>have never heard a conversation, amateur or commercial that resembled
>one I would have with someone face to face.

>Tim Hynde ka8ddz

You mean in person you are supposed to sound like a person but on
the air sounding like an ass is OK? All my conversations are spoken
as much as they would be in person as possible.

```
#================#=========================================================#
| Burt Fisher | Teacher of video, broadcasting and electronics |
| Amateur call | South Dennis, Ma. (Cape Cod) |
| K1OIK | The less you say, the more people will remember |
#================#=========================================================#
| k1oik@ccsnet.com fisher@meol.mass.edu |
#=====================================================================#
```

2363. Re: Do it for the log.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: time@tir.com
Message-ID: <4867nc$q2u@ramp2.lisp.com>
Source record: 23675
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

donk@a.crl.com (Don Kirkman) wrote:

>Burt Fisher <k1oik@ccsnet.com> wrote:

>>To: Multiple recipients of list HAM-L <HAM-L@TREARN.BITNET>

>And countless others, it turns out :-)

>>How many times have you heards folks say that they wanted the other
>>guy's name, QTH, etc. for the log? My log couldn't care less about
>>that information. Whenever I ask, it's because I want to know.

>Hey, guys, why was this posted in puzzles, running, skiing, and half a
>dozen other groups? Ham related I can understand, but PLEASE look at
>the cross-posted groups!

>BTW, I picked this up in rec.running, but I always wanted the name
>also--and of course I wrote it IN the log (where else, back in the old
>pre-computer days?) 73. N6IM

>Don Kirkman donk@a.crl.com
>Cerritos, CA
>If I had a life I'd be having a mid-life crisis

Gee, why dont you ask our good buddy Burt Fisher !

Tim (time@tir.com)

2364. Re: THE Burt

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: chef_don@ix.netcom.com
Message-ID: <486en3$b5f@ixnews5.ix.netcom.com>
Source record: 23676
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In <48682v$l55@alterdial.UU.NET> Burt Fisher <k1oik@ccsnet.com> writes:

>
>
>timhynde@ix.netcom.com (Tim Hynde ka8ddz/qrp Rochester, MI) wrote:
>
>>Did it ever occour to you that meeting someone in person is differnt
>>than meeting them on the air? In my 15 brief years as a ham and SWL I
>>have never heard a conversation, amateur or commercial that resembled
>>one I would have with someone face to face.
>
>>Tim Hynde ka8ddz
>
>You mean in person you are supposed to sound like a person but on
>the air sounding like an ass is OK? All my conversations are spoken
>as much as they would be in person as possible.
>
>#================#===
#
>| Burt Fisher | Teacher of video, broadcasting and electronics
|
>| Amateur call | South Dennis, Ma. (Cape Cod)
|
>| K1OIK | The less you say, the more people will remember
|
>#================#===
#
>| k1oik@ccsnet.com fisher@meol.mass.edu
|
>#===
#
>
>

on the air he tries to come through as much of a person as possible,
but on the internet he comes through as quite the ASS!

2365. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: jasonl@cts.com
Message-ID: <486ip6$7me@news2.cts.com>
Source record: 23677
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Well, DAWG! Burt Fisher's jokes not funny?
Y'all must got rocks fer brains! Ah'z just finishin'
readin' some print outs of Burt's jokes while
relaxin' in the bath -- fartin' up a storm.
Makes like a freakin' hot tub.

Ye haw! Let's hear it for Burt's humor!

--
jasonl@cts.com
"I choose to assert my fifth amendment privilege."

2366. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511130203.VAA21307@ncrhub5.attgis.com>
Source record: 23678

```
Received: by chwhert.switzerland.ncr.com; 13 Nov 95 03:08:09 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id UAA20810; Sun, 12 Nov 1995 20:55:42 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 20:55:19 EST
Received: by mail.ucsd.edu; id OAA00266
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 14:03:59 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id OAA00254
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 14:03:57 -0800 for ham-space-ddist
Message-Id: <199511122203.OAA00254@mail.ucsd.edu>
Date: Sun, 12 Nov 95 14:03:55 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #322
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 322

Today's Topics:
(none)
Request for help w/portable satcom
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?
WTB: FT 726 or FT 736

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 12 Nov 95 22:03:30 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
```

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 23:07:51 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id QAA14226; Sun, 12 Nov 1995 16:55:38 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 16:55:12 EST
Received: by mail.ucsd.edu; id KAA06211
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 10:44:00 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id KAA06197
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 10:43:58 -0800 for ham-space-ddist
Message-Id: <199511121843.KAA06197@mail.ucsd.edu>
Date: Sun, 12 Nov 95 10:43:57 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #321
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 321

Today's Topics:
(none) (2 msgs)
ARLK061 Keplerian data
MIR HAM-ing on 2m/70cm ???
Mods for Icom IC-736
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 15:03:30 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 16:07:37 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id JAA07107; Sun, 12 Nov 1995 09:55:28 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 09:55:09 EST
Received: by mail.ucsd.edu; id EAA07296
sendmail 8.6.12/UCSD-2.2-sun

Sun, 12 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA07288
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511121230.EAA07288@mail.ucsd.edu>
Date: Sun, 12 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #319
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 319

Today's Topics:
ARLS022 Next shuttle all licensed
fed Log
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 1995 20:24:46 -0500
From: w1aw@arrl.org
Subject: ARLS022 Next shuttle all licensed

SB SPACE @ ARL $ARLS022
ARLS022 Next shuttle all licensed

ZCZC AS02
QST de W1AW
Space Bulletin 022 ARLS022

Date: 10 Nov 1995 08:42:11 -0500
From: dcimp@aol.com (DCimp)
Subject: fed Log

Anyone know where I can get a copy of "Fed Log"?

Date: 11 Nov 1995 15:13:51 GMT
From: wave@mindspring.com (Pieter Ibelings)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Do these UFO's have ham radio stations on them?
I have MIR confirmed , but that's about it.

73's

Date: (null)
From: (null)

SB SPACE ARL ARLS022
ARLS022 Next shuttle all licensed

Space Shuttle mission STS-74 is scheduled for lift-off at 1255 UTC
on Saturday, November 11, with all five crew members holding Amateur
Radio licenses.

NASA astronaut James Halsell, KC5RNI, and Canadian Space Agency
astronaut Chris Hadfield, KC5RNJ, both received their licenses in
recent days, and both plan to participate in Shuttle Amateur Radio
EXperiment (SAREX) activities during the STS-74 mission.

Halsell is the shuttle's pilot, and Hadfield is a mission
specialist.

Shuttle Atlantis's commander for STS-74 is Ken Cameron, KB5AWP, who
used Amateur Radio from Atlantis during STS-37 in April 1991 and
from Discovery during STS-56 in April 1993. This will be the third
mission Cameron has flown where the entire crew are licensed radio
amateurs.

Other STS-74 crew members are Mission Specialist Jerry Ross, N5SCW,
who was also a member of STS-37, and who operated ham radio aboard
the STS-55 Columbia mission in April/May 1993; and Mission
Specialist Bill McArthur, KC5ACR, who used ham radio aboard Columbia
during STS-58 in October/November 1993.

For more information on the SAREX program, visit the SAREX home page
on the World Wide Web at

http://www.nasa.gov/sarex/sarexmainpage.html
NNNN
/EX

End of Ham-Space Digest V95 #319
****

Date: 12 Nov 95 18:43:39 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 19:47:44 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id NAA10159; Sun, 12 Nov 1995 13:35:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 13:35:09 EST
Received: by mail.ucsd.edu; id HAA19040
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:38 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id HAA19021
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:36 -0800 for ham-space-ddist
Message-Id: <199511121544.HAA19021@mail.ucsd.edu>
Date: Sun, 12 Nov 95 07:44:34 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #320
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 320

Today's Topics:
(none)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 07:01:16 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 08:08:16 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id BAA01557; Sun, 12 Nov 1995 01:56:06 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 01:55:39 EST
Received: by mail.ucsd.edu; id TAA22333
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:57 -0800 for ham-space-list

Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id TAA22317
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:55 -0800 for ham-space-ddist
Message-Id: <199511120333.TAA22317@mail.ucsd.edu>
Date: Sat, 11 Nov 95 19:33:54 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #318
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 318

Today's Topics:
(none)
* SpaceNews 06-Nov-95 *
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP. (2 msgs)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 03:33:31 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 04:33:30 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id WAA13713; Sat, 11 Nov 1995 22:21:22 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 22:21:15 EST
Received: by mail.ucsd.edu; id RAA07260
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:23 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id RAA07239
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:21 -0800 for ham-space-ddist
Message-Id: <199511120109.RAA07239@mail.ucsd.edu>

Date: Sat, 11 Nov 95 17:09:18 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #317
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 317

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WinOrbit 2.7 (tracking software) available

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 01:08:53 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 02:10:49 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id TAA22988; Sat, 11 Nov 1995 19:58:37 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 19:56:49 EST
Received: by mail.ucsd.edu; id OAA19651
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:15 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id OAA19627
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:14 -0800 for ham-space-ddist
Message-Id: <199511112244.OAA19627@mail.ucsd.edu>
Date: Sat, 11 Nov 95 14:44:11 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #316
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 316

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 22:43:48 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>

Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472

```
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #312
******************************
```

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and
rec.readio.amateur.space are all in the message header. Best approach is to
send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header
during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then
against the issue. Be bold, be brave and make radical statements. Just make
sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO
dweebs will respond in alt.ufo.abducted to your message containing not address
back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the
same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers)
writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name)
writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.
>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--
+-----------------------------------+-------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+-------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to stop the thread from showing up on YOUR screen. Your comment about "a great waste of bandwidth" shows an incredible ignorance of how the net works. If your concerned about bandwidth go take your soapbox to the alt. hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the one you already have to kill threads that you find offensive then you will not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on schedule today for liftoff on Saturday, November 11. The seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio

amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International

Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time,

and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-

page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know
that programs such as Instant Track include moon tracking (az/el
angles) information; but I need the algorithm itself. Anyone know
where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

Date: 11 Nov 1995 19:26:46 GMT
From: Cal Deal <caldeal@gate.net>
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Please move your UFO discussion to an appropriate
location.

Date: 11 Nov 1995 19:12:01 GMT
From: bsmith@msn.com (Bob Smith)
Subject: TS-790A vs.FT-736R

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

End of Ham-Space Digest V95 #316
****

Date: 11 Nov 1995 21:32:06 GMT
From: videodog@cybergate.com (Joe Thor)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> says:
>
>Please move your UFO discussion to an appropriate
>location.
>
>

This is an appropriate place to discuss the space shuttle and UFO's!

Joe

Date: 10 Nov 1995 13:52:22 GMT
From: Jean-Philippe Donnio <jpdonnio@info.unicaen.fr>
Subject: WinOrbit 2.7 (tracking software) available

Carl Gregory <cgregory@uiuc.edu> wrote:

>New Features in version 2.7
>---------------------------

>* Alternate satellite information databases such as "The
> Satellite Encyclopedia" may now be accessed directly.

Just a correction to WinOrbit's help file: TSE's web site is now
http://www.tele-satellit.com/tse/

You may also get the package from
ftp://ftp.tele-satellit.com/pub/tse/tse032.zip

WinOrbit together with TSE is really great! Give it a try!

--
Jean-Philippe Donnio
univ: jpdonnio@info.unicaen.fr http://www.info.unicaen.fr/~jpdonnio/
work: jpdonnio@tele-satellit.com http://tele-satellit.com/tse/tag.html
home: jpdonnio@dialup.francenet.fr

End of Ham-Space Digest V95 #317
****

Date: 8 Nov 1995 20:17:15 -0500
From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *
Date: 8 Nov 1995 20:17:15 -0500
Organization: Rutgers University
Message-ID: <47rkqr$oof@pilot.njin.net>

SB NEWS @ AMSAT $SPC1106
* SpaceNews 06-Nov-95 *

BID: $SPC1106

=========
SpaceNews
=========

MONDAY NOVEMBER 6, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* STS-74 NEWS *
===============
NASA managers have set Nov. 11, 1995, as the official launch date for the STS-74 mission -- the second in a series of missions between the U.S. Space Shuttle and the Russian Space Station Mir. The primary purpose of the Space Shuttle Atlantis STS-74 mission is the installation of a docking module that will improve clearance between the Shuttle and Mir's solar arrays during subsequent dockings. Atlantis' crew also will return to Earth experiment samples, equipment for repair and analysis and products manufactured on the station.

The Nov. 11 launch of Atlantis is planned for approximately 7:56 AM EST (1256 UTC) from Kennedy Space Center's Launch Complex 39-A. The actual launch time may vary by a few minutes based on calculations of Mir's precise location in space at the time of liftoff. The available launch period, or "window" to launch Atlantis, is approximately seven minutes each day.

The STS-74 mission is scheduled to last approximately eight days. Docking with Mir will occur on the fourth day of the flight. An on-time launch and nominal mission duration would have Atlantis and her crew returning to Earth on Nov. 19 with a landing at Kennedy Space Center's Shuttle Landing Facility, Florida, at approximately 1:28 p.m. EST (1828 UTC).

The STS-74 mission will be the 15th mission for Atlantis and the 73rd for the Space Shuttle system.

STS-74 data at a glance:

VEHICLE: Atlantis/OV-104
LOCATION: Pad 39A
TARGET LAUNCH DATE/TIME: Nov. 11 at about 7:56 AM EST (1256 UTC)
LAUNCH WINDOW: 6 minutes, 57 seconds
TARGET MIR DOCKING DATE: Nov. 14
TARGET KSC LANDING DATE/TIME: Nov. 19 at about 1 PM EST (1800 UTC)
MISSION DURATION: 8 days, 5 hours, 4 minutes
CREW SIZE: 5 (All licensed Amateur Radio Operators)
ORBITAL ALTITUDE and INCLINATION: 196-245 statute miles/51.6 degrees

[Info via NASA]

* NEW INFO SERVER AVAILABLE *
==========
An anonymous FTP server has been made available by a French Scientific Center for the purpose of disseminating information of interest to those involved in Amateur Astronomy and Amateur Space activitites. The server provides the following information services:

Kelso database (amateur, weather, synchro, manned spacecraft)
Molczan database (1000 2Line orbital elements)
NASA database (MIR and exotic satellites)
AMSAT database (Shuttle vectors)
SpaceNews (KD2BD)
ANS (from amsat.org, in English and French language)

Ephemerid (Solar planetary satellites (project))

Access at: Internet FTP anonymous (TCP/IP)
Address: alphalma.cnrs-mrs.fr (192.134.96.21)
Login: anonymous
Password: your e-mail address or call, please.
Directory name: astro

(This is an experimental test European database).

Sysop: fb1rci@lma.cnrs-mrs.fr

[Info via FB1RCI]

* MIR NEWS *
==========
Mir status as of 30-Oct-95

The current Mir crew is busy getting used to their new environment. Packet activity on 2-meters was temporarily interrupted due to a problem with the audio feed into the PacCom TNC. This problem has been resolved and 2-Meter packet is now fully operational. Some fine tuning of the TNC's parameters are still taking place to optimize 1200 baud data throughput.

The "USERS" counter has been set to 7. This means that 7 people can connect to Mir's keyboard at the same time. However if no one is at the keyboard on Mir, then all of the data sent goes into the bit bucket. It is recommended to stay OFF the keyboard ports unless someone from Mir is actually typing on the keyboard (Port call sign R0MIR). Excessive traffic on the keyboard port just causes interference to the user of the BBS (Port call sign R0MIR-1). Do not expect anyone to be at the keyboard after 21:00 UTC. This is one of the many parameters being adjusted.

The status of the 440 FM packet/voice is beginning to look better. The new dual band transceiver (Kenwood TM733 European version) is now on Mir. Arrangements are being made to deliver the missing Amateur Radio related parts to Mir in the near future (coax cables, manuals, cavity filter, etc). The cavity filters are required to allow simultaneous operation on both 2-meters (Icom 228) and on 70-cm (Kenwood TM733). Sources indicate the externally mounted dual band antenna was installed 6 months ago.

The Mir crew has two new Russian made 1200 baud TNCs. The TNCs are controlled by a Russian made Terminal Software program. Thomas has indicated that he has not be able to get the new TNCs to "initialize". There are people in Germany and Russia working on this problem.

The Mir station is still running on 145.550 MHz simplex for voice and packet communications. There may be a frequency change in the future, but there is no confirmed date for the frequency change.

During the weekend of 28-Nov-95, Sergi was active on voice and keyboard. Thomas was very active on voice working with key stations in the USA, fine tuning Amateur Radio related activities. Down link signal quality is very good, and the old noisy ventilation fan has been replaced (Do you remember the loud fan noises heard last summer everytime Mir used voice?).

The Mir crew sleeps from approximately 21:00 UTC till approximately 05:00 UTC (5pm-1am EST). Most of the Mir passes over the USA are during the sleeping period of the crew. The Mir Space station will be visible in the evening sky for the next few weeks. Please update your tracking programs, and look for Mir passes 30 - 120 minutes after local sunset.

Remember, only 1 station can connect to MIR's PMS (R0MIR-1) at a time, ALL others must wait. And please stay off the R0MIR keyboard port, unless it is active with communications from a Cosmonaut.

[Info via G. Miles Mann, WF1F]

* OSCAR NEWS *
==========
Pacsat AO-16: normal BBS.

Dove DO-17:

Last week:
Software, hardware and sound testing in progress
DOVE Command Team (WD0E)

This week:
10/29/95
Software load complete. S-band is on and should stay on. Accurate measurements of it's frequency (2401.220 MHz) appreciated to wd0e@amsat.org
DOVE Command Team (WD0E)

[telemetry dwell 30 secs]

Weber WO-18: normal operations

Lusat LO-19: normal BBS operations

Itamsat IO-26: nothing heard on either D/L 03-Nov-95 [vk7zo]

[Info via Graham, VK7ZO]

* FEEDBACK/INPUT WELCOMED *
==========
Comments and input for SpaceNews should be directed to the editor (John,

KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org, magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

Date: 11 Nov 1995 23:22:55 GMT
From: mjensen@phoenix.net (Mike Jensen)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Joe Thor (videodog@cybergate.com) wrote:
: >
: >Please move your UFO discussion to an appropriate
: >location.
: >

: This is an appropriate place to discuss the space shuttle and UFO's!

Where in sci.space.shuttle does it say ufo? This is not an appropriate
forum for UFO discussions. sci.space.ufo, if it existed, would be, but
since several other ufo newsgroups exist, I suggest taking the
discussion there instead.

: Joe

Mike
--

Through the router, over the firewall, down the cable.. nothing but net!
Don't be so open minded your brains fall out.

Date: Sun, 12 Nov 1995 01:20:11 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> wrote:

-> Please move your UFO discussion to an appropriate
-> location.

Learn how to use a 'KILL' file to stop the thread from showing up on YOUR
screen if you find it so offensive. We dont need censorship on the Net.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To Boldy VHF Where No Man Has VHFed Before"

End of Ham-Space Digest V95 #318
****

End of Ham-Space Digest V95 #320
****

Date: 12 Nov 1995 10:45:57 -0500
From: w1aw@arrl.org
Subject: ARLK061 Keplerian data

SB KEP @ ARL $ARLK061
ARLK061 Keplerian data

ZCZC SK86
QST de W1AW
Keplerian Bulletin 61 ARLK061

Date: 9 Nov 1995 17:18:27 GMT
From: Peter.Delmotte@mech.kuleuven.ac.be (Peter Delmotte)
Subject: MIR HAM-ing on 2m/70cm ???

In article <47sh6r$ob7@nervous.pdb.sni.de>, kebsch@pdb.sni.de says...
>
>Hi,
>
>approx. each day I am checking the announced frequencies, when MIR is
>flying over Europe. Until now I don't have heard anything. Is anyone
>out there who had a QSO (Phonie-FM) with DP1MIR?
>
>73 de Waldemar, DK3VN

Hi Waldemar,

I had a packet-QSO with R0MIR on 145.550 MHz somewhere last june.
It took me a while to get through with my portable, but it can be done!
However, R0MIR isn't always on the air. They periodically shut down

their ham gear (to conserve power I guess).

73 de Peter, ON1ACY.

Date: 9 Nov 1995 23:50:42 GMT
From: yingst@knighted.com (Harry Yingst)
Subject: Mods for Icom IC-736

Does anyone have any mods for the ICOM IC-736? I'm looking for a way to
turn the pre-amp back on below 1.6 Mhz.
Icom turns it off even though it the light says it's on.
I would like to listen for some lowfer stations 1750 meter band
(160-190 kc. 1 watt into a 50 ft antenna). I'm also looking for a way to
improve the recieve audio.
The recieve audio sounds flat and distant, lacking highs & lows.
With the notch filter ON the audio sounds a little better,
but it still could use some improvement.
They re-shape the audio through the notch filter,
and it actually has a nicer sound with the notch filter on
(Has more highs & lows).
I had a IC-737 that had the same problem with the audio,
just not sounding quite right. I am also interested in any other mods
for the Icom IC-736. Please send any replies to yingst@knighted.com Note:
If you post a reply into this newsgroup I proably wont get it,
my internet provider only holds news for 1 day. Thank You. Harry
N6VUJ

Date: Thu, 9 Nov 1995 19:33:52 GMT
From: gary@ke4zv.atl.ga.us (Gary Coffman)
Subject: TS-790A vs.FT-736R

In article <47s5o9$m71@ccnet2.ccnet.com> rbickel@ccnet.com (Robert Bickel) writes:
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm
>sure its got to be some feature thats just not quite right with the Kenwood.
>Thanks for your comments.
>Robert KO6PL

The TS-790A has several *glaring* faults, but the worst one for satellite
use is that you can't use the narrow filters in the subband receiver.
That's the receiver you *use* when listening to the satellite because
you're transmitting on the main band unit. Major oops! Also, to make
it track tune in sat mode, you have to *hold the SAT button in*, major
oops. And the thermal design really sucks, the 70cm output module gets
very hot under normal use. The main unit receiver is pretty good, but
you don't use it for satellite.

The FT-736R is a bit long in the tooth, and can't do independent
dual band receive, but for satellite use it is still the champ.

It works the way you *need* it to work.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

Date: (null)
From: (null)

SB KEP ARL ARLK061
ARLK061 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95313.86156770 .00003998 00000-0 58925-4 0 3081
2 16609 51.6451 148.0817 0003574 304.4745 55.5910 15.57982282555662
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95312.04588371 .00000040 00000-0 27245-4 0 01351
2 18129 82.9245 312.7342 0013329 54.0088 306.2297 13.72358626419701
UO-11
1 14781U 84021B 95312.00762864 .00000185 00000-0 39090-4 0 08425
2 14781 97.7871 307.8396 0012997 81.2952 278.9721 14.69396068625026
RS-12/13
1 21089U 91007A 95313.18472939 .00000038 00000-0 24104-4 0 8435
2 21089 82.9230 353.2460 0030062 125.8627 234.5324 13.74061957238684
AO-13
1 19216U 88051B 95312.96962799 .00000049 00000-0 18599-3 0 1088
2 19216 57.4296 154.0272 7346381 23.2353 357.6953 2.09725300 25200
UO-14
1 20437U 90005B 95313.21104328 .00000008 00000-0 19745-4 0 1385
2 20437 98.5617 35.2020 0011274 127.7188 232.5021 14.29902293302477
RS-15
1 23439U 94085A 95312.62980964 -.00000039 00000-0 10000-3 0 900
2 23439 64.8177 21.3820 0166782 237.5072 120.9633 11.27524533 35801

```
AO-16
1 20439U 90005D 95312.19769396 .00000017 00000-0 23609-4 0 09444
2 20439 98.5733 36.0735 0011380 131.3227 228.8935 14.29956970302342
DO-17
1 20440U 90005E 95312.10199304 .00000004 00000-0 18366-4 0 09465
2 20440 98.5752 36.5063 0011577 130.8060 229.4116 14.30098549302351
WO-18
1 20441U 90005F 95312.22711386 -.00000010 00000-0 13131-4 0 9417
2 20441 98.5747 36.5887 0011957 131.1486 229.0722 14.30068876302379
LO-19
1 20442U 90005G 95313.77866589 .00000012 00000-0 21505-4 0 9364
2 20442 98.5765 38.5280 0012531 126.2320 234.0023 14.30173898302618
FO-20
1 20480U 90013C 95312.17852060 -.00000057 00000-0 -47015-4 0 8338
2 20480 99.0641 13.9479 0539795 267.4453 86.4773 12.83231287269411
AO-21
1 21087U 91006A 95313.45137067 .00000094 00000-0 82657-4 0 6484
2 21087 82.9386 125.0833 0036574 100.1595 260.3690 13.74561131239680
UO-22
1 21575U 91050B 95313.67450737 .00000040 00000-0 27791-4 0 6435
2 21575 98.3820 21.2935 0006833 203.0488 157.0401 14.36998521226397
KO-23
1 22077U 92052B 95312.04093367 -.00000037 00000-0 10000-3 0 05360
2 22077 66.0826 294.5777 0001385 10.3582 349.7458 12.86293162152238
KO-25
1 22828U 93061F 95313.71059574 -.00000002 00000-0 16512-4 0 4087
2 22828 98.6027 28.1583 0010032 136.8018 223.3945 14.28118441 78643
IO-26
1 22826U 93061D 95312.13600329 .00000011 00000-0 21967-4 0 04393
2 22826 98.6069 26.5631 0008812 156.3426 203.8162 14.27785634110314
AO-27
1 22825U 93061C 95312.12288431 -.00000001 00000-0 17211-4 0 04350
2 22825 98.6069 26.4292 0008136 155.2622 204.8926 14.27677562110308
PO-28
1 22829U 93061G 95313.23382290 .00000082 00000-0 50443-4 0 4223
2 22829 98.6022 27.7314 0010003 138.0376 222.1565 14.28099902110490

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
November 14, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #321
******************************

------------------------------

Date: 12 Nov 1995 17:39:29 GMT
From: csp@clark.net ()
```

Subject: Request for help w/portable satcom

I am planning a hiking and backpacking trip and would like to try
portable packet ops via satellite. I am familiar with packet but have
never done any sat work. Is it feasbile to do satellite packet in the
field with a handheld and "portable" antenna? Any suggestions/advice
would be much appreciated. Thanks.

Craig Peterson, N3DCT
csp@clark.net

Date: 9 Nov 1995 22:51:03 GMT
From: jaminge@pb2esac.esac.pacbell.com (John Minger)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, Ken Durham <mbv@ti.com> wrote:
> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?
>
Maybe a new newsgroup: rec.radio.amateur.space.cadets ;-)

--
____
John A Minger KE6DTC Opinions expressed are those of the author
Los Angeles, CA and not those of anyone or anything else.

Date: Sun, 12 Nov 1995 16:24:04 -0500
From: Joseph Yakoski <jyakoski@epix.net>
Subject: WTB: FT 726 or FT 736

Hello to you all. I am looking for a Yaesu FT 726 or a FT 736 for my
brother. If anyone has anything to sell, e-mail to me at
jyakoski@epix.net
Thank You..
Joseph Yakoski N3JNX

End of Ham-Space Digest V95 #322
****

2367. Life elsewere ?? Was: UFO ...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: Georgios Tsoukalas <s8989370>
Message-ID: <486lov$jda@mirv.unsw.edu.au>
Source record: 23679
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

>I have four items to offer with respect to this issue:
>
>1. We know that life on earth happened. Therefore we know that the
>probability of life forming is greater than 0. But we do not know of
>any limit to the size of the universe. So, speculating, we have a non-
>zero probability of life forming and a virtually limitless number of
>samples out there (i.e. "opportunities"). Makes it seem almost ludicrous
>to be pessimistic about this.

We can't even say that. If you have an open mind, you may think
that the "I think therfore I am" quote is the best evidence we have of the
sence of self. But forget that, you see we have nothing to loose if we
beleave that we exist.

Another quote I remeber from Stephen Hawkins is:
"No matter what the probability is that we got here, we made it".
I can't remeber how he put it, but the meaning is there. Who he was
arguing against was creationists. Their argument is that look at how many
things could have gone wrong ! To start chemistry .. if ice didn't float
there would be no life ... (There are thousands of those). Then
astronomy ... if the earth wasn't this big, this far from the sun.
If the sun wasn't this big. Then we have history (for any historical
figure we are a virtual impossibility ie. think of the chance any one
sperm has :-)) And so on. All these lead to the current events being
practicaly impossible. So it may be that the probability that life
can occur anywere again is zero if we round it to to X number of
zeroes. (Think X being big enough to exclude all planets)

My conculsion from the above are ...
The probability that this happens again are impossible to work out.
We have no way of guessing because we can't even comprehend the luck we
had to make it this. So the argument of probability is mute. It's just
the last resort from those that want to beleave there is life elsewre . They
start backwards. Let's assume there is life elsewere. Now let's shape our
argument to prove it is so, and ignore directions that would prove it otherwise.

Another point from S. Hawkins quote would be, "we made it so far".
That only speaks of the past. There is no evidence everything will fail
in the next three seconds. One of the increadable impossibilities would
work agaist us, ie a chain reaction in water would make ice sink, carbon
molecules will brake down .. and so on.

>
>2. We know that chemical reactions happen elsewhere just as they do here.
>I mean, for instance, our sun does not operate on principles that are in

>any way unique. Nor are meteorological phenomena different here from
>what they are in other planets we know about. So that's more evidence that
>this solar system and planet are hardly going to end up being the unique
>one among trillions.

We only assume that the reason life exists are those chemical
reactions that occured on earth. What if we assume that the only reason life
exists are the exact conditions as well as the order of events. When the earth
cooled, what the temperature of the sun was and when. The creation
of the layers of atmosphere since the earth began (no ozone layer now no life,
if there was an ozone layer then no life). You cannot doubt the fact that
it's impossible to duplicate the exact situation to start with as well as
the exact order of events. Unless you go back to your infinite sample
theorem. That's not possible, and I don't think many scientists
beleave this. My excuse agaist that would be: Consider the big bang. Since
the BB, material is rushing outwards. Nothing is beond that boundary,
therfore there is a limit to the size of "everything". Making it big enough
is like the scientists looking for dark matter. They just assume it exists
and start making up theories to prove it does. (a more legit persuit, but
so far it cannot be proven). ("So far ..." does not mean "Eventualy will be
proven".

>
>3. We know that water exists elsewhere in the universe (e.g. in comets),
>so that important ingredient is not unique to Earth.

That means practicaly nothing. If 50% of the reason life exists
is water, it's like saying that you need 100 ingreadiants to make a "X",
if you ensure that 50 are there. You still don't have "X". This is proved by
above. Your evidence that there is water did not prove that there is life (ie.
comets). I'd say more fundamentaly that to have life you need matter. It's
existance proves nothing about lifes existance. Basicaly for now all we know is
that you need 100 ingreadiants AND the recipy. ie. Same argument as above
you need the whole history of earth in the order it occured as well as
earth. The margin of error that may exist is the only hope you have of other
life elsewere. Like I said, we don't know what that margin is. It can span
from zero for the non-beleavers to 1 for the beleavers. And they get their data
from the same pot. Don't forget, by stating that Water is the most important
element in life, you are assuming you know something you don't.

>
>4. And finally, to me this is a little bit like picking up a grain of
>sand on one beach, just one grain, and swearing that _this_ grain is
>fundamentally different from all other grains of sand in every beach
>on earth. Failing chemical analysis of even a single other grain, I
>suppose one might wonder if it were true. But most reasonable people
>would _speculate_ that bullshit, this grain is probably very similar to
>zillions of others.
>

If the exact molecule count as well as the order those molecules
are aranged is what matters ... good luck finding a second. Your above argument

simply does one thing. What you fear are the increadable number of variables involved in life on earth. So pshycologicaly what you do is choose an example that get's rid of those variables. That seems to be uniform with all others. You then present it as similar to the case earth-life. Not realy. But even though I doubt ther are any beaches with two grains of sand that are the same. I doubt there are two on earth. Consider the variables molecular count, order of composition, Identity of molecules, molecular isotopes. Consider that we are coming up with many new particles all the time. So who knows what "ingrediants" went into making the grain you picked up. Put it under a microscope and consider the chance there is anothe one like it. Now make an earth and fill it with sand. What is the chance there is another person somewere that has made the same bowl full of sand identicle down to the last grain.

Not if ice didn't flote in his universe ...

>Bert
>manfredi@engr05.comsys.rockwell.com
>

George
s8989370@cse.unsw.edu.au

2368. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: postmaster@chwhert.switzerland.ncr.COM
Message-ID: <199511130543.AAA28818@ncrhub5.attgis.com>
Source record: 23680

```
Received: by chwhert.switzerland.ncr.com; 13 Nov 95 06:49:53 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id AAA24095; Mon, 13 Nov 1995 00:37:15 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 13 Nov 95 00:20:38 EST
Received: by mail.ucsd.edu; id SAA00955
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 18:04:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id SAA00921
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 18:04:03 -0800 for ham-space-ddist
Message-Id: <199511130204.SAA00921@mail.ucsd.edu>
Date: Sun, 12 Nov 95 18:03:59 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #323
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 323

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WWW> Expedition Link

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.
------------------------------------------------------------------------

Date: 13 Nov 95 02:03:39 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)
```

Received: by chwhert.switzerland.ncr.com; 13 Nov 95 03:08:09 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id UAA20810; Sun, 12 Nov 1995 20:55:42 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 20:55:19 EST
Received: by mail.ucsd.edu; id OAA00266
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 14:03:59 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id OAA00254
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 14:03:57 -0800 for ham-space-ddist
Message-Id: <199511122203.OAA00254@mail.ucsd.edu>
Date: Sun, 12 Nov 95 14:03:55 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #322
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 322

Today's Topics:
(none)
Request for help w/portable satcom
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?
WTB: FT 726 or FT 736

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 22:03:30 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 23:07:51 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id QAA14226; Sun, 12 Nov 1995 16:55:38 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 16:55:12 EST
Received: by mail.ucsd.edu; id KAA06211
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 10:44:00 -0800 for ham-space-list

Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id KAA06197
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 10:43:58 -0800 for ham-space-ddist
Message-Id: <199511121843.KAA06197@mail.ucsd.edu>
Date: Sun, 12 Nov 95 10:43:57 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #321
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 321

Today's Topics:
(none) (2 msgs)
ARLK061 Keplerian data
MIR HAM-ing on 2m/70cm ???
Mods for Icom IC-736
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 15:03:30 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 16:07:37 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id JAA07107; Sun, 12 Nov 1995 09:55:28 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 09:55:09 EST
Received: by mail.ucsd.edu; id EAA07296
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA07288
sendmail 8.6.12/UCSD-2.2-sun

Sun, 12 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511121230.EAA07288@mail.ucsd.edu>
Date: Sun, 12 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #319
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 319

Today's Topics:
ARLS022 Next shuttle all licensed
fed Log
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 1995 20:24:46 -0500
From: w1aw@arrl.org
Subject: ARLS022 Next shuttle all licensed

SB SPACE @ ARL $ARLS022
ARLS022 Next shuttle all licensed

ZCZC AS02
QST de W1AW
Space Bulletin 022 ARLS022

Date: 10 Nov 1995 08:42:11 -0500
From: dcimp@aol.com (DCimp)
Subject: fed Log

Anyone know where I can get a copy of "Fed Log"?

Date: 11 Nov 1995 15:13:51 GMT
From: wave@mindspring.com (Pieter Ibelings)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Do these UFO's have ham radio stations on them?
I have MIR confirmed , but that's about it.

73's

Date: (null)
From: (null)

SB SPACE ARL ARLS022
ARLS022 Next shuttle all licensed

Space Shuttle mission STS-74 is scheduled for lift-off at 1255 UTC on Saturday, November 11, with all five crew members holding Amateur Radio licenses.

NASA astronaut James Halsell, KC5RNI, and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ, both received their licenses in recent days, and both plan to participate in Shuttle Amateur Radio EXperiment (SAREX) activities during the STS-74 mission.

Halsell is the shuttle's pilot, and Hadfield is a mission specialist.

Shuttle Atlantis's commander for STS-74 is Ken Cameron, KB5AWP, who used Amateur Radio from Atlantis during STS-37 in April 1991 and from Discovery during STS-56 in April 1993. This will be the third mission Cameron has flown where the entire crew are licensed radio amateurs.

Other STS-74 crew members are Mission Specialist Jerry Ross, N5SCW, who was also a member of STS-37, and who operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR, who used ham radio aboard Columbia during STS-58 in October/November 1993.

For more information on the SAREX program, visit the SAREX home page on the World Wide Web at

http://www.nasa.gov/sarex/sarexmainpage.html
NNNN
/EX

End of Ham-Space Digest V95 #319
****

Date: 12 Nov 95 18:43:39 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 19:47:44 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id NAA10159; Sun, 12 Nov 1995 13:35:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 13:35:09 EST
Received: by mail.ucsd.edu; id HAA19040
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:38 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id HAA19021
sendmail 8.6.12/UCSD-2.2-sun
Sun, 12 Nov 1995 07:44:36 -0800 for ham-space-ddist
Message-Id: <199511121544.HAA19021@mail.ucsd.edu>
Date: Sun, 12 Nov 95 07:44:34 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #320
To: Ham-Space@ucsd.edu

Ham-Space Digest Sun, 12 Nov 95 Volume 95 : Issue 320

Today's Topics:
(none)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 07:01:16 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 08:08:16 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id BAA01557; Sun, 12 Nov 1995 01:56:06 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 12 Nov 95 01:55:39 EST
Received: by mail.ucsd.edu; id TAA22333
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:57 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List

Received: by mail.ucsd.edu; id TAA22317
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 19:33:55 -0800 for ham-space-ddist
Message-Id: <199511120333.TAA22317@mail.ucsd.edu>
Date: Sat, 11 Nov 95 19:33:54 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #318
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 318

Today's Topics:
(none)
* SpaceNews 06-Nov-95 *
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP. (2 msgs)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 03:33:31 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 04:33:30 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id WAA13713; Sat, 11 Nov 1995 22:21:22 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 22:21:15 EST
Received: by mail.ucsd.edu; id RAA07260
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:23 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id RAA07239
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 17:09:21 -0800 for ham-space-ddist
Message-Id: <199511120109.RAA07239@mail.ucsd.edu>
Date: Sat, 11 Nov 95 17:09:18 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU

Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #317
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 317

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WinOrbit 2.7 (tracking software) available

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 12 Nov 95 01:08:53 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 12 Nov 95 02:10:49 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id TAA22988; Sat, 11 Nov 1995 19:58:37 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 19:56:49 EST
Received: by mail.ucsd.edu; id OAA19651
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:15 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id OAA19627
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 14:44:14 -0800 for ham-space-ddist
Message-Id: <199511112244.OAA19627@mail.ucsd.edu>
Date: Sat, 11 Nov 95 14:44:11 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #316
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 316

Today's Topics:
(none)
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 22:43:48 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 23:48:38 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub5.attgis.com (8.7.1/8.7.1) with
UUCP id RAA20245; Sat, 11 Nov 1995 17:36:32 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 17:36:15 EST
Received: by mail.ucsd.edu; id MAA00986
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:06 -0800 for ham-space-list
Errors-To: ham-space-relay@ucsd.edu
Sender: ham-space-relay@ucsd.edu
Precedence: List
Received: by mail.ucsd.edu; id MAA00967
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 12:14:03 -0800 for ham-space-ddist
Message-Id: <199511112014.MAA00967@mail.ucsd.edu>
Date: Sat, 11 Nov 95 12:14:02 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@ucsd.edu
Reply-To: Ham-Space@ucsd.edu
Precedence: List
Subject: Ham-Space Digest V95 #315
To: Ham-Space@ucsd.edu

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 315

Today's Topics:
(none)
Moon track software
Radarsat launch

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 20:13:35 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 21:18:35 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id PAA07271; Sat, 11 Nov 1995 15:06:29 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 15:06:01 EST
Received: by mail.ucsd.edu; id JAA11945
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:17 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id JAA11925
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 09:46:14 -0800 for ham-space-ddist
Message-Id: <199511111746.JAA11925@mail.ucsd.edu>
Date: Sat, 11 Nov 95 09:46:12 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #314
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 314

Today's Topics:
(none)
ARLS021 Shuttle Countdown Continues
Epoch Time ? (2 msgs)
Looking for the email addresses of Arthur C. Clark (2 msgs)
MIR HAM-ing on 2m/70cm ???
PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official

policies or positions of any party. Your mileage may vary. So there.

Date: 11 Nov 95 15:38:40 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 11 Nov 95 16:34:50 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id KAA01829; Sat, 11 Nov 1995 10:22:46 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 11 Nov 95 10:21:40 EST
Received: by mail.ucsd.edu; id EAA14256
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:34 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA14249
sendmail 8.6.12/UCSD-2.2-sun
Sat, 11 Nov 1995 04:30:32 -0800 for ham-space-ddist
Message-Id: <199511111230.EAA14249@mail.ucsd.edu>
Date: Sat, 11 Nov 95 04:30:31 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #313
To: Ham-Space@UCSD.EDU

Ham-Space Digest Sat, 11 Nov 95 Volume 95 : Issue 313

Today's Topics:
(none)
hmmm
Re AO-13 400bps psk
STS-74 Prelaunch KEPS?
TS-790A vs.FT-736R
WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP? (2 msgs)
WTB: SatTrack IV or Trackbox

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 Nov 95 20:08:00 GMT
From: postmaster@chwhert.switzerland.ncr.COM
Subject: (none)

Received: by chwhert.switzerland.ncr.com; 10 Nov 95 18:40:00 CET
Received: from ncrgw1.UUCP (ncrgw1@localhost) by ncrhub4.attgis.com (8.7.1/8.7.1) with
UUCP id MAA11079; Fri, 10 Nov 1995 12:28:01 -0500 (EST)
Received: by ncrgw1.ATTGIS.COM; 10 Nov 95 12:22:08 EST
Received: by mail.ucsd.edu; id EAA23693
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:39 -0800 for ham-space-list
Errors-To: ham-space-relay@UCSD.EDU
Sender: ham-space-relay@UCSD.EDU
Precedence: List
Received: by mail.ucsd.edu; id EAA23685
sendmail 8.6.12/UCSD-2.2-sun
Fri, 10 Nov 1995 04:30:37 -0800 for ham-space-ddist
Message-Id: <199511101230.EAA23685@mail.ucsd.edu>
Date: Fri, 10 Nov 95 04:30:36 PST
From: Ham-Space Mailing List and Newsgroup <ham-space@UCSD.EDU>
Errors-To: Ham-Space-Errors@UCSD.EDU
Reply-To: Ham-Space@UCSD.EDU
Precedence: List
Subject: Ham-Space Digest V95 #312
To: Ham-Space@UCSD.EDU

Ham-Space Digest Fri, 10 Nov 95 Volume 95 : Issue 312

Today's Topics:
(none)
ARLK060 Keplerian data
Learning Machine!
Moon track software
TS-790A vs.FT-736R

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 9 Nov 95 17:27:19 GMT
From: sp9bch@krakow.ampr.ORG
Subject: (none)

help
quit

Date: 7 Nov 1995 18:15:50 -0500
From: w1aw@arrl.org
Subject: ARLK060 Keplerian data

SB KEP @ ARL $ARLK060
ARLK060 Keplerian data

ZCZC SK85
QST de W1AW
Keplerian Bulletin 60 ARLK060

Date: 9 Nov 95 17:48:37 GMT
From: fred@zygon.COM (Fred Stirling)
Subject: Learning Machine!

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site http://Zygon.com. They have an incredible new multi-media technology that uses a special digital headset that forces your mind to learn. It blew my mind!!! Kinda felt like I was dreaming, while l
earning foreign languages, and programming my subconscious for success. And you can even read books with your eyes closed. Pretty awesome. The company offers a free 30 day trail. Check it out!!!

Fred Sterling

Date: 8 Nov 1995 21:32:00 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: Moon track software

Look in the "Astronomical Almanac for the Year 19xx", published by the US Government Printing Office, and available in larger public libraries or in the Physics or Astronomy section of academic libraries. Section D gives tables of lunar positions, but also has a couple of pages (D46 in the 1994 edition) describing a simple algorithm for right ascension and declination. These can easily be converted to Az/El by the usual procedures. Most tabulated positions make use of an (additional) atmospheric refraction correction, which may not be correct for radio signals (EME).

The trickiest part is getting the time in the proper units for the algorithms in the book - there are several timescales, described elsewhere in the same book.

Carl Gregory
K8CG

Date: 9 Nov 1995 06:06:01 GMT
From: rbickel@ccnet.com (Robert Bickel)
Subject: TS-790A vs.FT-736R

I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm sure its got to be some feature thats just not quite right with the Kenwood.
Thanks for your comments.
Robert KO6PL

Date: (null)
From: (null)

SB KEP ARL ARLK060
ARLK060 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95310.46196231 .00000259 00000-0 10000-4 0 3067
2 16609 51.6462 165.1311 0003314 286.7899 73.2949 15.57977756555138
HST
1 20580U 90037B 95310.14570357 .00000544 00000-0 38676-4 0 07551
2 20580 28.4703 218.5887 0006192 349.5076 10.5377 14.90966120105111
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95310.00445519 .00000057 00000-0 45340-4 0 01557
2 18129 82.9247 314.2437 0013398 59.2414 301.0058 13.72358646419420
UO-11
1 14781U 84021B 95310.03283416 .00000153 00000-0 33583-4 0 08557
2 14781 97.7872 305.9565 0012942 86.9892 273.2794 14.69394968624731
RS-12/13
1 21089U 91007A 95310.19918924 .00000009 00000-0 -71140-5 0 08478
2 21089 82.9230 355.4591 0029767 133.9729 226.3886 13.74061630238271
AO-13
1 19216U 88051B 95309.63206224 -.00000318 00000-0 17766-3 0 01054
2 19216 57.4522 154.7514 7340667 23.1970 357.7462 2.09729545025136
UO-14
1 20437U 90005B 95310.20212331 .00000013 00000-0 21734-4 0 01472

```
2 20437 98.5616 32.2430 0011169 136.3425 223.8644 14.29902055302044
RS-15
1 23439U 94085A 95310.05768480 -.00000039 00000-0 10000-3 0 00968
2 23439 64.8185 25.5409 0166677 237.9389 120.5243 11.27524663035512
AO-16
1 20439U 90005D 95310.23847234 .00000023 00000-0 25689-4 0 09644
2 20439 98.5731 34.1438 0011346 137.1461 223.0607 14.29956810302060
DO-17
1 20440U 90005E 95310.14296534 .00000031 00000-0 28737-4 0 09373
2 20440 98.5753 34.5768 0011415 136.5027 223.7058 14.30098563302076
WO-18
1 20441U 90005F 95310.19807865 .00000018 00000-0 23846-4 0 09500
2 20441 98.5748 34.5904 0011825 137.0277 223.1829 14.30068932302089
LO-19
1 20442U 90005G 95310.21062432 .00000012 00000-0 21536-4 0 09404
2 20442 98.5765 35.0118 0012343 136.6609 223.5534 14.30173537302100
FO-20
1 20480U 90013C 95310.15139540 -.00000017 00000-0 42389-4 0 08485
2 20480 99.0641 12.2995 0539808 272.0413 81.8977 12.83231706269151
AO-21
1 21087U 91006A 95310.03016520 .00000094 00000-0 82657-4 0 06755
2 21087 82.9388 127.6155 0036460 109.2162 251.2936 13.74560895239218
UO-22
1 21575U 91050B 95310.19301784 .00000026 00000-0 23264-4 0 06475
2 21575 98.3820 17.9019 0006594 215.1754 144.8992 14.36998000225891
KO-23
1 22077U 92052B 95310.09716932 -.00000037 00000-0 10000-3 0 05565
2 22077 66.0831 298.6482 0001296 11.2702 348.8345 12.86293104151989
KO-25
1 22828U 93061F 95310.20748689 -.00000004 00000-0 15822-4 0 04120
2 22828 98.6033 24.7094 0009923 147.4766 212.7020 14.28117957078146
IO-26
1 22826U 93061D 95310.17380528 .00000008 00000-0 21060-4 0 04504
2 22826 98.6072 24.6312 0008739 162.5848 197.5635 14.27785433110038
AO-27
1 22825U 93061C 95310.16053817 .00000036 00000-0 32465-4 0 04489
2 22825 98.6070 24.4970 0008136 161.4928 198.6549 14.27677623110027
PO-28
1 22829U 93061G 95310.15104656 .00000042 00000-0 34537-4 0 04287
2 22829 98.6014 24.6941 0010097 148.5138 211.6649 14.28098955110053

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 11, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #312
******************************
```

Date: Wed, 08 Nov 1995 19:26:24 -0500
From: rmw@ids.net (Ryan M Williams)
Subject: hmmm

NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

--
-R.M.Williams
RMW@ids.net
Check out my *NEW* Web Page
http://ids.net/~rmw/news.html
NEW Amateur Radio Link BBS @ 401-885-3074
Includes: FidoNet, Usenet
InterNet EMail, HAM-Net File
Distribution, & 2000 files available Online!

Date: 8 Nov 1995 06:12:32 GMT
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Subject: Re AO-13 400bps psk

Danie Brynard <danie.brynard@pixie.co.za> wrote:

>I am looking for any information on the 400bps PSK modem beacon on
>AO-13. Does somebody perhaps have a scanned file of one of the
>articles that were published in the magazines a few years ago ?
>
>Danie

The best source for such material is AMSAT's ftp file server:

ftp://ftp.amsat.org

which is also pointed to by AMSAT's WWW site

http://www.amsat.org

73 de Tom, W3IWI

Date: 6 Nov 1995 12:21:46 -0500
From: bourkee@aol.com (BourkeE)
Subject: STS-74 Prelaunch KEPS?

Where can I get pre-launch Keps or two-line data for STS-74???
Bourke Ettling
BourkeE@aol.com

Date: 11 Nov 95 01:11:00 GMT
From: Jim.Hansen@stpete.honeywell.COM (Hansen, James K (FL40))
Subject: TS-790A vs.FT-736R

>Date: 9 Nov 1995 06:06:01 GMT
>From: rbickel@ccnet.com (Robert Bickel)
>Subject:
>
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with
the
>Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone
>explain why?.I'm
>sure its got to be some feature thats just not quite right with the
Kenwood.
>Thanks for your comments.
>Robert KO6PL

Just to put things in perspective, I have a FT-736R, but do not own or have not played much with a TS-790A. So if anyone knows more about the TS-790A, It wont hurt my feelings if someone contradicts me in regards to the TS-790A.

These are the facts as I know them:

The FT-736R is suppose to be quieter and more sensitive than the TS-790A.

The FT-736R is set up out of the box to supply power to your mast mounted LNA.

In my opinion, Yaesu seams to lead the competition when it comes to the high end VHF/UHF radios. The FT-736R came out before anyone else had anything similar. This fact in it's self accounts for why there are some many more of the FT-736R's around.

Date: 9 Nov 1995 14:37:47 GMT
From: mbv@ti.com (Ken Durham)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Does anyone know if there is a way to get these guys to edit their newsgroup header so that the responses to the SPAMED post don't end up here and in sci.space.shuttle instead of just in alt.paranet.ufo? Can an administrator somewhere filter out this junk?

Ken K5MBV mbv@ti.com

Date: Sat, 11 Nov 1995 03:08:08 GMT
From: ghansen@accessone.com (Glenn Hansen)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

It happens because the UFO freaks omong other space groups and
rec.readio.amateur.space are all in the message header. Best approach is to
send them a message explaining that they should change the header.
I tried this on a few of them the other day. If a few people change the header
during their response/followup it will be gone.

The other approach is to jump into the conversation twice. Once for and then
against the issue. Be bold, be brave and make radical statements. Just make
sure you delete R.R.A.S. out of the newsgroup list when you post. All the UFO
dweebs will respond in alt.ufo.abducted to your message containing not address
back to the R.R.A.S. newsgroup.

We can try that next.

In article <47t3nr$kao@superb.csc.ti.com> mbv@ti.com (Ken Durham) writes:

> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?

>Ken K5MBV mbv@ti.com

Date: Mon, 6 Nov 1995 16:26:58 GMT
From: rubenc@iglou2.iglou.com (Charles A. Rubenstein)
Subject: WTB: SatTrack IV or Trackbox

Im looking for a SatTrack IV controller or a TAPR Trackbox for sale.
Currently using a SASI Sattracker with tuner for my IC820, but its not
supported by WISP. Have a DSP2232 sitting here collecting dust til I get
the system set up.

Charlie KB8BWE
rubenc@iglou.com
KB8BWE @ N8LHG.#CIN.OH.USA

--
Charlie Rubenstein
KB8BWE@N8LHG.#CIN.OH.USA.NA
rubenc@iglou.com

End of Ham-Space Digest V95 #313
****

Date: 10 Nov 1995 17:24:53 -0500
From: w1aw@arrl.org
Subject: ARLS021 Shuttle Countdown Continues

SB SPACE @ ARL $ARLS021
ARLS021 Shuttle Countdown Continues

ZCZC AS01
QST de W1AW
Space Bulletin 021 ARLS021

Date: 10 Nov 1995 16:54:30 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

Please, I need to know what is the meaning of the numbers that are in the
epoch time in the kep data in the Amsat format.
I need to introduce this elements in quicktrack 4.0, but the format is not the
same.
Does anyone know a good free software (for windows), for tracking and
communications.
Thanks
Answer by mail

Luis

Date: 10 Nov 1995 16:58:16 GMT
From: Luis Miguel Nunes <lm@demnet2.ubi.pt>
Subject: Epoch Time ?

TESTE

Date: Wed, 8 Nov 1995 11:27:03 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Looking for the email addresses of Arthur C. Clark

In <pmedward.3.815781099@scifac.indstate.edu> pmedward@scifac.indstate.edu (pmusers)
writes:

>In article <47c6vu$i7a@Oak.IC.Mankato.MN.US> <userID>@ic.mankato.mn.us (Your Name)
writes:
>>From: <userID>@ic.mankato.mn.us (Your Name)
>>Subject: Looking for the email addresses of Arthur C. Clark
>>Date: 3 Nov 1995 04:49:02 GMT
>>Friends, I am looking for the email address of Prof. Arthur C. Clark
>>(Father of telecommunication satellites) and Stallinger (Author of the
>>book "Computer Communications".)
>>Please inform me at my email address goli@ic.mankato.mn.usa.
>>
>>Thank you,
>>Goli.

>uhmm try

>ACClark@heaven.com

>'sorry couldn't resist

Do you think this is a good joke?
To the best of my knowledge, Arthur C. Clark is alive and well.

Rob
--
+-----------------------------------+-------------------------------------+
| Rob Janssen rob@knoware.nl | AMPRnet: rob@pe1chl.ampr.org |
| e-mail: pe1chl@wab-tis.rabobank.nl | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+-------------------------------------+

Date: 10 Nov 1995 21:50:25 GMT
From: ai557@ccn.cs.dal.ca (Jeffrey A. Harvey)
Subject: Looking for the email addresses of Arthur C. Clark

: To the best of my knowledge, Arthur C. Clark is alive and well.

...and living in Colombo, Sri Lanka.

-Jeffy

Date: 9 Nov 1995 09:21:31 GMT
From: kebsch@pdb.sni.de (Waldemar Kebsch)
Subject: MIR HAM-ing on 2m/70cm ???

Hi,

approx. each day I am checking the announced frequencies, when MIR is
flying over Europe. Until now I don't have heard anything. Is anyone
out there who had a QSO (Phonie-FM) with DP1MIR?

73 de Waldemar, DK3VN
--
E-Mail: kebsch.pad@sni.de Packet Radio DK3VN @ DB0NOS.#NRW.DEU.EU
Big antennas, high in the sky, are better than small ones, low! [106]

Date: Sat, 11 Nov 1995 08:32:06 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
(Glenn Hansen) wrote:

-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
-> Newsgroups. These are all the places your UFO stuff is going to. We at
-> rec.radio.amateur.space are not interested.
->

Take a pill Glen, if you dont like it learn how to use a 'KILL' file to stop the thread from showing up on YOUR screen. Your comment about "a great waste of bandwidth" shows an incredible ignorance of how the net works. If your concerned about bandwidth go take your soapbox to the alt. hierarchy.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: Sat, 11 Nov 1995 08:34:19 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, mbv@ti.com (Ken Durham) wrote:

-> Does anyone know if there is a way to get these guys to edit their
-> newsgroup header so that the responses to the SPAMED post don't
-> end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
-> Can an administrator somewhere filter out this junk?
->
-> Ken K5MBV mbv@ti.com

Get a Newsreader program with a "Kill" file and or learn how to use the one you already have to kill threads that you find offensive then you will not have to play censor for the rest of us.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada

Date: (null)
From: (null)

SB SPACE ARL ARLS021
ARLS021 Shuttle Countdown Continues

The countdown for launch of the Space Shuttle Atlantis continues on schedule today for liftoff on Saturday, November 11. The seven-minute launch window opens at about 1256 UTC.

The mission includes Amateur Radio activities as part of the Shuttle Amateur Radio EXperiment (SAREX). The project has flown on 19 previous shuttle flights since 1983.

The mission will be Commanded by Ken Cameron, KB5AWP, who previously used ham radio from Atlantis during STS-37 in April 1991 and from the Shuttle Discovery during STS-56 in April 1993. This will be the third mission Ken has flown where the entire crew are licensed radio

amateurs. The other members include Mission Specialist Jerry Ross, N5SCW, who was also member of STS-37 SAREX crew, and operated ham radio aboard the STS-55 Columbia mission in April/May 1993; and Mission Specialist Bill McArthur, KC5ACR who used ham radio aboard the Shuttle Columbia during STS-58 in October/November 1993. Two of the crew members have just recently earned Amateur Radio licenses. They are NASA astronaut James Halsell, KC5RNI and Canadian Space Agency astronaut Chris Hadfield, KC5RNJ. Halsell will serve as the shuttle's Pilot, and Hadfield is a Mission Specialist.

During the flight, the shuttle astronauts have scheduled contacts with 5 schools from around the US. SAREX general voice contacts are expected to commence after a rendezvous and docking with the Russian Mir Space Station has occurred on November 14. There will not be any packet radio activity for this mission.

The shuttle is scheduled to land at the Kennedy Space Center in Florida at about 1828 UTC on November 19.

WHEN: Launch is scheduled for November 11, 1995 at 1256 UTC (7:56 AM EST) from the Kennedy Space Center, Cape Canaveral, Florida. Landing is scheduled for November 19, 1995 at 1828 UTC (1:28 PM EST) at the Kennedy Space Center, Florida. 8 day, 5 hour mission.

WHERE: The launch will place the shuttle into Earth orbit at an altitude of 196-245 statute miles (315-394 km) and an inclination of 51.6 degrees.

WHY: NASA's intent in making astronauts available for SAREX operations is to involve the largest possible numbers of people, particularly students, in technology and the US space program with the help of Amateur Radio.

During SAREX missions, the astronauts will typically make the following types of Amateur Radio contacts:
Scheduled radio contacts with schools.
Random radio contacts with the Amateur Radio community.
Personal contacts with the astronauts' families.

CREW MEMBERS (and Amateur Radio call signs):
Kenneth D. Cameron, Commander, KB5AWP
James Donald Halsell, Jr., Pilot, KC5RNI
Jerry L. Ross, Mission Specialist 1, N5SCW
William Surles McArthur, Jr., Mission Specialist 2, KC5ACR
Chris Hadfield, Mission Specialist 3, KC5RNJ

PAYLOAD: Primary Payload--Docking Module
The Space Shuttle Atlantis makes its second trip to the Russian Space Station Mir during this mission, this time to install a permanent docking module that will simplify future shuttle link ups to the Russian complex. The target Mir docking date is November 14. STS-74 is the second of seven shuttle flights to Mir. This effort, known as Phase 1, is the precursor to building the International

Space Station. This information taken from the NASA STS-74 Mission Summary, 12/14/94.

Additional STS-74 mission information can be obtained from NASA:
NASA Spacelink computer information system (look under Spacelink.Hot.Topics)
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA Shuttle World Wide Web Home Page: http://shuttle.nasa.gov

SAREX SPONSORS: The Shuttle Amateur Radio EXperiment (SAREX) is sponsored by the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT) and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

PARTICIPATING SCHOOLS: A handful of schools are selected from around the world to make contact with the shuttle during most SAREX missions. These contacts are prearranged, giving the schools a greater chance at making a successful contact. Two or more students at each of the selected schools ask questions of the astronauts during the contact. The nature of these contacts embodies the primary goal of SAREX--to excite students' interest in learning.

The following schools have been selected by the SAREX Working Group for a scheduled radio contact during this mission:

Franklin Junior High School
Pocatello, ID

Connecticut-area schools (combined-effort)
Bedford Middle School (contact site), Westport
Coleytown Middle School, Westport
Western Middle School, Greenwich
Saxe Middle School, New Canaan
Columbus Magnet School, Norwalk

Lake Street Elementary School
Crown Point, IN

Round Lake area schools
Magee Middle School (contact site)
Round Lake Hts., IL

Quimby Oak Junior High School
San Jose, CA

ADDITIONAL INFORMATION FOR AMATEUR RADIO OPERATORS-

SAREX RADIO FREQUENCIES: During most SAREX missions, many of the crew members will make random contacts with earth-bound hams. They make these contacts during their breaks, before and after meal time,

and during their pre-sleep time. In fact, over the past years the astronauts have contacted thousands of amateurs around the world.

Since this flight is a shuttle-Mir docking mission, and SAREX and Mir Amateur Radio stations usually share the same downlink frequency (145.55 MHz), the SAREX Working Group has decided to use the following frequencies during this mission.

The crew will use separate receive and transmit frequencies. PLEASE do not transmit on the shuttle's DOWNLINK frequency. The DOWNLINK is your receiving frequency. The UPLINK is your transmitting frequency.

FM Voice Downlink: 145.84 MHz
FM Voice Uplink: 144.45, 144.47 MHz

The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the shuttle's station is on-the-air.

CALL SIGNS:
FM voice call signs--KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ

QSL VIA: Send reports and QSLs to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

SHUTTLE TRACKING: Current Keplerian elements to track the shuttle are available from the following sources:
NASA Spacelink computer information system
BBS: (205) 895-0028 VT-100, 8-N-1
Telnet, FTP, and Gopher: spacelink.msfc.nasa.gov
World Wide Web: http://spacelink.msfc.nasa.gov
Internet TCP/IP address: 192.149.89.61
NASA SAREX WWW Home Page:
http://www.nasa.gov/sarex/sarexmainpage.html
ARRL
W1AW news bulletins (frequencies and times listed under ''FOR FURTHER INFORMATION'')
BBS: (860) 594-0306
World Wide Web: http://www.arrl.org
AMSAT
World Wide Web: http://www.amsat.org
Johnson Space Center Amateur Radio Club
BBS: (713) 244-5625
Goddard Amateur Radio Club
BBS: (301) 286-4137
World Wide Web: http://garc.gsfc.nasa.gov/www/garc-home-

page.html
Packet: WA3NAN on 145.090 MHz in DC area

CONFIGURATION: During STS-74, the SAREX hardware will be flown in configuration M. Configuration M uses the shuttle/Mir VHF radio for FM voice radio contacts.

During final approaches to the Mir Space Station, a VHF radio is used by the shuttle Commander to radio the Mir crew by ship-to-ship communications, providing shuttle status and keeping them informed of major events from that point on, including confirmation of contact, capture and conclusion of damping. This same VHF radio is used by the crew for SAREX activities during shuttle/Mir docking missions.

FOR FURTHER INFORMATION:
Contact the American Radio Relay League
Educational Activities Department
225 Main Street, Newington CT 06111-1494 USA
Telephone (860) 594-0301, FAX (860) 594-0259, ARRL BBS (860) 594-0306
Internet sarexarrl.org
World Wide Web http://www.arrl.org/
CompuServe 70007,3373
Prodigy PTYS02A
America Online HQARRL1

ARRL's (Newington, CT) Amateur Radio station (call sign W1AW) transmits news bulletins (9:45 PM, 12:45 AM EST) on HF bands at 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and in the Connecticut area on VHF at 147.555 MHz. W1AW bulletins are also forwarded on packet.

Members of the Goddard Amateur Radio Club (Greenbelt, MD) re-transmit live, shuttle air-to-ground audio over the amateur frequencies from their club station, WA3NAN. To listen-in, tune to Amateur Radio high frequency (HF) bands at 3.86, 7.185, 14.295, 21.395, and 28.65 megahertz (MHz) and in the Maryland/DC area on a very high frequency (VHF) band at 147.45 MHz.

The ''SAREX Bulletin'' contains additional general information on SAREX. This document may be obtained electronically from many of the popular on-line electronic services.

The American Radio Relay League
Newington, CT
USA
NNNN
/EX

End of Ham-Space Digest V95 #314
****

Date: 7 Nov 1995 13:56:35 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Moon track software

I have need of source code for a moon track algorithm. I know
that programs such as Instant Track include moon tracking (az/el
angles) information; but I need the algorithm itself. Anyone know
where to look?

Date: 7 Nov 1995 13:53:48 GMT
From: "Norman L. Hannon" <73614.2047@CompuServe.COM>
Subject: Radarsat launch

Anyone have news on the status of Radarsat. I heard that the
launch went well and early TLM indicated no problems.

End of Ham-Space Digest V95 #315
****

Date: 11 Nov 1995 19:26:46 GMT
From: Cal Deal <caldeal@gate.net>
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Please move your UFO discussion to an appropriate
location.

Date: 11 Nov 1995 19:12:01 GMT
From: bsmith@msn.com (Bob Smith)
Subject: TS-790A vs.FT-736R

OK How about comparing them both to the Icom 820H???
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

End of Ham-Space Digest V95 #316
****

Date: 11 Nov 1995 21:32:06 GMT
From: videodog@cybergate.com (Joe Thor)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> says:
>
>Please move your UFO discussion to an appropriate
>location.
>
>

This is an appropriate place to discuss the space shuttle and UFO's!

Joe

Date: 10 Nov 1995 13:52:22 GMT
From: Jean-Philippe Donnio <jpdonnio@info.unicaen.fr>
Subject: WinOrbit 2.7 (tracking software) available

Carl Gregory <cgregory@uiuc.edu> wrote:

>New Features in version 2.7
>---------------------------

>* Alternate satellite information databases such as "The
> Satellite Encyclopedia" may now be accessed directly.

Just a correction to WinOrbit's help file: TSE's web site is now
http://www.tele-satellit.com/tse/

You may also get the package from
ftp://ftp.tele-satellit.com/pub/tse/tse032.zip

WinOrbit together with TSE is really great! Give it a try!

--
Jean-Philippe Donnio
univ: jpdonnio@info.unicaen.fr http://www.info.unicaen.fr/~jpdonnio/
work: jpdonnio@tele-satellit.com http://tele-satellit.com/tse/tag.html
home: jpdonnio@dialup.francenet.fr

End of Ham-Space Digest V95 #317
****

Date: 8 Nov 1995 20:17:15 -0500
From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 06-Nov-95 *
Date: 8 Nov 1995 20:17:15 -0500
Organization: Rutgers University
Message-ID: <47rkqr$oof@pilot.njin.net>

SB NEWS @ AMSAT $SPC1106
* SpaceNews 06-Nov-95 *

BID: $SPC1106

=========
SpaceNews
=========

MONDAY NOVEMBER 6, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited free distribution.

* STS-74 NEWS *
===============
NASA managers have set Nov. 11, 1995, as the official launch date for the STS-74 mission -- the second in a series of missions between the U.S. Space Shuttle and the Russian Space Station Mir. The primary purpose of the Space Shuttle Atlantis STS-74 mission is the installation of a docking module that will improve clearance between the Shuttle and Mir's solar arrays during subsequent dockings. Atlantis' crew also will return to Earth experiment samples, equipment for repair and analysis and products manufactured on the station.

The Nov. 11 launch of Atlantis is planned for approximately 7:56 AM EST (1256 UTC) from Kennedy Space Center's Launch Complex 39-A. The actual launch time may vary by a few minutes based on calculations of Mir's precise location in space at the time of liftoff. The available launch period, or "window" to launch Atlantis, is approximately seven minutes each day.

The STS-74 mission is scheduled to last approximately eight days. Docking with Mir will occur on the fourth day of the flight. An on-time launch and nominal mission duration would have Atlantis and her crew returning to Earth on Nov. 19 with a landing at Kennedy Space Center's Shuttle Landing Facility, Florida, at approximately 1:28 p.m. EST (1828 UTC).

The STS-74 mission will be the 15th mission for Atlantis and the 73rd for the Space Shuttle system.

STS-74 data at a glance:

VEHICLE: Atlantis/OV-104
LOCATION: Pad 39A
TARGET LAUNCH DATE/TIME: Nov. 11 at about 7:56 AM EST (1256 UTC)
LAUNCH WINDOW: 6 minutes, 57 seconds
TARGET MIR DOCKING DATE: Nov. 14
TARGET KSC LANDING DATE/TIME: Nov. 19 at about 1 PM EST (1800 UTC)
MISSION DURATION: 8 days, 5 hours, 4 minutes
CREW SIZE: 5 (All licensed Amateur Radio Operators)
ORBITAL ALTITUDE and INCLINATION: 196-245 statute miles/51.6 degrees

[Info via NASA]

* NEW INFO SERVER AVAILABLE *
==========
An anonymous FTP server has been made available by a French Scientific Center for the purpose of disseminating information of interest to those involved in Amateur Astronomy and Amateur Space activitites. The server provides the following information services:

Kelso database (amateur, weather, synchro, manned spacecraft)
Molczan database (1000 2Line orbital elements)
NASA database (MIR and exotic satellites)
AMSAT database (Shuttle vectors)
SpaceNews (KD2BD)
ANS (from amsat.org, in English and French language)

Ephemerid (Solar planetary satellites (project))

Access at: Internet FTP anonymous (TCP/IP)
Address: alphalma.cnrs-mrs.fr (192.134.96.21)
Login: anonymous
Password: your e-mail address or call, please.
Directory name: astro

(This is an experimental test European database).

Sysop: fb1rci@lma.cnrs-mrs.fr

[Info via FB1RCI]

* MIR NEWS *
==========
Mir status as of 30-Oct-95

The current Mir crew is busy getting used to their new environment. Packet activity on 2-meters was temporarily interrupted due to a problem with the audio feed into the PacCom TNC. This problem has been resolved and 2-Meter packet is now fully operational. Some fine tuning of the TNC's parameters are still taking place to optimize 1200 baud data throughput.

The "USERS" counter has been set to 7. This means that 7 people can connect to Mir's keyboard at the same time. However if no one is at the keyboard on Mir, then all of the data sent goes into the bit bucket. It is recommended to stay OFF the keyboard ports unless someone from Mir is actually typing on the keyboard (Port call sign R0MIR). Excessive traffic on the keyboard port just causes interference to the user of the BBS (Port call sign R0MIR-1). Do not expect anyone to be at the keyboard after 21:00 UTC. This is one of the many parameters being adjusted.

The status of the 440 FM packet/voice is beginning to look better. The new dual band transceiver (Kenwood TM733 European version) is now on Mir. Arrangements are being made to deliver the missing Amateur Radio related parts to Mir in the near future (coax cables, manuals, cavity filter, etc). The cavity filters are required to allow simultaneous operation on both 2-meters (Icom 228) and on 70-cm (Kenwood TM733). Sources indicate the externally mounted dual band antenna was installed 6 months ago.

The Mir crew has two new Russian made 1200 baud TNCs. The TNCs are controlled by a Russian made Terminal Software program. Thomas has indicated that he has not be able to get the new TNCs to "initialize". There are people in Germany and Russia working on this problem.

The Mir station is still running on 145.550 MHz simplex for voice and packet communications. There may be a frequency change in the future, but there is no confirmed date for the frequency change.

During the weekend of 28-Nov-95, Sergi was active on voice and keyboard. Thomas was very active on voice working with key stations in the USA, fine tuning Amateur Radio related activities. Down link signal quality is very good, and the old noisy ventilation fan has been replaced (Do you remember the loud fan noises heard last summer everytime Mir used voice?).

The Mir crew sleeps from approximately 21:00 UTC till approximately 05:00 UTC (5pm-1am EST). Most of the Mir passes over the USA are during the sleeping period of the crew. The Mir Space station will be visible in the evening sky for the next few weeks. Please update your tracking programs, and look for Mir passes 30 - 120 minutes after local sunset.

Remember, only 1 station can connect to MIR's PMS (R0MIR-1) at a time, ALL others must wait. And please stay off the R0MIR keyboard port, unless it is active with communications from a Cosmonaut.

[Info via G. Miles Mann, WF1F]

* OSCAR NEWS *
==========
Pacsat AO-16: normal BBS.

Dove DO-17:

Last week:
Software, hardware and sound testing in progress
DOVE Command Team (WD0E)

This week:
10/29/95
Software load complete. S-band is on and should stay on. Accurate measurements of it's frequency (2401.220 MHz) appreciated to wd0e@amsat.org
DOVE Command Team (WD0E)

[telemetry dwell 30 secs]

Weber WO-18: normal operations

Lusat LO-19: normal BBS operations

Itamsat IO-26: nothing heard on either D/L 03-Nov-95 [vk7zo]

[Info via Graham, VK7ZO]

* FEEDBACK/INPUT WELCOMED *
==========
Comments and input for SpaceNews should be directed to the editor (John,

KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org, magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

Date: 11 Nov 1995 23:22:55 GMT
From: mjensen@phoenix.net (Mike Jensen)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Joe Thor (videodog@cybergate.com) wrote:
: >
: >Please move your UFO discussion to an appropriate
: >location.
: >

: This is an appropriate place to discuss the space shuttle and UFO's!

Where in sci.space.shuttle does it say ufo? This is not an appropriate
forum for UFO discussions. sci.space.ufo, if it existed, would be, but
since several other ufo newsgroups exist, I suggest taking the
discussion there instead.

: Joe

Mike
--

Through the router, over the firewall, down the cable.. nothing but net!
Don't be so open minded your brains fall out.

Date: Sun, 12 Nov 1995 01:20:11 GMT
From: ve7zvz@dowco.com (Scott Leaf)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> wrote:

-> Please move your UFO discussion to an appropriate
-> location.

Learn how to use a 'KILL' file to stop the thread from showing up on YOUR
screen if you find it so offensive. We dont need censorship on the Net.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To Boldy VHF Where No Man Has VHFed Before"

End of Ham-Space Digest V95 #318
****

End of Ham-Space Digest V95 #320
****

Date: 12 Nov 1995 10:45:57 -0500
From: w1aw@arrl.org
Subject: ARLK061 Keplerian data

SB KEP @ ARL $ARLK061
ARLK061 Keplerian data

ZCZC SK86
QST de W1AW
Keplerian Bulletin 61 ARLK061

Date: 9 Nov 1995 17:18:27 GMT
From: Peter.Delmotte@mech.kuleuven.ac.be (Peter Delmotte)
Subject: MIR HAM-ing on 2m/70cm ???

In article <47sh6r$ob7@nervous.pdb.sni.de>, kebsch@pdb.sni.de says...
>
>Hi,
>
>approx. each day I am checking the announced frequencies, when MIR is
>flying over Europe. Until now I don't have heard anything. Is anyone
>out there who had a QSO (Phonie-FM) with DP1MIR?
>
>73 de Waldemar, DK3VN

Hi Waldemar,

I had a packet-QSO with R0MIR on 145.550 MHz somewhere last june.
It took me a while to get through with my portable, but it can be done!
However, R0MIR isn't always on the air. They periodically shut down

their ham gear (to conserve power I guess).

73 de Peter, ON1ACY.

Date: 9 Nov 1995 23:50:42 GMT
From: yingst@knighted.com (Harry Yingst)
Subject: Mods for Icom IC-736

Does anyone have any mods for the ICOM IC-736? I'm looking for a way to
turn the pre-amp back on below 1.6 Mhz.
Icom turns it off even though it the light says it's on.
I would like to listen for some lowfer stations 1750 meter band
(160-190 kc. 1 watt into a 50 ft antenna). I'm also looking for a way to
improve the recieve audio.
The recieve audio sounds flat and distant, lacking highs & lows.
With the notch filter ON the audio sounds a little better,
but it still could use some improvement.
They re-shape the audio through the notch filter,
and it actually has a nicer sound with the notch filter on
(Has more highs & lows).
I had a IC-737 that had the same problem with the audio,
just not sounding quite right. I am also interested in any other mods
for the Icom IC-736. Please send any replies to yingst@knighted.com Note:
If you post a reply into this newsgroup I proably wont get it,
my internet provider only holds news for 1 day. Thank You. Harry
N6VUJ

Date: Thu, 9 Nov 1995 19:33:52 GMT
From: gary@ke4zv.atl.ga.us (Gary Coffman)
Subject: TS-790A vs.FT-736R

In article <47s5o9$m71@ccnet2.ccnet.com> rbickel@ccnet.com (Robert Bickel) writes:
>I think I've noticed that most Oscar operators use the Yaesu FT-736R with the Kenwood
>TS-790A being almost universally rejected as a satellite rig.Can anyone explain why?.I'm
>sure its got to be some feature thats just not quite right with the Kenwood.
>Thanks for your comments.
>Robert KO6PL

The TS-790A has several *glaring* faults, but the worst one for satellite
use is that you can't use the narrow filters in the subband receiver.
That's the receiver you *use* when listening to the satellite because
you're transmitting on the main band unit. Major oops! Also, to make
it track tune in sat mode, you have to *hold the SAT button in*, major
oops. And the thermal design really sucks, the 70cm output module gets
very hot under normal use. The main unit receiver is pretty good, but
you don't use it for satellite.

The FT-736R is a bit long in the tooth, and can't do independent
dual band receive, but for satellite use it is still the champ.

It works the way you *need* it to work.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | emory!kd4nc!ke4zv!gary
534 Shannon Way | Guaranteed! | gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244 | |

Date: (null)
From: (null)

SB KEP ARL ARLK061
ARLK061 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 99974U 95315.59818964 .01006020 00000-0 19864-3 0 15
2 99974 51.6456 140.1652 0103509 5.0168 355.2008 16.17694769 25
Mir
1 16609U 86017A 95313.86156770 .00003998 00000-0 58925-4 0 3081
2 16609 51.6451 148.0817 0003574 304.4745 55.5910 15.57982282555662
AO-10
1 14129U 83058B 95301.79734081 -.00000147 00000-0 10000-3 0 03832
2 14129 26.4483 241.3041 5979377 321.7524 8.2043 2.05879727065085
RS-10/11
1 18129U 87054A 95312.04588371 .00000040 00000-0 27245-4 0 01351
2 18129 82.9245 312.7342 0013329 54.0088 306.2297 13.72358626419701
UO-11
1 14781U 84021B 95312.00762864 .00000185 00000-0 39090-4 0 08425
2 14781 97.7871 307.8396 0012997 81.2952 278.9721 14.69396068625026
RS-12/13
1 21089U 91007A 95313.18472939 .00000038 00000-0 24104-4 0 8435
2 21089 82.9230 353.2460 0030062 125.8627 234.5324 13.74061957238684
AO-13
1 19216U 88051B 95312.96962799 .00000049 00000-0 18599-3 0 1088
2 19216 57.4296 154.0272 7346381 23.2353 357.6953 2.09725300 25200
UO-14
1 20437U 90005B 95313.21104328 .00000008 00000-0 19745-4 0 1385
2 20437 98.5617 35.2020 0011274 127.7188 232.5021 14.29902293302477
RS-15
1 23439U 94085A 95312.62980964 -.00000039 00000-0 10000-3 0 900
2 23439 64.8177 21.3820 0166782 237.5072 120.9633 11.27524533 35801

```
AO-16
1 20439U 90005D 95312.19769396 .00000017 00000-0 23609-4 0 09444
2 20439 98.5733 36.0735 0011380 131.3227 228.8935 14.29956970302342
DO-17
1 20440U 90005E 95312.10199304 .00000004 00000-0 18366-4 0 09465
2 20440 98.5752 36.5063 0011577 130.8060 229.4116 14.30098549302351
WO-18
1 20441U 90005F 95312.22711386 -.00000010 00000-0 13131-4 0 9417
2 20441 98.5747 36.5887 0011957 131.1486 229.0722 14.30068876302379
LO-19
1 20442U 90005G 95313.77866589 .00000012 00000-0 21505-4 0 9364
2 20442 98.5765 38.5280 0012531 126.2320 234.0023 14.30173898302618
FO-20
1 20480U 90013C 95312.17852060 -.00000057 00000-0 -47015-4 0 8338
2 20480 99.0641 13.9479 0539795 267.4453 86.4773 12.83231287269411
AO-21
1 21087U 91006A 95313.45137067 .00000094 00000-0 82657-4 0 6484
2 21087 82.9386 125.0833 0036574 100.1595 260.3690 13.74561131239680
UO-22
1 21575U 91050B 95313.67450737 .00000040 00000-0 27791-4 0 6435
2 21575 98.3820 21.2935 0006833 203.0488 157.0401 14.36998521226397
KO-23
1 22077U 92052B 95312.04093367 -.00000037 00000-0 10000-3 0 05360
2 22077 66.0826 294.5777 0001385 10.3582 349.7458 12.86293162152238
KO-25
1 22828U 93061F 95313.71059574 -.00000002 00000-0 16512-4 0 4087
2 22828 98.6027 28.1583 0010032 136.8018 223.3945 14.28118441 78643
IO-26
1 22826U 93061D 95312.13600329 .00000011 00000-0 21967-4 0 04393
2 22826 98.6069 26.5631 0008812 156.3426 203.8162 14.27785634110314
AO-27
1 22825U 93061C 95312.12288431 -.00000001 00000-0 17211-4 0 04350
2 22825 98.6069 26.4292 0008136 155.2622 204.8926 14.27677562110308
PO-28
1 22829U 93061G 95313.23382290 .00000082 00000-0 50443-4 0 4223
2 22829 98.6022 27.7314 0010003 138.0376 222.1565 14.28099902110490

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
November 14, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX

------------------------------

End of Ham-Space Digest V95 #321
******************************

------------------------------

Date: 12 Nov 1995 17:39:29 GMT
From: csp@clark.net ()
```

Subject: Request for help w/portable satcom

I am planning a hiking and backpacking trip and would like to try
portable packet ops via satellite. I am familiar with packet but have
never done any sat work. Is it feasbile to do satellite packet in the
field with a handheld and "portable" antenna? Any suggestions/advice
would be much appreciated. Thanks.

Craig Peterson, N3DCT
csp@clark.net

Date: 9 Nov 1995 22:51:03 GMT
From: jaminge@pb2esac.esac.pacbell.com (John Minger)
Subject: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

In article <47t3nr$kao@superb.csc.ti.com>, Ken Durham <mbv@ti.com> wrote:
> Does anyone know if there is a way to get these guys to edit their
>newsgroup header so that the responses to the SPAMED post don't
>end up here and in sci.space.shuttle instead of just in alt.paranet.ufo?
> Can an administrator somewhere filter out this junk?
>
Maybe a new newsgroup: rec.radio.amateur.space.cadets ;-)

--

____
John A Minger KE6DTC Opinions expressed are those of the author
Los Angeles, CA and not those of anyone or anything else.

Date: Sun, 12 Nov 1995 16:24:04 -0500
From: Joseph Yakoski <jyakoski@epix.net>
Subject: WTB: FT 726 or FT 736

Hello to you all. I am looking for a Yaesu FT 726 or a FT 736 for my
brother. If anyone has anything to sell, e-mail to me at
jyakoski@epix.net
Thank You..
Joseph Yakoski N3JNX

End of Ham-Space Digest V95 #322
****

Date: Sun, 12 Nov 1995 17:45:24 GMT
From: wjake@VOA.GOV (William J. Keaton)
Subject: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

In article <ve7zvz-1111950131490001@206.12.26.44> ve7zvz@dowco.com (Scott Leaf) writes:
>In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com

>(Glenn Hansen) wrote:
>
>-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.
>
>-> rec.radio.amateur.space. It is a great waste of bandwidth. When you post a
>-> reply please. I SHOUT PLEASE, look up at the top of the page where it says
>-> Newsgroups. These are all the places your UFO stuff is going to. We at
>-> rec.radio.amateur.space are not interested.
>->
>
>Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
>stop the thread from showing up on YOUR screen. Your comment about "a
>great waste of bandwidth" shows an incredible ignorance of how the net
>works. If your concerned about bandwidth go take your soapbox to the alt.
>hierarchy.
>
>--
>Scott Leaf VE7ZVZ
>ve7zvz@dowco.com
>Port Coquitlam, British Columbia, Canada

And why don't you both keep your silly argument out of sci.space.*?

****
* WJaKe - William J. Keaton wjake@voa.gov *
* VOA - The Voice of America VDJS27A@prodigy.com *
* Opinions - Mine Only http://pages.prodigy.com/VA/wjake/home.html *
****

Date: 10 Nov 1995 12:31:52 GMT
From: John Criswick <criswick@conveyor.com>
Subject: WWW> Expedition Link

SCIENCE - Expedition Link

Expedition Link - A 2111 Foundation Virtual Library

Expedition Link is a service of the 2111 Foundation to provide
links to other sites of interest related to expeditions of
scientific and exploration endeavor.

The site is located at:

<URL:http://twentyone-11.org/2111/exp-link.html>

The 2111 Foundation for Exploration is a non-profit exploration
organization developing a number of international grant programs
directed toward expeditions and environmental fieldwork using
space technology or exploration endeavors with space related
themes.

<URL:http://twentyone-11.org/2111/>

...John Criswick
criswick@conveyor.com

End of Ham-Space Digest V95 #323
****

2369. Re: THE Burt

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: ka1kjz@ix.netcom.com
Message-ID: <487put$pf2@ixnews2.ix.netcom.com>
Source record: 23681
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <486en3$b5f@ixnews5.ix.netcom.com>,
chef_don@ix.netcom.com (Donald R. Sanchez) wrote:

_____ LOTS OF STUFF NUKED _____

>
>on the air he tries to come through as much of a person as possible,
>but on the internet he comes through as quite the ASS!

Here's an original idea here....

IGNORE THE ASS... KILL FILES ARE OUR FRIENDS

I added Burt to my killfile, and WHOA.. the number of messages my newsreader
thinks it has is about half what it was.

Now... if there is only a way of filtering out responses.

--
****
The opinions contained herein are mine and mine alone, so there!
For only I am capable of spewing forth such absurdities and my
boss / internet provider / own mother will laugh heartily at any
attempt to bring them into this and disavow any knowlege of me.
Then we'll have a beer and have a good laugh at your expense.
****

2370. Re: What some think about sexy hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: stevesam@visi.com
Message-ID: <487urp$arl@mixer.visi.com>
Source record: 23682
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

beeb@ix.netcom.com wrote:

>Burt Fisher <k1oik@ccsnet.com> wrote:

>(snip)

>What the hell does this have to do with rollercoasters?

>Please remove rec.roller-coaster from this thread.

<inappropriate groups cut from subject line>

Rec.pyrotechnics too...and everything that isn't radio related.
Me

2371. Re: The idiot ham trade.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: Chris White <chris_white@mail.utexas.edu>
Message-ID: <487vm3$9n4@geraldo.cc.utexas.edu>
Source record: 23683
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

Please stop posting this crap to rec.scuba, rec.scouting, rec. ....

I've removed the bogus cross-posts from the Post To: header above. Please give
us a break: Please Please Please look at those headers when you post, ok?
--
Chris White e-mail: chris_white@mail.utexas.edu
\\// Live long and prosper.

2372. Re: THE Burt

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: STOP@CROSS-POSTING.COM
Message-ID: <DHzopq.Ky2@eskimo.com>
Source record: 23684
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Burt Fisher <k1oik@ccsnet.com> wrote:

>timhynde@ix.netcom.com (Tim Hynde ka8ddz/qrp Rochester, MI) wrote:

>>Did it ever occour to you that meeting someone in person is differnt
>>than meeting them on the air? In my 15 brief years as a ham and SWL I
>>have never heard a conversation, amateur or commercial that resembled
>>one I would have with someone face to face.

>>Tim Hynde ka8ddz

>You mean in person you are supposed to sound like a person but on
>the air sounding like an ass is OK? All my conversations are spoken
>as much as they would be in person as possible.

>#===============#===#
>| Burt Fisher | Teacher of video, broadcasting and electronics |
>| Amateur call | South Dennis, Ma. (Cape Cod) |
>| K1OIK | The less you say, the more people will remember |
>#===============#===#
>| k1oik@ccsnet.com fisher@meol.mass.edu |
>#===#

COME ON BURT !!!!!!!!!!!!

>rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur..space,
>rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,
>rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

BURT,
Annoying, slandering, mean-spirited are all easy attributes
and you excel in every field. You occasionally kinda sorta
show some intelligence. Why don't you quit taking the LAZY
route of cross-posting, and instead narrow it to the respective
group.
If seeing the responses generated by your remarks fascinates
you, I'm sure somewhere in the halls of M.U. is a psychology
professor that may be able to help you.
Of course, practicing what you preach would be nice too !!!

>| Burt Fisher | The less you say, the more people will remember |

regards,
founding member of the Stamp Out Cross-Posters Society SOCS

2373. Re: What some think about sexy hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: stevesam@visi.com
Message-ID: <488amm$f88@mixer.visi.com>
Source record: 23685
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

spug@intlog.demon.co.uk (Sparrow) wrote:

>jimc@mdsroc.com (Jim Clarke) wrote:

<snip>
>Rec.puzzles.crosswords DOES NOT CARE. Please return to a ham radio newsgroup,
>or even better go back to your bloody radio and talk to people who do.
>
>Bloody but unbowed=
>==============Spug (Sparrow) London.==========================

<inappropriate groups cut>

PLEASE PLEASE PLEASE stop this thread.
Re-issue it with a new groups line.
rec.pyrotechnics doesn't care either.
Me

2374. Re: The idiot ham trade.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: stevesam@visi.com
Message-ID: <488apa$f88@mixer.visi.com>
Source record: 23686
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

whirlwind@fangz.com () wrote:

>Speaking of idiots, this wound up in a very inappropritate newsgroup. I've
>taken the liberty of leaving that newsgroup out of further discussion.

<sig cut>
<inappropriate groups cut>

Why not use your judgement and remove ALL inappropriate groups like I
did?
Me

2375. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: Andrew C Robertson <drewbob@mit.edu>
Message-ID: <488eh3$qfo@senator-bedfellow.MIT.EDU>
Source record: 23687
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

rawiley@blue.weeg.uiowa.edu (R. Wiley) wrote:
>
> I think they can be fixed, see below;

No, these are still not funny. They need new punchlines. Regard:

>>-> Burt Fisher Jokes:
>>->
>>-> 1. What is the thinnest book in the world?
"A Boy's First Book of Subtlety" by Burt Fisher
>>->
>>-> 2. How does Burt Fisher take a bubble bath?
He gets into a 55 gallon fish tank with some piranhas
>>->
>>-> 3. What's Burt Fisher's idea of foreplay?
Posting usenet articles until his wife falls asleep
>>->
>>-> 4. How can you tell if Burt Fisher is sexually excited?
We don't know...it has never happened
>>->
>>-> 5. Can Burt Fisher change a roll of toilet paper?
He prefers to use old newspapers spread out on the floor
>>->
>>-> 6. What's Burt Fisher idea of helping with the housework?
Fleeing
>>->
>>-> 7. What does Burt Fisher consider a seven course meal?
Any one-course meal plus six doses of ipecac

drewbob aa1hx MP NTAP

2376. re: spamming the net - was Re: The idiot ham trade.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: Steve.Breland@rmh.edu
Message-ID: <488fb2$ehk@news1.sunbelt.net>
Source record: 23688
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

Burt Fisher <k1oik@ccsnet.com> wrote:

>I said: "I have a VIC 20 I want to trade for a IC-781" (how long do we
>have read thesre messages where some ham wants to trade his junk for
>something woth something).
>
Burt,
How's about trimming the non-radio groups from your posting
Newsgroups?
Thanks,

-Steve
email: Steve.Breland@rmh.edu

2377. Re: THE Burt

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: rfm@urth.eng.sun.com
Message-ID: <RFM.95Nov13174719@urth.eng.sun.com>
Source record: 23689
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <DHzopq.Ky2@eskimo.com> STOP @CROSS-POSTING.COM writes:

BURT,
Annoying, slandering, mean-spirited are all easy attributes
and you excel in every field. You occasionally kinda sorta
show some intelligence. Why don't you quit taking the LAZY
route of cross-posting, and instead narrow it to the respective
group.

Geez, don't give him a clue! I've got a killfile that zaps all postings to more than 5 newsgroups, since anything that widely crossposted is always a waste of time. I had idly wondered why all the Burt followups had dropped off my radar, but was mainly just happy that they had. (I happened to trip over your posting while experimenting with a different newsreader configuration.) Burt, *please* keep on crossposting, it really helps me out.

(BTW, I also kill every post with a subject in ALL CAPITAL LETTERS. They're also uniformly worthless. Funny how these things work.)

Rich

--
Rich McAllister (rfm@eng.sun.com)

2378. Re: THE biggest THE ham THE problem.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: "Thomas W. Castle" <afn17891@freenet.ufl.edu>
Message-ID: <Pine.A32.3.91.951112221821.7099B-100000@freenet2.freenet.ufl.edu>
Source record: 23690
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

You just go to show that "foamers & droolers", do have a place
in this world. Even an idiot like you can find your way into
Ham radio, an computers. Now if only you had something worth
while to say or do..?
If nothing else you are fun <?> to watch <???>. You at least
give us something to laugh at...

BTW> If life gets too much for you to handle, there is a site on
the www// that provides information on the: Do it yourself -
Frontal lobotomy <using 38 - 357 - 45 or what have you>,
Do it yourself Electro Shock therapy <just requires 2 pieces
of number 6 wire an access to a 220v electrical panel.> or
the ever favorite Birth-Control Retro=active classes.

Now you can see how boring it is reading useless crap...
Do yourself a favor, find a new or different hobby...
Unless your 10-13yrs old & like flaming & whinning...

C/U De Tom a.k.a. KD4QHH

2379. Re: What some think about sexy hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: stevesam@visi.com
Message-ID: <488709$dlv@mixer.visi.com>
Source record: 23691
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

jimc@mdsroc.com (Jim Clarke) wrote:

>Oh, I see, the self-righteous calling the self-righteous self-righteous.

<snip>

>Don't let the bad apples spoil the excitement that can be found in amateur
>radio, there is something there for everyone (wives/girlfriends too).

<inapproprate groups snipped>

Please don't continue posting this to inappropriate groups.
Me

2380. Quad Antenna for Space Shuttle UHF

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: Brian Webb <102670.1206@CompuServe.COM>
Message-ID: <486huv$2be$3@mhafn.production.compuserve.com>
Source record: 23692

For those of you interested in monitoring the Space Shuttle on
259.700 MHz, go to the USENET sci.space.shuttle and look for
Parts 1, 2, and 3 of the posting "Quad Antenna for Shuttle UHF."
Be sure to read all three parts.

73s

Brian Webb, KD6NRP

2381. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: cas@ops1.bwi.wec.com
Message-ID: <cas.358.00882B23@ops1.bwi.wec.com>
Source record: 23693
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <483hiepci1@perth.DIALix.oz.au> pbarry@perth.DIALix.oz.au (Paul Barry) writes:
>From: pbarry@perth.DIALix.oz.au (Paul Barry)
>Subject: Re: STS-73 Sees UFO
>Date: 12 Nov 1995 09:10:38 +0800

>Anthony John Xenos (ax823092@oak.cats.ohiou.edu) probably wrote:
>:
>: The idea (detailed below) that we can assume much about whether life exists on
>: other planets based on two premises (life exists on earth, so it is possible,
>: and the universe is big) is ridiculous. Think about the beach analogy.
>: Imagine that it is a pebbly rather than sandy beach you are sitting on. You
>: reach down and the first thing you pick up happens to be a dime. Would you
>: assume that the beach was made of dimes? Of course not. You could only begin
>[deleted] ^^^^^^^^^^^^^

>Maybe not, but it sure WOULD be reasonable to conclude that the chances
>of finding another dime on a large beach is very high, as is the
>possibility of finding another civilized planet in a large universe.

Really? Please explain, keeping in mind that if the number of dimes in
existence is unknown (as is the number of alien civilizations), the assumption
that there are many can hardly be used as evidence that there are many.
(Sounds circular, doesn't it? It is, as is your logic in the above paragraph.
No flame; I just don't think you examined your statement before posting.)

>paul

Bob C.

* Good, fast, cheap! (Pick 2) *

2382. news:30A40ED7@vax-flcgr.stpete.honeywell.com

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: jack blake <blakejl@mhsgate.salem.ge.com>
Message-ID: <48807r$r3m@crissy.ge.com>
Source record: 23694

I have a 736-R, just got. I really enjoy this radio, The one drawback I see is that it is not 9600 ready. I got the factory mod for this and I was curious what other people need about the FM filter Yaesu recomends you change ? On my radio this seems to involve unsoldering the old filter and putting in the new one. Something I really do not want to do. Has anybody out there had any luck on the 9600 birds using the FM filter that came in the radio ?

thanks
jl blake ke4oal

2383. news:30A40ED7@vax-flcgr.stpete.honeywell.com

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: jack blake <blakejl@mhsgate.salem.ge.com>
Message-ID: <488058$r3m@crissy.ge.com>
Source record: 23695

I have a 736-R, just got. I really enjoy this radio, The one drawback I see is that it is not 9600 ready. I got the factory mod for this and I was curious what other people need about the FM filter Yaesu recomends you change ? On my radio this seems to involve unsoldering the old filter and putting in the new one. Something I really do not want to do. Has anybody out there had any luck on the 9600 birds using the FM filter that came in the radio ?

thanks
jl blake ke4oal

2384. news:30A40ED7@vax-flcgr.stpete.honeywell.com

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: jack blake <blakejl@mhsgate.salem.ge.com>
Message-ID: <488064$r3m@crissy.ge.com>
Source record: 23696

I have a 736-R, just got. I really enjoy this radio, The one drawback I see is that it is not 9600 ready. I got the factory mod for this and I was curious what other people need about the FM filter Yaesu recomends you change ? On my radio this seems to involve unsoldering the old filter and putting in the new one. Something I really do not want to do. Has anybody out there had any luck on the 9600 birds using the FM filter that came in the radio ?

thanks
jl blake ke4oal

2385. news:30A40ED7@vax-flcgr.stpete.honeywell.com

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: jack blake <blakejl@mhsgate.salem.ge.com>
Message-ID: <488074$r3m@crissy.ge.com>
Source record: 23697

I have a 736-R, just got. I really enjoy this radio, The one drawback I see is that it is not 9600 ready. I got the factory mod for this and I was curious what other people need about the FM filter Yaesu recomends you change ? On my radio this seems to involve unsoldering the old filter and putting in the new one. Something I really do not want to do. Has anybody out there had any luck on the 9600 birds using the FM filter that came in the radio ?

thanks
jl blake ke4oal

2386. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: mbv@ti.com
Message-ID: <4883lo$frr@superb.csc.ti.com>
Source record: 23698
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

In article <ve7zvz-11119518195200001@206.12.26.40>, ve7zvz@dowco.com. says...
>
>In article <482tdm$fro@news.gate.net>, Cal Deal <caldeal@gate.net> wrote:
>
>
>Learn how to use a 'KILL' file to stop the thread from showing up on YOUR
>screen if you find it so offensive. We dont need censorship on the Net.
~~~~~~
Scott, no one mentioned censorship. There was a request to the UFO guys
to edit their headers so as not to broadcast to other newsgroups than the
ones that they read when responding to a SPAMED UFO posting. A little
consideration would be in order here. If you are offended by this then
maybe you don't understand what we are trying to say.

Ken K5MBV
~~~~~~

2387. Re: ARLS022 Next shuttle all licensed

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: jaminge@pb2esac.esac.pacbell.com
Message-ID: <48855g$f40@gw.PacBell.COM>
Source record: 23699

In article <$arls022.1995@ampr.org>, <w1aw@arrl.org> wrote:
>
>SB SPACE @ ARL $ARLS022
>ARLS022 Next shuttle all licensed
>
>ZCZC AS02
>QST de W1AW
>Space Bulletin 022 ARLS022
>From ARRL Headquarters
>Newington, CT November 10, 1995
>To all radio amateurs
>
>SB SPACE ARL ARLS022
>ARLS022 Next shuttle all licensed
>
[snip, snip]

>For more information on the SAREX program, visit the SAREX home page
>on the World Wide Web at
>
> http://www.nasa.gov/sarex/sarexmainpage.html

That URL has a typo. I was able to reach it via:

http://www.nasa.gov/sarex/sarex_mainpage.html

73,

--

John A Minger KE6DTC Opinions expressed are those of the author
Los Angeles, CA and not those of anyone or anything else.

2388. Azimuth Calibrator

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: billh@gn2.getnet.com
Message-ID: <1995Nov13.193945.13208@schbbs.mot.com>
Source record: 23700

Somewhere in the last few months I saw a reference to a simple device for azimuth calibration to the sun. I believe the reference was to an AMSAT article but I don't belong and have not been able to find the info. If anyone out there either has or can guide me to the information it would be appreciated.
Thanks and 73
Bill, W7JSW
billh@gn2.getnet.com

2389. Convolutional Coding/Differential Coding

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: rsalter@eag.unisysgsg.com
Message-ID: <488g5p$4ok@email.eag.unisysgsg.com>
Source record: 23701

I am working with equipment which supports BPSK and OQPSK 'convolutional decoding' with k numbers and r numbers. Can anyone EMail me a thumbnail explanation? How does it relate to differential? Thanks

2390. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-13 00:00:00 UTC
From: manfredi@engr04.comsys.rockwell.com
Message-ID: <1995Nov13.180637.9652@nb.rockwell.com>
Source record: 23702
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Anthony John Xenos (ax823092@oak.cats.ohiou.edu) probably wrote:
>
>The idea (detailed below) that we can assume much about whether life exists on
>other planets based on two premises (life exists on earth, so it is possible,
>and the universe is big) is ridiculous. Think about the beach analogy.
>Imagine that it is a pebbly rather than sandy beach you are sitting on. You
>reach down and the first thing you pick up happens to be a dime. Would you
>assume that the beach was made of dimes?

First of all, if you reach down on a _pebbly_ beach and pick out that unique-looking dime, you've already done some discriminating. I'm suggesting that our sun is by no means "unique" in the sense that dime is on the pebbly beach. As we discover more planets around other suns, I'll wager there will be plenty of others that will roughly fit the description of this one, in terms of distance from their sun.

And seconly, if you reach down, on that pebbly beach, with your eyes closed and pick up a dime, are you really going to tell me that you would think that this is the _only_ dime on _all_ beaches of planet earth? I seriously doubt it. I think you'd say "Gee, ain't that great, I picked up a dime."

Bert
manfredi@engr05.comsys.rockwell.com

2391. Re: re: spamming the net - was Re: The idiot ham trade.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-14 00:00:00 UTC
From: Wes Stewart <N7WS@azstarnet.com>
Message-ID: <488pvh$47h@news.azstarnet.com>
Source record: 23703
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

Steve.Breland@rmh.edu (Steve Breland) wrote:
>Burt Fisher <k1oik@ccsnet.com> wrote:
>
>Burt,
>How's about trimming the non-radio groups from your posting
>Newsgroups?
>Thanks,
>
Burt,

How about trimming the radio groups from your postings too?

Spammer, jammer, what's the difference. Same mentality.

2392. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-14 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-1311951740330001@206.12.26.38>
Source record: 23704
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

In article <4867e4$l55@alterdial.UU.NET>, Burt Fisher <k1oik@ccsnet.com> wrote:

-> time@tir.com (Tim English) wrote:
-> >Burt, why dont you just go away someplace else. Your the only one who
-> >enjoys your "so called" wit. We all think your a jerk. You must lead
-> >an awfully sheltered dull life if this is all you can find to do for
->
-> Then why do I get frequent messages that appreciate my comments?
->
->
-> #================#===#
-> | Burt Fisher | Teacher of video, broadcasting and electronics |
-> | Very Amateur | South Dennis, Ma. (Cape Cod) |
-> | K1DORK | The less you say, the more people will remember |
-> #================#===#
-> | k1oik@ccsnet.com The studpidest ham in the USA fisher@meol.mass.edu |
-> #===#

They must be from your poor students sucking up for a better grade!

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"

2393. Re: What some think about sexy hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-14 00:00:00 UTC
From: ki7zd@chinook.halcyon.com
Message-ID: <489chl$ah6@news1.halcyon.com>
Source record: 23705
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.

My wife is 33 years old.
My wife is sexy.
My wife thinks Im sexy (and a few other hams too)
My wife is beautiful.
My wife (and her friends) think I am beautiful.
My wife loves sex, with me, and I love it with her.

My wife is a ham!
My wife thinks I'm one too!

Drop it already. har har!

---------------------------------------\/----------------------------------
OO

>>who does this Burt think he is? A am a ham, have been since I was ten.
>>And thats before I had my first bra! And before I got my first modeling
>>job. Even before I had my first sex (with a ham btw). Grow up you creep!
>>My boyfriend is NOT a ham, and even if he was, I would find him just as
>>attractive! Hey, Idea, how many "hams" have posed for playboy? Hummm,
>>maybe I'll be the first! Anyone know?
>>face it burt fisher, you hate women, you hate men, you hate yourself!

>>Ciar
>>>xxxxxx <-callsign removed because this burt guy might bother me, and his
>>antenna probly isn't big enough for my tower's anyway!

>>~~~~~ The body is a work of art, you get out of it what you put in to it!
>>~~~~~ So If I dont swallow a baby, I wont get pregnant right?

>Burt Fisher wrote:

>What would a female find the least bit exciting about hams?

>

>#===============#===#
>| Burt Fisher | Teacher of abuse, badmouthing and divorce |
>| Amateur call | South Dennis, Ma. (Cape Cod) |
>| K1OInK | The more you say, the less people will forget |
>#===============#===#
>| k1oik@ccsnet.com fisher@hole.ass.bum |
>#===#

--
/-/-/ ~~~~~~

| Amateur Radio Station Inet: ki7zd@halcyon.com
| KI7ZD
| WWA CN87 73's _._ .. __... __.. _.. "If RST > 519, Reduce Power!"

2394. Re: The idiot ham trade.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-14 00:00:00 UTC
From: stevesam@visi.com
Message-ID: <48ajd5$3pc@mixer.visi.com>
Source record: 23706
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

crazyone@city-net.com (CrazyOne - Greg Pacek) wrote:

>In article <488ff6$srk@i-2000.com>, dougrand@i-2000.com (Doug Randall) wrote:

<snip>
<inappropriate groups cut>

PLEASE check your subject lines people!
REC.PYROTECHNICS DOESN'T CARE!
Me

2395. SAREX question

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: BRETSKI <bap@storm.atms.purdue.edu>
Message-ID: <Pine.A32.3.91.951115161002.17872A-100000@storm.atms.purdue.edu>
Source record: 23567

I am monitoring the shuttle 2 meter frequencies with a scanner
and a Jpole and a VOX recorder. Should I expect to hear anything?
Is there a known schedule for the SAREX usage?

BRET A. PENNINGTON / COMPUTER TECHNICIAN /EARTH AND ATMOSPHERIC SCIENCES
CIVL 4252 317-494-0678 / PURDUE UNIVERSITY / WEST LAFAYETTE, INDIANA 47907
bap@storm.atms.purdue.edu/ N9ZFF@W9YB.IN.USA.NA / speaking only for myself.
/\/\/\/\/\/ __... /\/\/\/\/\/\/\/\ N9ZFF /\/\/\/\/\/ ...__ /\/\/\/\/\/\/\/\

2396. Re: OSCAR antenna rotors and coax placement

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: rparsons@bga.com
Message-ID: <rparsons-1511951607260001@jake-4p.ip.realtime.net>
Source record: 23568

In article <DI3AI0.BF2@ceco.ceco.com>, sufana@ceco.ceco.com wrote:

> I am thinking of buying a G5400 rotor for satellite work and was wondering if
> that rotor has the capability to make north think it is south and vice versa
> while under computer control. The reason for the question is that I have been
> involved with 2 schools that had a successful SAREX contact and we made sure
> that the rotors (normal azimuth not computer controlled types) would not run
> into a mechanical stop in the middle of the pass. I didn't want to wait 50
> seconds or so for the rotor to go back around. So in most cases, our rotors
> had north as mechanical stop and for 1 mission (2 days ago) we made north
> into south and south into north. Obviously under hand control there is no
> problem (other than relabeling everything), but what about under computer
> control? I run Quiktrak.

The way we solved this is to set the offset (or whatever your program
calles the "error correction value" for antennas that are off by a few
degrees) to 180 degrees.

This name south into north etc. Install the az rotator with the stop to
the north and all is well.

--
Ron W5RKN

2397. Re: Azimuth Calibrator

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Message-ID: <48d78n$7cd@post.gsfc.nasa.gov>
Source record: 23569

No, it wasn't an article. I posted a piece on the amsat-bb@amsat.org mailing list pointing out that if you put a stick in the ground on a sunny day on flat, horizontal ground, and note the tip of the shadow at two times split around local noon, then the line connecting those two points is (nearly) an east-west line. The (nearly) deviations from "perfect" are zero at the solstice (Jun.21 and Dec.21) and are < 1/2 degree maximum at the equinoxes (Mar.21 and Sep 21).

This trick goes all the way back to the Egyptian pyramid builders who used it to align the bases of the pyramids N/S/E/W.

Tom Clark, W3IWI

2398. Re: Satellite Tracking

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: pss@infocom.net
Message-ID: <48easr$ohv@news.infocom.net>
Source record: 23570

Have you taken a look at Micro Orbiter 3.0?
It is not a Windows program but I think you will be
quite impressed with the level of graphics. It comes very
close to the same level of graphics that you see on NASA
TV with DEMOS.

A sample of the graphics along with a demo version can be found at:
http://www.infocom.net/~pss

Chris...

Kory Hamzeh <kory@avatar.com> wrote:

>On 1 Nov 1995, Roland B. Burgan wrote:

>>
>> Is this a Windows (3.1) based program, or if not, does anyone
>> know of a good satelitte tracking program for Windows. I'm
>> currently using STSPLUS for Dos, which does fine, but would
>> like t run in Windows 3.1 .
>> --
>>

>Try winorb, It's very nice and I beleive it's either public domain or
>shareware, I'm not sure. It's ussually on ftp.amsat.org or oak.oakland.edu.

>Kory

2399. Schematic to VLF/VLF rcvr - McGreevy BBB-4 model

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: spmcgrvy@ix.netcom.com
Message-ID: <48d4e6$jvk@ixnews5.ix.netcom.com>
Source record: 23571
Cross-posted to: rec.radio.shortwave,rec.radio.amateur.space,rec.radio.amateur.homebrew

There is a related 3-part article to this posting, entitled VLF STORY.
originally posted to rec.radio.shortwave 59300-59302.

(Re-post note: By this time, those probably have
been archived and are no longer available on the rec.radio.shortwave
USENET group for reading. If you want the 3-part article reposted,
please e-mail me. I will re-post the article if enough folks request
it!
Also, note the WWW URL toward the end of this posting for WAV file
availibility. I noticed I misspelled the WWW URL, so here it is--
correct at last: http://www-pw.physics.uiowa.edu/mcgreevy/
This URL will be repeated at the end of this posting.

==========

Use a fixed-width font such as courier 10cpi or "line Printer"
if viewing in graphical editor/word-processor,
or use Windows Notepad or a DOS text editor such as edit.com.

Thanks to everyone's nice comments! Due to many requests, here is
the schematic to the McGreevy BBB-4 ELF/VLF "whistler" receiver:

REVISED 20 AUG 1995, WITH LINE-NUMBERS INSERTED IN SCHEMATIC AREA
AND ALSO DUE TO A PART BEING LEFT OUT!
==========
S. P. McGreevy BBB-4 Naturally-Occurring V.L.F. Phenomena E-field
Receiver ("Whistler Receiver") For Broadband 0.2 to 11 kHz Reception
of naturally-occurring radio phenomena.

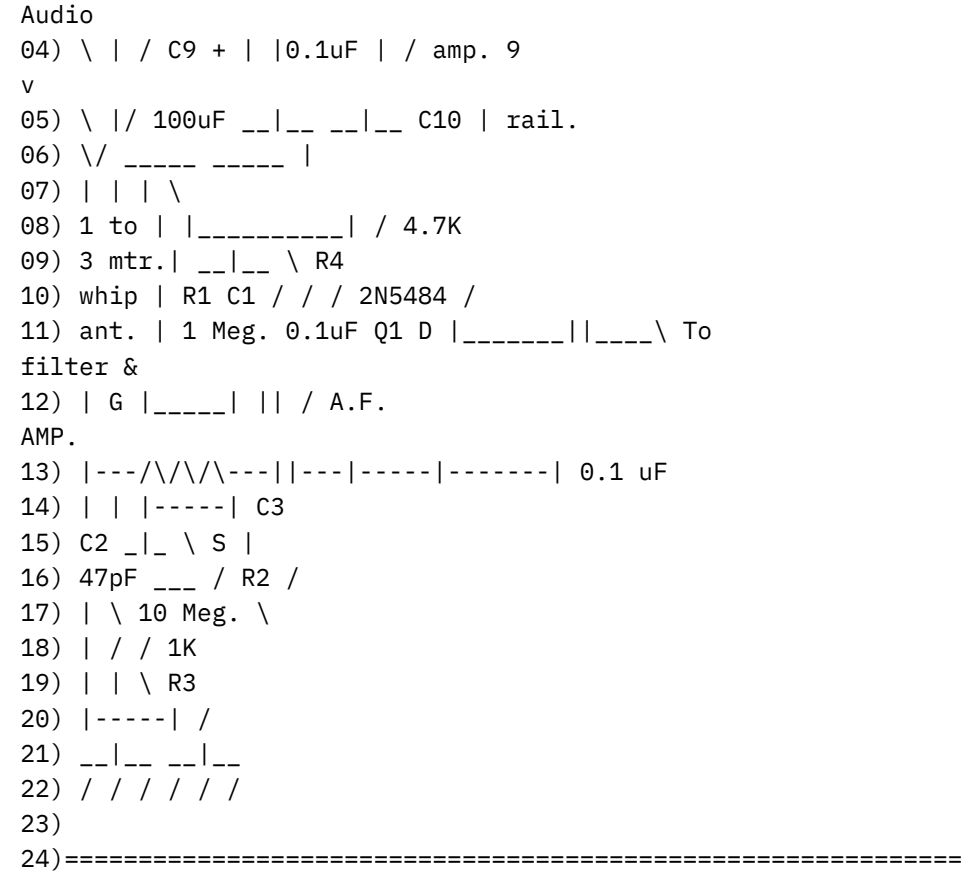
(Originally copyright 1993 S. P. McGreevy). spmcgrvy@ix.netcom.com

Snail: 45 Elda Drive, San Rafael, CA 94903-3723, U.S.A.

REVISED ASCII SCHEMATIC OF McGREEVY BBB-4 ELF/VLF RECEIVER w/LINE #'S:
(Sorry about the yucky ascii text "graphics" -- I'm not too good
at doing schematics using text characters, but I wanted this to
be fully compatible with the text-only nature of USENET, etc.

NOTE: I've added line numbers to aid with "fixing" any scrambled lines:
These numbers are at the BEGINNING of each line in schematic (01 to
72).
==========

```
01) __________ o +9 Volts
02) \ | / |
03) \ | / ____________________|_____________\ To
```


Audio
04) \ | / C9 + | |0.1uF | / amp. 9
v
05) \ |/ 100uF __|__ __|__ C10 | rail.
06) \/ _____ _____ |
07) | | | \
08) 1 to | |__________| / 4.7K
09) 3 mtr.| __|__ \ R4
10) whip | R1 C1 / / / 2N5484 /
11) ant. | 1 Meg. 0.1uF Q1 D |_______||____\ To
filter &
12) | G |_____| || / A.F.
AMP.
13) |---/\/\/\---||---|-----|-------| 0.1 uF
14) | | |-----| C3
15) C2 _|_ \ S |
16) 47pF ___ / R2 /
17) | \ 10 Meg. \
18) | / / 1K
19) | | \ R3
20) |-----| /
21) __|__ __|__
22) / / / / / /
23)
24)==========
25) AUDIO FILTER
26) * (^^^ = coil
windings)
27) From FET drain coupling L1 (xfmr pri.) or 180-200 mH choke
28) cap. ==========
29) _____ _________|^^^^^^|^^^^^^ To input
of
30) / | |_____| |____\ bi-polar
31) | | | | / audio
amp.
32) | .047 uF | 0.1 uF
33) __|__ C4 .047 uF | C6
34) _____ C5 __|__
35) | _____
36) | |
37) | |
38) __|__ __|__
39) / / / / / /
40)
41)
42) * L1 is a 1 KCT pri. to 8 ohm sec. audio xfmr. using one end of
primary
43) winding and the center-tap as a series inductor equalling approx
160 mH.
44)

45)
==========

46) MIC. LEVEL NPN AUDIO AMPLIFIER
47) (+9 volt rail)
48) _____
49) / | |
50) | 10 K /
51) 33 K \ R7 \
52) R5 / / MIC. LEVEL
53) \ C ____|______| |_______\ OUTPUT
54) From audio / / | | / To tape
rec. or
55) filter | B | / 0.1 uF speaker
amp.
56) _____|_____|/ C8
57) / | |__
58) | Q2 | \/ E
59) | 2N3904 ______
60) | NPN | |
61) | Bipolar + | |
62) | Transistor __|__ \
63) \ 1uF _____ / R8
64) 4.7K / C7 | \ 1.5K
65) R6 \ | /
66) / |_____|
67) | |
68) __|__ __|__
69) / / / / / /
70)
71)
72)
==========

The "BBB-4" is a broadband 0.2 to 11 kHz V.L.F. receiver with a
passband peak at approximately 2 kHz, and is designed to receive
naturally-occurring V.L.F. phenomena (such as "whistlers") that occur
as
electromagnetic (radio) waves at audio-frequencies. This receiver was
designed to be hand-held, and its output patched to a microphone-level
input
such as a tape-recorder or speaker-amplifier (such as the one available
at
Radio Shack ("Mini Audio Amplifier/Speaker" cat. # 277-1008).

Dissatisfied with more complicated and cumbersome multi-turn loop
receiver
schemes, I opted to design a whistler receiver which was simple to
build and
use, but was as sensitive and low-noise as possible while being highly-
immune to broadcast station overload.

The BBB-4 V.L.F. receiver circuit ("BBB-4" standing for a fourth version of my "Bare-Bones-Basic" designs) is remarkably sensitive and works very well with short whip antennas between 30-60 inches in length,
since it operates on the same principle as high-impedance "active antennas"
designed for other frequency ranges (such as long, medium or shortwaves).
The BBB-4, due to its F.E.T. "front-end" being a high-performance J-FET,
has an input impedance of about 10 megohms, which is why the short whip

antenna--more correctly called an "electrical-field probe"--works fantastically
for being such a tiny fraction of the received-frequencies' wavelengths in
size (the ultimate isotropic antenna).

R1 and C2 act as a roll-off to frequencies above about 20 kHz, efficiently eliminating potential receiver overload/intermod from Loran-C
(100 kHz), strong AM-BCB signals or SWBC signals, and frequencies up into the VHF ranges. R2 sets the gate impedance for the J-FET. R4 and R3
set the optimum bias on the FET for maximum dynamic range and minimum susceptibility to overload and intermod. C3 and C6 slightly helps roll-off
low-frequencies such as powerline "hum." The "pi-filter" consisting of C4,
L1 and C5 roll-off frequencies beginning at about 7 kHz, so there are not
excessive levels of 10.2 - 13.6 kHz "Omega" signals or higher frequency
signals, which can create problems with the recording system connected to
the output of the receiver. R5 to R8 , Q2 and C7 form a fairly low-noise
Class-A audio amplifier which boosts the output from Q1 to a level plenty for
all microphone-level recorder inputs and even some more "sensitive" line-
level inputs. Bypassing R3 (1K) with a 2.2 uF cap will boost FET gain somewhat, esp. the higher frequencies--depending on your location and listening conditions, this may or may not be desireable.

The circuit can be built on perfboard such as IC-LSI boards or even wired point-to-point, as layout is not very critical. However, the parts'
values ARE critical for optimum passband shape and sensitivity. L1, the
inductor, can either be a 160-200 mH choke or the Radio-Shack 1K to 8 ohm audio

transformer available at Radio-Shack (cat. # 273-1380). Use the black and
green or black and blue wires (the center-tap and one end of the primary
winding). The audio transformer was used since it is easily available at
Radio Shack stores. In fact, ALL the parts with the exception of the 2N5484
FET are available at Radio Shack. Very good performance (but slightly
reduced gain) can also be had if a 2N3819 J-FET, available at Radio Shack,
is used. If so, R3 must be 220 ohm and R4 must be 1K, because the 2N3819
needs different biasing than the 2N5484. Also, if you use the Radio Shack
2N3819 FET, you might wish to reduce C4 and C5 to .033 mF, since there
will be less high audio-frequency output from the 2N3819. Keep C4 and C5
047 mF if you live in Hawaii or within 300 miles of La Moure, ND (south-
eastern North Dakota) due to the Omega-navigation transmitters (frequency
stepping from 10.2 to 13.6 kHz) being located there. Capacitors C4 and C5
work with L1 to reduce Omega to tolerable levels. Solder the J-FET into the
circuit LAST, and take measures to protect the FET from static electricity.

The total cost for parts (not including an enclosure) for the BBB-4 are in the
neighborhood of $15-20 U.S. A rugged telescoping-whip antenna is the GROVE
ENTERPRISES "ANT-8" 7-46-inch telescoping whip with a BNC
connector. This is available for $16.95 from Grove Enterprises, P.O. Box 98,
Brasstown, NC 28902-0098, U.S.A. (Order Line 1 (800) 438-8155. They
send out a free catalog.

Another telescoping whip antenna of like design is
available from C. CRANE RADIO CO. in Fortuna, CA in Fortuna,
California (800) 522-TUNE (522-8863). E-field-probe receivers of this type
need to be operated at locations away from trees, buildings, or other
obstacles by about 100 feet/30 meters. This is because received
signal levels (due to E-field attenuation) will be poor if the receiver is
operated too near (or under) such obstructions.

The greatest nemesis to monitoring and recording naturally occurring
VLF phenomena are electric a.c. powerlines, which emit annoying hum at

50/60 Hertz and also harmonics beyond 3 kHz. The only cure for this "hum"
problem it to locate monitoring sites well away from a.c. powerlines. Locations at least 1/2 mile/1 km or so away from a.c. powerlines will begin
to be acceptable, though the farther you can get from powerlines, the better.

Hilly or mountainous terrain (with open areas free of trees) offer larger areas
away from powerlines, though large fields and meadows where the powerlines are shielded by trees, etc. may be surprisingly hum-free. Remote
locations such as deep into desert and wilderness regions offer the most
rewarding locations, both aesthetically and electrically, to listen, and you may
be able to get over 10 miles from the nearest powerline. If so, you can make
the receiver's antenna several meters in length (keeping it vertical) for
maximum sensitivity. Longer vertical antennas or horizontal wires may either overload the receiver, or in the case of long/low wires, will create a
mismatch which will actually reduce output. Experiment here.

NOTE: A 100 mH choke across C5 (th secone .47 cap in the audio filter will greatly reduce the below 1 kHz frequencies, including pesky power-line hum. This may enable you to listen far closer to AC power-lines including even some backyard locations!

Grounding is non-critical. High-impedance FET receivers of this type need only minimal grounding to work well_even just the body of the listener
holding the metal enclosure of the receiver will be adequate in most cases. If
recording, it is best to stick a 8-10 inch ground rod into the soil to reduce the
possibility of feedback with some tape recorders. Also, a small ground-rod
(8-10 inches long) will cut noise from body or foot movements (due to capacitive interaction with the ground). If you ground the receiver to objects
such as fences, beware that certain grounds may couple a.c. powerline noise
to the receiver, which is why I recommend a simple Earth ground.

Better quality tape recorders, with adjustable input level controls, are
desirable, as "cheapie" portable recorders with auto-level control will often

have annoying variations in record level due to lightning-sferics. And, these
cheap recorders also put noise of their own onto the tape. A shielded 600 ohm
patch-cord will suffice between the output of the BBB-4 and microphone
input of a tape recorder.

The most common naturally occurring V.L.F. emissions to be heard
are the myriad "crackling and popping" sounds of lightning-stroke
electromagnetic impulses from lightning storms within a couple thousand-
mile radius of the listener. Since there are nearly 100 lightning storms in
progress anywhere on the Earth at any given time, and that millions of
lightning strokes happen daily, there is never a moment when these lightning
"sferics" will not be heard. However, the density and strength of lightning
sferics can vary day-to-day and hour-to-hour. Mid-winter offers the lowest
density of sferics, and summer evenings can be full of a dense barrage of
strong sferics.

The other most common (and most awesome) sounds are "whistlers"_eerie
descending tones caused when the lightning electromagnetic energy gets
"ducted" along Earth's magnetic lines-of-force (magnetosphere) to the
opposite polar hemisphere, then gets rebounded back to the vicinity of the
originating lightning stroke impulse. However, there doesn't have to be
lightning within sight or even a few hundred miles of your listening
location_lightning from storms up to thousands of miles away, particularly if
more to the north of your location, can generate large whistlers which are
heard continent-wide. On the other hand, it's quite spectacular to watch
distant lightning storms generate whistlers in the receiver's output_you hear
the huge "crack" of the lightning impulse sferic, then, if the conditions to
support whistlers are occurring, a whistler may follow from 1 to 2 seconds
after the lightning stroke.

Optimum times to listen for natural V.L.F. phenomena, such as
whistlers, are between sunset and sunrise, with the midnight to sunrise period
generally being the best. Statistically, the greatest activity to be heard is

around dawn and sunrise (4-7 a.m. local time)_sferics tend to be fairly low as
compared to the sunset period.

Dawn Chorus can occur during magnetic-
storms, and will peak anywhere from an hour before sunrise to 2 hours past
sunrise. Whistlers can occur at anytime, but the period of minimum
frequency is midday. Sometimes, activity can also occur just after sunset,
but sferics will be fiercer. Lightning sferics will be most fierce during
summer afternoons and minimum (generally) an hour or so after sunrise until
thunderstorm activity picks up later on. Winter can present delightfully low
lightning sferics_other activity will be more "in the clear."

Tweeks, the "ringing/pinging" sounds of sferics caused by the Earth-
surface/ionosphere "waveguide," will be best from an hour after sunset to 2-3
a.m. local time, gradually tapering off toward sunrise. Their number and
intensity of "pinginess" can vary from night to night_some nights they can
sound rather "pale," but other nights they can ring in a variety of beautiful
mixtures and pitches. Whistlers, which may or may not be heard on some

days or even weeks, can range in sound from quite pure notes to very diffuse
"breathy" sounds. They can swoop in frequency from very high to low, or
abruptly cut-off as they descend in pitch.

Don't be discouraged if you listen for several hours, or several sessions on
different days, without hearing whistlers or other natural radio phenomena.
When you DO hear them, it will make up for the "dry" times, as there is

nothing like "live" listening!

Listeners located north between 40-55 degrees north or south latitude
are in the optimum latitudes for monitoring natural V.L.F. phenomena. If
you can see visible Aurora (Northern/Southern Lights) from your location,
you are at a great location for natural V.L.F phenomena monitoring!
Latitudes between 20-30 degrees north and south will hear less, but at times,
still loud phenomena. I've heard whistlers just fine in

Hawaii_presumably
those whistlers were louder farther north, but still, they were heard!

DO NOT operate this receiver (or any other) when nearby lightning
threatens! Take appropriate lightning precautions when lightning is
occurring nearby (within 5-10 miles). Nearby lightning will cause
excessively loud sferics in the receiver's output, and whistlers will
not be
louder just because lightning is close-by. Reserve listening for fair
weather
periods_most often, the best and loudest natural V.L.F. phenomena will
happen during clear weather, since lightning can be quite distant, as
mentioned above, and still spawn loud whistlers.

If you would like to purchase a ready-made receiver which is
fashioned like a "Walkman-style" whistler receiver, e-mail me for
details. I don't want to "advertise" here.

The Longwave Club of America also has other designs of ELF/VLF
"whistler"
receivers, and has a BBS run by member John Davis. The LWCA BBS is at
(706) 672-0360 with speeds up to 9600 (8,N,1). Download the
ALLFILES.TXT or ALLFILES.ZIP for listing of files avail on this BBS.

A WWW URL of natural radio WAV files (most 8 bit/11 kHz sampling
compatible with Windows "speaker.drv" as well as 8-bit sound cards,
plus a
few 16-bit files for 16-bit sound cards are available for downloading
at:

http://www-pw.physics.uiowa.edu/mcgreevy/

Special thanks to Larry Granroth a the U. of Iowa for doing this for
me!

Coordinated monitoring of naturally occurring V.L.F. phenomena
among individuals and groups has a strong potential to uncover new and
previously unknown characteristics of these phenomena, particularly if
those
monitoring simultaneously are located hundreds and thousands of miles
apart. Research and understanding of V.L.F. phenomena has been
hindered
by a lack of listeners, which is something a few research groups, both
amateur and professional, are attempting to alleviate.

I hope you enjoy this rcvr. and are interested in monitoring and
studying naturally occurring VLF radio phenomena for yourself. It is
quite
fascinating, especially when one ponders the fact that Earth's natural
radio
emissions have been "sounding-off" way before we Humans came into
existence and started making radio waves of our own! Happy Listening!

Stephen P. McGreevy
Originally released November 1993, updated November 1995

Additional Tips:

1) A 100-200 mH inductor connected across C5 the will act as a high-pass filter, nicely attenuating 60-360 Hz powerline emissions (hum).

2) If you want less gain from the Q2 stage (and slightly lower noise), reduce R8
to 4.7K.

3) Listen to WWV-shortwave (2.5, 5, 10, 15, 20 MHz) for geo-magnetic indices at 18 min. past each hour (WWVH-Hawaii at :45). A K-index at or above 3 indicates enhanced conditions for natural phenomena,
especially chorus.

73,

Stephen P. McGreevy, N6NKS

2400. Re: What some think about sexy hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <48beel$ek9@alterdial.UU.NET>
Source record: 23707
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.

>>>who does this Burt think he is? A am a ham, have been since I was ten.
>>>And thats before I had my first bra! And before I got my first modeling
>>>job. Even before I had my first sex (with a ham btw). Grow up you creep!

What a doll you must be. Having sex with an old fat white ham.
Is your last name Barker? Certainly not Fox?

>>>My boyfriend is NOT a ham, and even if he was, I would find him just as
>>>attractive! Hey, Idea, how many "hams" have posed for playboy? Hummm,
>>>maybe I'll be the first! Anyone know?
>>>face it burt fisher, you hate women, you hate men, you hate yourself!

I am not into dogs or pigs.

>>>Ciar
>>>>xxxxxx <-callsign removed because this burt guy might bother me, and his
>>>antenna probly isn't big enough for my tower's anyway!

Come look at my erection (tower of course).

>
>>#================#===#
>>| Burt Fisher | Teacher of abuse, badmouthing and divorce |
>>| Amateur call | South Dennis, Ma. (Cape Cod) |
>>| K1OInK | The more you say, the less people will forget |
>>#================#===#
>>| k1oik@ccsnet.com fisher@hole.ass.bum |
>>#===#

2401. Re: What some think about sexy hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: ki7zd@chinook.halcyon.com
Message-ID: <48bvc6$9sd@news1.halcyon.com>
Source record: 23708
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.

PEOPLE!!!

IGNORE THIS CRAP!!!

JUST LIKE ANYONE ELSE IN THE WORLD WITH A POOR ATTITUDE, IF YOU IGNORE THEM
THEY WILL GO AWAY!

(But I have to admit, the new burt signature is a roll!!) ahhaha

I dont many hams over 40 years old, so, I guys Im not a ham then.. Most
hams I know are all under 40, some under 20. And about 30% of them are women.
Its the 90's, and women enjoy hobbies of this sort also. More power to
the lady trying out for playboy, good luck to you. I used to date a model
that worked for "Hef".
You'll have fun im sure..

See ya all later...
ki7zd
Rock Musician, Lawyer, Author, artist, Ham, and above all, a father!

Burt Fisher <k1oik@ccsnet.com> writes:

>>>>who does this Burt think he is? A am a ham, have been since I was ten.
>>>>And thats before I had my first bra! And before I got my first modeling
>>>>job. Even before I had my first sex (with a ham btw). Grow up you creep!

>What a doll you must be. Having sex with an old fat white ham.
>Is your last name Barker? Certainly not Fox?

I dont a 19 year old woman cares too much for fat old men!

>>>>My boyfriend is NOT a ham, and even if he was, I would find him just as
>>>>attractive! Hey, Idea, how many "hams" have posed for playboy? Hummm,
>>>>maybe I'll be the first! Anyone know?
>>>>face it burt fisher, you hate women, you hate men, you hate yourself!

>I am not into dogs or pigs.

Calling yourself a pig now.. Good.....

>>>>Ciar
Love this name!

>>>>>xxxxxx <-callsign removed because this burt guy might bother me, and his
>>>>antenna probly isn't big enough for my tower's anyway!

>Come look at my erection (tower of course).

>>
>>>#================#==#
>>>| Burt Fisher | Teacher of abuse, badmouthing and divorce |
>>>| Amateur call | South Dennis, Ma. (Cape Cod) |
>>>| K1OInK | The more you say, the less people will forget |
>>>#================#==#
>>>| k1oik@ccsnet.com fisher@hole.ass.bum |
>>>#===#

H ahha ha hahahahah WHO DID THIS? this is funny....

Humm dont worry folks, this will soon stop..

--
/-/-/ ~~~~~~
| Amateur Radio Station Inet: ki7zd@halcyon.com
| KI7ZD
| WWA CN87 73's _._ .. __... __.. _.. "If RST > 519, Reduce Power!"

2402. Re: Burt Fisher

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-1411952002120001@206.12.26.40>
Source record: 23709
Cross-posted to: rec.radio.amateur.space,rec.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.equipment

```
-> Xref: lancelot.dowco.com rec.radio.amateur.antenna:6451
rec.radio.amateur.digital.misc:5824 rec.radio.amateur.equipment:8509
rec.radio.amateur.homebrew:4885 rec.radio.amateur.misc:21775
rec.radio.amateur.policy:7097 rec.radio.amateur.space:2724
rec.radio.cb:4072 rec.radio.noncomm:1579
-> Path:
lancelot.dowco.com!news.bc.net!sparky.insinc.net!grumpy.insinc.net!www.bconnex.net!light.l
ightlink.com!news.sprintlink.net!europa.chnt.gtegsc.com!news.kreonet.re.kr!usenet.seri.re.
kr!news.dacom.co.kr!newsfeed.internetmci.com!in2.uu.net!alterdial.uu.net!not-for-mail
-> From: Burt Fisher <k1oik@ccsnet.com>
-> Newsgroups:
rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.r
adio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.sp
ace,rec.radio.cb,rec.radio.noncomm,rec.
-> Subject: Re: What some think about sexy hams
-> Date: 13 Nov 1995 23:16:54 GMT
-> Lines: 40
-> Message-ID: <488jl6$c53@alterdial.UU.NET>
-> References: <309FBFAE.6F6A@hawaii.edu> <47uhb8$dfq@odo.PEAK.ORG>
<481qu5$imv@ixnews5.ix.netcom.com> <4825g6$k1h@alterdial.UU.NET>
<487hjv$19c@mdsroc.com>
-> NNTP-Posting-Host: 199.172.47.193
-> Mime-Version: 1.0
-> Content-Type: multipart/mixed;
-> boundary="------------------------------240052519214135"
-> X-Mailer: Mozilla 1.1N (Windows; I; 16bit)
-> To: jimc@mdsroc.com
->
-> This is a multi-part message in MIME format.
->
-> --------------------------------240052519214135
-> Content-Transfer-Encoding: 7bit
-> Content-Type: text/plain; charset=us-ascii
->
->
-> jimc@mdsroc.com (Jim Clarke) wrote:
->
-> >Don't let the bad apples spoil the excitement that can be found in amateur
-> >radio, there is something there for everyone (wives/girlfriends too).
->
-> What would a female find the least bit exciting about hams?
->
->
```

```
->
-> #================#============================================================#
-> | Burt Fisher | Teacher of video, broadcasting and electronics |
-> | Amateur call | South Dennis, Ma. (Cape Cod) |
-> | K1OIK | The less you say, the more people will remember |
-> #================#============================================================#
-> | k1oik@ccsnet.com fisher@meol.mass.edu |
-> #=========================================================================#
->
->
-> ---------------------------------240052519214135
-> Content-Transfer-Encoding: 7bit
-> Content-Type: text/plain
->
->
-> ///|\\\
-> //(-O-O-)\\
-> ---oooO(_)Oooo-------------------------------------------------------------
-> | You are a Ham Radio Operator if... |
-> | |
-> | your wife, who is still 130lb, tremendously attractive, comes to |
-> | you in a hot pink, topless teddy and starts nibbling on your shoulder|
-> | and you tell her to hang on for a minute because you're just about |
-> | to make the contact with East Molohavnia. |
-> -------------------------------------------------------------------------
```

This is just a sample message, one of hundreds he has sent in a spam fashion. I have no problem with his stupid jokes et al. What annoys me is that every message he sends is crossposted on from 20 to 30 groups that have little or nothing to do with what he is talking about.

Could you please take appropriate steps to educate Burt.

Thanks in advance,

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"

2403. Re: Weather Card for PC?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: jbartlo@ouchem.chem.oakland.edu
Message-ID: <48c4ra$ljm@news2.acs.oakland.edu>
Source record: 23710

billh@gn2.getnet.com wrote:

: In article <rogerh.497.0007A446@cris.com>, <rogerh@cris.com> writes:

: > Just wondering why anyone would use "Multifax" in the advent of the
: incredible
: > weather servers found on the net?

I am not familiar with 'Multifax', but can offer some very good reasons why shortwave satellite imagery receivers provide more reliable images of much better quality than on I-net. I have only used systems of ERIM (Environmental Research Institute in Michigan) and Bob Allen in Adelaide, Australia, but several advantages are:

* Images can be downloaded in real time. Thus, they are available for interpretation and aid to weather prediction *immediately*.

* They are more reliable, although downloading may sometimes be a problem.

* One can use software to more effectively zoom on areas of interest.

* Temperature data is stored in pixels of the satellites scan, so that temperatures of ground and clouds are available. Because of that, a user can enhance images as they choose.

* METEOR and NOAA polar orbiter images are often available.

I am happy to have images available on I-net, but would rather download them to make accurate weather predictions.

Josef Bartlo

2404. Re: Burt Fisher Spamming the Net

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: cnc23a@b4pph13e.bnr.ca
Message-ID: <48cvuv$22f@crchh327.rich.bnr.ca>
Source record: 23711
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,rec.radio.swap

In article <4899ms$l31@crash.microserve.net>, jackl@pinetree.microserve.com (WB3U) writes:
|>
|> rec.puzzles,rec.puzzles.crosswords,rec.pyrotechnics,rec.radio.amateur.
|> antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec
|> radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.polic
|> y,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.sca
|> nner,rec.radio.shortwave,rec.radio.swap,rec.roller-coaster,rec.running
|> ,rec.scouting,rec.scuba,rec.skiing.alpine
|>
|> Burt,
|>
|> Why are you spamming all these groups? Many of them have nothing
|> to do with Amateur Radio.
|>
|> If you must post this antagonistic nonsense, please restrain yourself.
|> There are plenty of people to bother on R.R.A.Policy and R.R.A.Misc.
|>
|> Jack WB3U

All those who are upset with Burt's spamming, please inform the SYSOP of the
system from which he posts.

--
==

Ken M. Edwards, PE Bell Northern Research, Research Triangle Park, NC
(919) 991-4769 email: cnc23a@bnr.ca Ham: N4ZBB Packet: n4zbb@n1gmv.nc
DX PacketCluster (tm) Node : W4DW

All opinions are my own and do not necessarily reflect the views of
my employer or co-workers, family, friends, congress, or president.

2405. Re: Rules of ham DUMB.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: damelio@roush.racing.com
Message-ID: <48drhd$734@progress.progress.com>
Source record: 23712
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Burt Fisher (k1oik@ccsnet.com) wrote:
: Ham operator Jokes:

Hey, I've got one,

where does an idiot cross-post to when discussing ham radio?

(I'll let you figure this one out Burt)

--

2406. Re: Burt Fisher

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: cnc23a@b4pph13e.bnr.ca
Message-ID: <48cvlp$22f@crchh327.rich.bnr.ca>
Source record: 23713
Cross-posted to: rec.radio.amateur.space,rec.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.equipment

In article <ve7zvz-14119520021200001@206.12.26.40>, ve7zvz@dowco.com (Scott Leaf) writes:
|>
|> This is just a sample message, one of hundreds he has sent in a spam
|> fashion. I have no problem with his stupid jokes et al. What annoys me
|> is that every message he sends is crossposted on from 20 to 30 groups that
|> have little or nothing to do with what he is talking about.
|>
|> Could you please take appropriate steps to educate Burt.
|>
|> Thanks in advance,
|>
|> --
|> Scott Leaf VE7ZVZ
|> ve7zvz@dowco.com
|> Port Coquitlam, British Columbia, Canada
|> Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"

Some of us have tried. But as they say, "You can't teach an old dog....".

Seriously, old Burt stepped over the liine apparently in his spamming.
Maybe those upset should inform the SYSOP of Burt's 'board' of his
problems.

--
==========

Ken M. Edwards, PE Bell Northern Research, Research Triangle Park, NC
(919) 991-4769 email: cnc23a@bnr.ca Ham: N4ZBB Packet: n4zbb@n1gmv.nc
DX PacketCluster (tm) Node : W4DW

All opinions are my own and do not necessarily reflect the views of
my employer or co-workers, family, friends, congress, or president.

2407. ARLK062 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk062.1995@ampr.org>
Source record: 23714
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK062
ARLK062 Keplerian data

ZCZC SK87
QST de W1AW
Keplerian Bulletin 62 ARLK062
From ARRL Headquarters
Newington, CT November 14, 1995
To all radio amateurs

SB KEP ARL ARLK062
ARLK062 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 23714U 95061A 95317.25000000 -.00002321 10914-4 47888-5 0 56
2 23714 51.6446 131.2680 0030009 358.8952 220.1795 15.83902278 100
Mir
1 16609U 86017A 95317.13283933 .00000260 00000-0 10000-4 0 03190
2 16609 51.6452 131.6864 0003258 318.1455 41.9288 15.57997099556178
HST
1 20580U 90037B 95317.04053563 .00000575 00000-0 41780-4 0 07589
2 20580 28.4695 174.2781 0006245 59.3667 300.7553 14.90971675106148
AO-10
1 14129U 83058B 95316.85354834 -.00000437 00000-0 10000-3 0 03864
2 14129 26.4596 238.8914 5980347 325.8738 7.2978 2.05881975065399
RS-10/11
1 18129U 87054A 95317.00363646 .00000034 00000-0 20321-4 0 01427
2 18129 82.9236 309.0667 0013107 42.5906 317.6260 13.72358879420387
UO-11
1 14781U 84021B 95316.97865738 .00000173 00000-0 36952-4 0 08486
2 14781 97.7873 312.5802 0013026 66.7600 293.4979 14.69398207625759
RS-12/13
1 21089U 91007A 95317.11690190 .00000056 00000-0 42915-4 0 08646
2 21089 82.9228 350.3299 0030343 115.1267 245.3037 13.74062397239224
AO-13
1 19216U 88051B 95313.92325061 .00000169 00000-0 18600-3 0 01097
2 19216 57.4290 153.8446 7346677 23.3155 357.6829 2.09723983025222
```

```
UO-14
1 20437U 90005B 95317.26958387 .00000032 00000-0 29111-4 0 1392
2 20437 98.5613 39.1918 0011440 115.9257 244.3103 14.29903038303058
RS-15
1 23439U 94085A 95317.06450748 -.00000039 00000-0 10000-3 0 01119
2 23439 64.8167 14.2116 0167019 236.6946 121.7891 11.27524335036304
AO-16
1 20439U 90005D 95317.16571784 .00000018 00000-0 23831-4 0 09536
2 20439 98.5730 40.9647 0011687 117.1069 243.1306 14.29957574303053
DO-17
1 20440U 90005E 95317.13949044 .00000023 00000-0 25557-4 0 09514
2 20440 98.5750 41.4687 0011783 116.3138 243.9256 14.30099200303071
WO-18
1 20441U 90005F 95317.12478166 .00000026 00000-0 26959-4 0 09437
2 20441 98.5747 41.4134 0012240 116.8447 243.3976 14.30069660303072
LO-19
1 20442U 90005G 95317.13682039 .00000027 00000-0 27107-4 0 09555
2 20442 98.5762 41.8366 0012799 116.9503 243.2988 14.30174457303099
FO-20
1 20480U 90013C 95317.16840017 -.00000024 00000-0 26936-4 0 08401
2 20480 99.0632 18.0037 0539854 256.1426 97.9069 12.83231773270055
AO-21
1 21087U 91006A 95316.94536548 .00000094 00000-0 82657-4 0 06534
2 21087 82.9385 122.4973 0036556 90.5479 269.9865 13.74561377240164
UO-22
1 21575U 91050B 95317.08636486 .00000097 00000-0 47200-4 0 06609
2 21575 98.3813 24.6147 0006780 191.6508 168.4534 14.36999827226884
KO-23
1 22077U 92052B 95317.01697194 -.00000037 00000-0 10000-3 0 05416
2 22077 66.0810 284.1575 0002019 3.1050 356.9977 12.86293196152870
KO-25
1 22828U 93061F 95317.07357942 .00000042 00000-0 34429-4 0 04248
2 22828 98.6024 31.4704 0010253 127.1050 233.1108 14.28119111079125
IO-26
1 22826U 93061D 95317.11157497 .00000038 00000-0 32830-4 0 04423
2 22826 98.6067 31.4639 0008981 141.1106 219.0747 14.27786357111029
AO-27
1 22825U 93061C 95317.09883133 -.00000000 00000-0 17559-4 0 04401
2 22825 98.6064 31.3281 0008583 140.4100 219.7691 14.27678097111016
PO-28
1 22829U 93061G 95317.15735651 .00000017 00000-0 24254-4 0 04499
2 22829 98.6016 31.5949 0010162 126.5811 233.6303 14.28099927111059

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 18, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2408. OSCAR antenna rotors and coax placement

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: sufana@ceco.ceco.com
Message-ID: <DI3AI0.BF2@ceco.ceco.com>
Source record: 23715

I am thinking of buying a G5400 rotor for satellite work and was wondering if that rotor has the capability to make north think it is south and vice versa while under computer control. The reason for the question is that I have been involved with 2 schools that had a successful SAREX contact and we made sure that the rotors (normal azimuth not computer controlled types) would not run into a mechanical stop in the middle of the pass. I didn't want to wait 50 seconds or so for the rotor to go back around. So in most cases, our rotors had north as mechanical stop and for 1 mission (2 days ago) we made north into south and south into north. Obviously under hand control there is no problem (other than relabeling everything), but what about under computer control? I run Quiktrak.

A second question involves dressing up the coax cable off of the antenna. Does the pattern get screwed up if the cable is taped to the antenna boom to get back to the cross boom? Or does it really need to be hanging in a big loop?

Thanks in advance.

73s,

Charlie Sufana AJ9N Internet sufana@ceco.ceco.com

ComEd - A Div. of Unicom (formerly Commonwealth Edison Co.)
Work address: ComEd, System Protection Dept. 1039E, 125 S. Clark St.,
P.O. Box 767, Chicago, Il. 60690
Work phone: (312) 394-2815, work fax: (312) 394-4583

Who are you going to call? Fault busters!

Prodigy Internet jtjf69a@prodigy.com

2409. VARIAN MICROWAVE AMPS&RELATED GEARmust sell prices neg.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-15 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <48d9le$csi@ixnews3.ix.netcom.com>
Source record: 23716
Cross-posted to: sci.chem,sci.engr.manufacturing,misc.forsale,sci.med.radiology,rec.radio.amateur.space

FOR SALE- OR TRADE::
Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 404-923-5726

2410. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: dstock@hpqmdla.sqf.hp.com
Message-ID: <DI4zr1.B4w@hpqmoea.sqf.hp.com>
Source record: 23572
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Burt Fisher (k1oik@ccsnet.com) wrote:

: Then why do I get frequent messages that appreciate my comments?

Is this the first contact with non-human sapient entities ?

Or is someone going to suggest that any message that likes Burt's
humour..... No, who would be so cruel ?

Cheers,
David

2411. Tired of Burt Fisher ?? Read This !!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: gnewbe2635@aol.com
Message-ID: <48g8us$jv8@newsbf02.news.aol.com>
Source record: 23573
Cross-posted to: rec.radio.amateur.space,rec.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.equipment

Hello,
if you are tired (like I am) of seeing meaningless, ego driven diatribe
posted and crossposted by Burt Fisher all over the Amateur Radio
Newsgroups,
try sending a E-Mail message to :postmaster@ccsnet.com and
postmaster@meol.mass.edu and tell them that you are tired of Burt Fisher
(k1iok@ccsnet.com and fisher@meol.mass.edu) constantly spamming the
amateur radio newsgroups and God knows how many others.(I've allready sent
my
complaint to them)

With any luck they might give Fisher all the attention he so desperately
seeks
and we can carry on our amateur hobby without his meaningless spams :)

Gary

2412. I have a packet log of MIR available.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: BRETSKI <bap@storm.atms.purdue.edu>
Message-ID: <Pine.A32.3.91.951116101350.32858A-100000@storm.atms.purdue.edu>
Source record: 23574

HELLO FROM MIR-20 CREW: YURIJ & TOMAS & SERGEJ !!!

I have a log from my packet that runs from

[11/12/95 13:24:09] to [11/15/95 07:07:56] EST.

It isn't pretty. It isn't continuous. I have edited lots of it out
like billions of lines of BEACONS. Below are SOME of the calls
I captured during that time.

AA2WQ AA8RV AA9KQ AB6YO AB9V EN60RG G3ZCZ K5JW K6EHA K9DSQ KB5JRA KB5TZF
KB5UMU KB8KBI KB8LLL KB9BWS KB9LTW KC4FSW KC4UG KC5AOY KC5EMH KC5GVS KC5LZB
KC7DBA KC7HSN KD4UPF KE4AEB KE4AR KE4IAM KE4WAW KE4ZRM KG0BK KJ5FG KT4DQ
N0ALJ N0PCD N0PDD N0ULJ N0VJN N0ZHE N1PPP N1UML N2JNT N2RIF N3BHY N3BZW
N3JLQ N3QZC N3SHN N3SQF N4DB N4HUV N5VIN N5YPJ N5ZEV N8AAQ N8DEU N8EYF
N8LRG N8NTS N8QYN N8TDL N9LLO N9MLW N9PIW N9ZZD VA2CND VA3DVC VE1ECN
VE2AKX VE2JOR VE3GUN VE3VRW VE4DE VE4LU VE4MP VE4UB VE5GW VE6DGG VK6YJS
W1QJR W1ZNY W2CJ W3ADO W3ANX W4HBK W6GBF W8KZM W9BNF WA0VQY WA2GSY WA3IMF
WA4VAF WA5QAI WB8PLS WB9JEJ WB9YDL WD9ATU WK3N WW3S WZ0W

To retrieve:

ftp 128.210.14.31
anonymous
whatever_password
cd pub
cd BRET
get MIR145.550
quit

BRET A. PENNINGTON / COMPUTER TECHNICIAN /EARTH AND ATMOSPHERIC SCIENCES
CIVL 4252 317-494-0678 / PURDUE UNIVERSITY / WEST LAFAYETTE, INDIANA 47907
bap@storm.atms.purdue.edu/ N9ZFF@W9YB.IN.USA.NA / speaking only for myself.
/\/\/\/\/\/ __... /\/\/\/\/\/\/\/\ N9ZFF /\/\/\/\/\/ ...__ /\/\/\/\/\/\/\/\

2413. Re: SAREX question

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: Hank@superstore.com
Message-ID: <48epem$761@nikita.intelenet.net>
Source record: 23575

BRETSKI <bap@storm.atms.purdue.edu> wrote:

>I am monitoring the shuttle 2 meter frequencies with a scanner
>and a Jpole and a VOX recorder. Should I expect to hear anything?
>Is there a known schedule for the SAREX usage?

try using almost any search engine on the web for sts74. you'll end up
at nasa's home page. send email to hank@superstore.com and i'll send
all the specifics
>BRET A. PENNINGTON / COMPUTER TECHNICIAN /EARTH AND ATMOSPHERIC SCIENCES
>CIVL 4252 317-494-0678 / PURDUE UNIVERSITY / WEST LAFAYETTE, INDIANA 47907
>bap@storm.atms.purdue.edu/ N9ZFF@W9YB.IN.USA.NA / speaking only for myself.
>/\/\/\/\/\/ __... /\/\/\/\/\/\/\/\ N9ZFF /\/\/\/\/\/ ..__ /\/\/\/\/\/\/\/\

2414. Shuttle Transmissions

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: lvp0412@aol.com
Message-ID: <48gvjl$rb7@newsbf02.news.aol.com>
Source record: 23576

A friend of mine, in New Jersey, monitors the shuttle voice transmissions on his home scanner. Is there any such frequency (or repeater) here in Cincinnati?

LVP...Cincy

2415. ARLS023 AMSAT on TV on Friday

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls023.1995@ampr.org>
Source record: 23577
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS023
ARLS023 AMSAT on TV on Friday

ZCZC AS03
QST de W1AW
Space Bulletin 023 ARLS023
From ARRL Headquarters
Newington, CT November 15, 1995
To all radio amateurs

SB SPACE ARL ARLS023
ARLS023 AMSAT on TV on Friday

Here's an update on Amateur Radio's next scheduled appearance on network television.

The cable television Sci-Fi Channel on Friday evening's (November 17) ''Inside Space'' program will show a broad overview of the activities over the years of the Radio Amateur Satellite Corporation (AMSAT), along with scenes and accompanying discussion of other Amateur Radio activities, according to the latest word from AMSAT Executive Vice President Keith Baker, KB1SF.

Tentative plans are for airings on Friday evening the 17th at 9 PM Eastern Time and later in the weekend.

Footage shot recently by the Sci-Fi Channel of AMSAT Phase 3-D satellite construction and testing at the AMSAT laboratory in Orlando will be held for possible airing on ''Inside Space'' sometime late next year, closer to the projected launch date for the satellite, Baker said.

''Inside Space'' will air Friday, November 17, at 9 PM Eastern Time and again at 1 AM ET on the 18th. An additional airing of the program is set for 11 AM ET on Sunday, November 19.
NNNN
/EX

2416. What is wrong with spacelink?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: BRETSKI <bap@storm.atms.purdue.edu>
Message-ID: <Pine.A32.3.91.951116145726.38759A-100000@storm.atms.purdue.edu>
Source record: 23578

What is wrong with spacelink?
192.149.89.61

BRET A. PENNINGTON / COMPUTER TECHNICIAN /EARTH AND ATMOSPHERIC SCIENCES
CIVL 4252 317-494-0678 / PURDUE UNIVERSITY / WEST LAFAYETTE, INDIANA 47907
bap@storm.atms.purdue.edu/ N9ZFF@W9YB.IN.USA.NA / speaking only for myself.
/\/\/\/\/\/ __... /\/\/\/\/\/\/\/\ N9ZFF /\/\/\/\/\/ ..__ /\/\/\/\/\/\/\/\

2417. Re: What is wrong with spacelink?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: ir004656@interramp.com
Message-ID: <ir004656-1611952310590001@ip129.santa-clara.ca.interramp.com>
Source record: 23579

In article
<Pine.A32.3.91.951116145726.38759A-100000@storm.atms.purdue.edu>, BRETSKI
<bap@storm.atms.purdue.edu> wrote:

> What is wrong with spacelink?
> 192.149.89.61

Probabally the Federal shutdown.

--
Michael South Pasco, WA USA
msouth@oneworld.owt.com

2418. EME / Moonbounce

Newsgroup: rec.radio.amateur.space
Date: 1995-11-16 00:00:00 UTC
From: arthurc@crl.com
Message-ID: <48h519$q7l@crl6.crl.com>
Source record: 23580

Can anyone direct me to individuals or groups and clubs -- preferably
on the West Coast -- that are active in EME?
Thanks!

-- Arthur KO6OA

2419. Even my wife thinks hams are...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-17 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <48j44a$5i6@alterdial.UU.NET>
Source record: 23581
Cross-posted to: radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

I received a call today from a ham who would not identify himself. I repeatedly asked him who he was, even saying to him that if he had an opinion worth anything it is reasonable to expect he state who he was. Still he he refused. I then commented that he was "so typical ham, no guts." My wife then told me to get off the phone and stop wasting time with gutless hams who hide behind their mikes. As I made one more effort to identify the caller, he hung up. He also made a veiled threat that bad things would happen to me, I retorted I might take it more seriously if he were not a gutless ham.

This call is just so typical of hams, brave at a distance.

2420. Re: What is wrong with spacelink?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-17 00:00:00 UTC
From: drted@ix.netcom.com
Message-ID: <48hd7h$j48@ixnews7.ix.netcom.com>
Source record: 23582

Welcome to the Government Shutdown...

In <Pine.A32.3.91.951116145726.38759A-100000@storm.atms.purdue.edu>
BRETSKI <bap@storm.atms.purdue.edu> writes:
>
>
>What is wrong with spacelink?
>192.149.89.61
>
>
>BRET A. PENNINGTON / COMPUTER TECHNICIAN /EARTH AND ATMOSPHERIC
SCIENCES
>CIVL 4252 317-494-0678 / PURDUE UNIVERSITY / WEST LAFAYETTE, INDIANA
47907
>bap@storm.atms.purdue.edu/ N9ZFF@W9YB.IN.USA.NA / speaking only for
myself.
>/\/\/\/\/\/ __... /\/\/\/\/\/\/\/\ N9ZFF /\/\/\/\/\/ ...__
/\/\/\/\/\/\/\
>

--
Bye... Ted..
Deep in the Heart of the Armpits of Houston, Texas...

2421. Mir Space Station QSL cards

Newsgroup: rec.radio.amateur.space
Date: 1995-11-17 00:00:00 UTC
From: randyk@emf.net
Message-ID: <48h1jn$ig@emf.emf.net>
Source record: 23583

From: Dave Larsen N6JLH
Date: Nov. 17th. 1995

I have been granted the privilege from Sergji RV3DR, to become the
Mir QSL manager for the USA area hams. If you have worked Mir and would like
a card I would need your QSL card with date, time, and mode for R0MIR and
R0MIR-1.

Send to:
=======
N6JLH
POB 1501
Pine Grove, California
- 95665 -

=========
Important: Please make sure you include a *_business_* size SASE.
========= ==

For right now I cannot accept SWL's; however, KB to KB contact's with R0MIR
are fine. If you need info or have questions contact me via the following
paths.

N6JLH@N0ARY.#NOCAL.CA.USA.NOAM [SLOW]
docdave@ix.netcom.com {E-M} [FAST]

2422. ARLS024 Hams Contact Atlantis/Mir Astronauts

Newsgroup: rec.radio.amateur.space
Date: 1995-11-17 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls024.1995@ampr.org>
Source record: 23584
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS024
ARLS024 Hams Contact Atlantis/Mir Astronauts

ZCZC AS04
QST de W1AW
Space Bulletin 024 ARLS024
From ARRL Headquarters
Newington, CT November 17, 1995
To all radio amateurs

SB SPACE ARL ARLS024
ARLS024 Hams Contact Atlantis/Mir Astronauts

ARRL has received dozens of reports from amateurs that have made successful voice contacts with the crew aboard the Space Shuttle Atlantis and the Mir Space Station Complex. The two spacecraft have been docked together since Wednesday, and are orbiting 245 miles above the earth at approximately 17,000 mph.

Earlier this week, the Atlantis astronauts completed 5 scheduled ham radio contacts with US students as part of the Shuttle Amateur Radio EXperiment or SAREX. These groups included students from Franklin Junior High School in Pocatello, Idaho, Norwalk County schools in Connecticut, Lake Street Elementary School in Crown Point, Indiana, Round Lake-area schools in Illinois, and Quimby Oak Junior High School in San Jose, California. The students were assisted by their local Amateur Radio clubs and many AMSAT SAREX volunteers.

Amateurs trying to make random contacts with the astronauts should be aware the crew is using separate receive and transmit frequencies. Do not transmit on the shuttle's downlink frequency. The downlink is your receiving frequency. The uplink is your transmitting frequency. The FM voice downlink is 145.84 MHz. The FM voice uplinks are 144.45 and 144.47 MHz. The crew will not favor either uplink frequency, so your ability to communicate with SAREX will be the ''luck of the draw.'' Transmit only when the shuttle is within range of your station, and when the astronauts are on-the-air. The astronaut's call signs are KB5AWP, KC5NRI, N5SCW, KC5ACR, and KC5RNJ. There is no hardware to support packet radio contacts from the shuttle during this flight.

QSL cards and reports may be sent to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a

SASE using a large, business-sized envelope (10) if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

Thanks to SAREX Volunteer Gil Carman, WA5NOM, at NASA Johnson Space Center for generating the following Keplerian element set, JSC-914:

Mir-Atl
1 16609U 86017A 95319.63436307 .00005442 00000-0 65227-4 0 9141
2 16609 51.6445 119.1436 0002776 342.3991 17.7067 15.58119804556564

Satellite: Mir-Atl
Catalog number: 16609
Epoch time: 95319.63436307 = yrday.fracday
Element set: 914
Inclination: 51.6445 deg
RA of node: 119.1436 deg
Eccentricity: .0002776
Arg of perigee: 342.3991 deg
Mean anomaly: 17.7067 deg
Mean motion: 15.58119804 rev/day
Decay rate: 5.44200E-05 rev/day sq
Epoch rev: 55656
Checksum: 319

Note: This element set is valid for the Atlantis/Mir docked configuration until undocking on Nov 18 at 0815 UTC. The shuttle landing is scheduled at the Kennedy Space Center, Florida for November 20, 1995 at 1734 UTC.
NNNN
/EX

2423. Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-18 00:00:00 UTC
From: aa024@detroit.freenet.org
Message-ID: <48lekf$b9k@detroit.freenet.org>
Source record: 23585
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

If you guys want to spam all the rec radio amateur gorups I couldn't care less
but why the H*ll are these stupid ham debate posts spilling into the
shortwave, scanner and puzzles (among others) groups. Watch the
reply lines guys. One spam is bad enough but when you all reply to all
the groups it is just plain RUDE.

Leave the rest of us in peace -- and if your must spam, do it via e-mail
to the original poster and again, leave the rest of us in peace.

Thanks for letting me rant. 73 //kvz

--
kv zichi, aa024@detroit.freenet.org
(PGP Public Key Available on Request)
"Lasciate ogni speranza, voi ch'entrante" --Dante
Kind of appropriate for the Internet, eh?

2424. ARLK063 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-11-18 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk063.1995@ampr.org>
Source record: 23586
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK063
ARLK063 Keplerian data

ZCZC SK88
QST de W1AW
Keplerian Bulletin 63 ARLK063
From ARRL Headquarters
Newington, CT November 18, 1995
To all radio amateurs

SB KEP ARL ARLK063
ARLK063 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

STS-74
1 23714U 95061A 95320.25000000 -.00000505 00000-0 00000+0 0 164
2 23714 51.6464 116.0598 0003276 345.3877 230.1614 15.58070413 584
Mir
1 16609U 86017A 95320.53230843 .00000261 00000-0 10000-4 0 3225
2 16609 51.6408 114.6440 0003556 344.5431 15.5413 15.58069763556703
AO-10
1 14129U 83058B 95317.82490987 -.00000390 00000-0 10000-3 0 3871
2 14129 26.4603 238.7537 5975683 326.1845 7.2342 2.05879708 65417
RS-10/11
1 18129U 87054A 95319.99286949 .00000017 00000-0 15766-5 0 01370
2 18129 82.9234 306.8558 0012971 35.2689 324.9319 13.72358810420790
UO-11
1 14781U 84021B 95319.97489107 .00000124 00000-0 28823-4 0 08700
2 14781 97.7872 315.4368 0012898 58.5632 301.6853 14.69398869626193
RS-12/13
1 21089U 91007A 95320.10243849 .00000057 00000-0 43965-4 0 08584
2 21089 82.9227 348.1158 0030545 107.1084 253.3410 13.74062590239638
AO-13
1 19216U 88051B 95313.92325061 .00000169 00000-0 18600-3 0 01097
2 19216 57.4290 153.8446 7346677 23.3155 357.6829 2.09723983025222
UO-14
1 20437U 90005B 95320.20852602 .00000017 00000-0 23408-4 0 01580
2 20437 98.5609 42.0800 0011590 107.4918 252.7530 14.29903345303476
```

```
RS-15
1 23439U 94085A 95320.16879719 -.00000039 00000-0 10000-3 0 01061
2 23439 64.8159 9.1914 0166952 236.1192 122.3742 11.27524151036653
AO-16
1 20439U 90005D 95320.17451933 .00000020 00000-0 24649-4 0 09489
2 20439 98.5729 43.9272 0012018 109.5834 250.6647 14.29957907303480
DO-17
1 20440U 90005E 95320.21795804 .00000057 00000-0 38669-4 0 09469
2 20440 98.5747 44.5008 0011822 106.8903 253.3566 14.30100059303519
WO-18
1 20441U 90005F 95320.20331412 .00000047 00000-0 35055-4 0 09599
2 20441 98.5744 44.4456 0012491 108.4974 251.7570 14.30070221303516
LO-19
1 20442U 90005G 95320.21512675 .00000053 00000-0 37298-4 0 09502
2 20442 98.5759 44.8695 0013062 108.8759 251.3845 14.30175154303536
FO-20
1 20480U 90013C 95320.20913285 .00000016 00000-0 11553-3 0 08608
2 20480 99.0629 20.4758 0539870 249.2414 105.0049 12.83232253270442
AO-21
1 21087U 91006A 95319.92981751 .00000094 00000-0 82657-4 0 06524
2 21087 82.9382 120.2876 0036820 83.0267 277.5074 13.74561465240575
UO-22
1 21575U 91050B 95320.21970276 .00000059 00000-0 34219-4 0 06576
2 21575 98.3808 27.6642 0006817 180.7248 179.3923 14.37000223227330
KO-23
1 22077U 92052B 95320.04924549 -.00000037 00000-0 10000-3 0 5353
2 22077 66.0799 277.8073 0002252 1.1285 358.9732 12.86293120153267
KO-25
1 22828U 93061F 95320.15631150 .00000043 00000-0 34618-4 0 04192
2 22828 98.6022 34.5064 0010434 118.3526 241.8707 14.28119601079560
IO-26
1 22826U 93061D 95320.19502554 .00000030 00000-0 29576-4 0 04372
2 22826 98.6063 34.4997 0009166 132.1739 228.0222 14.27786775111463
AO-27
1 22825U 93061C 95320.18251527 .00000033 00000-0 31036-4 0 04367
2 22825 98.6061 34.3639 0008687 131.1589 229.0345 14.27678800111456
PO-28
1 22829U 93061G 95320.17006696 .00000051 00000-0 37817-4 0 04403
2 22829 98.6013 34.5617 0010250 117.7728 242.4491 14.28100664111482

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
November 21, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2425. I Just Worked Atlantis!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-18 00:00:00 UTC
From: btaylor@mailserv.nbnet.nb.ca
Message-ID: <48knf7$1afk@darwin.nbnet.nb.ca>
Source record: 23587
Cross-posted to: rec.radio.amateur.space,sci.space.shuttle

I just spoke with Mission Specialist MacArthur, KC5ACR, at 1253 hrs
UTC on Saturday, November 18th, 1995.

I was on the standard 2-meter 145.84/144.45 split.

Atlantis was to my Northeast, near the end of its pass over my area.

Brent S.D. Taylor - VE1JH | Central Park 1965-1971
Doaktown on the Miramichi | Meadowbrook 1971-1973
New Brunswick, Canada | Lachine High 1973-1975
Grid Square FN66WN | Looking for exiles...
r.a.s.n./ NASCAR / MWDX / 6M VUCC #5481

2426. Re: What some think about sexy hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-18 00:00:00 UTC
From: tip@mercury.aichem.arizona.edu
Message-ID: <tip-181195171009@pc176x1.phy.ohiou.edu>
Source record: 23588
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,re

In article <48l7ic$bqa@pegasus.starlink.com>, Bill Funk
<skypilot@starlink.com> wrote:
>
>
> >Speaking of HAM radios, could this group help me out? Every time I go and
> >dive with my radio set, the fuse blows. What's the trick here?
> >
>
> Ah, yes...
> There was a time when having a HAM ticket *meant* something...
> When a fuse blows consistantly, it's because there's more current going
> thru the fuse than the fuse is rated to carry. The fuse, being a safety
> device, blows to prevent this excess current from flowing, possibly
> damaging something.
> Check to make sure the fuse is the proper rating for the gear. Do *not*
> replace it with a higher-rated fuse! If it is the correct fuse, then the
> gear is drawing too much current. This needs to be corrected. Maybe it's a
> short in the power line, maybe the gear is not a boat anchor. Either
> extreme, and all points in between should be checked, and corrected.
> Good luck.
> Bill

What does this have to do with rec.pyrotechnics

If I was smart, I'd have a clever .sig

2427. Re: Even my wife thinks hams are...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-19 00:00:00 UTC
From: "Dennis A. Mason" <damason>
Message-ID: <48mc8e$lli@sanews.uswc.uswest.com>
Source record: 23589
Cross-posted to: radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

Burt must be a Chicken Bander.

2428. Re: Even my wife thinks hams are...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-19 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <48nfna$781@alterdial.UU.NET>
Source record: 23590
Cross-posted to: adio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

"Dennis A. Mason" <damason> wrote:
>Burt must be a Chicken Bander.

Why?

#================#===#
Burt Fisher	Teacher of video, broadcasting and electronics
Amateur call	South Dennis, Ma. (Cape Cod)
K1OIK	The less you say, the more people will remember
#================#===#
| k1oik@ccsnet.com fisher@meol.mass.edu |
#===#

2429. Re: Even my wife thinks hams are...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-19 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <48nfnt$781@alterdial.UU.NET>
Source record: 23591
Cross-posted to: radio.amateur.policy,rec.radio.amateur.space

"Dennis A. Mason" <damason> wrote:
>Burt must be a Chicken Bander.

Why?

#================#===#
Burt Fisher	Teacher of video, broadcasting and electronics
Amateur call	South Dennis, Ma. (Cape Cod)
K1OIK	The less you say, the more people will remember
#================#===#
| k1oik@ccsnet.com fisher@meol.mass.edu |
#===#

2430. Re: Even my wife thinks hams are...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-19 00:00:00 UTC
From: Burt Fisher <k1oik@ccsnet.com>
Message-ID: <48nfoa$781@alterdial.UU.NET>
Source record: 23592
Cross-posted to: radio.amateur.policy,rec.radio.amateur.space

"Dennis A. Mason" <damason> wrote:
>Burt must be a Chicken Bander.

Why?

#===============#===#
Burt Fisher	Teacher of video, broadcasting and electronics
Amateur call	South Dennis, Ma. (Cape Cod)
K1OIK	The less you say, the more people will remember
#===============#===#
| k1oik@ccsnet.com fisher@meol.mass.edu |
#===#

2431. Re: EME / Moonbounce

Newsgroup: rec.radio.amateur.space
Date: 1995-11-19 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-19119512444000001@206.12.26.38>
Source record: 23593

In article <48h519$q7l@crl6.crl.com>, arthurc@crl.com (Arthur Chandler) wrote:

-> Can anyone direct me to individuals or groups and clubs -- preferably
-> on the West Coast -- that are active in EME?
-> Thanks!
->
-> -- Arthur KO6OA

VE7SCC, Coquitlam, British Columbia will be operating an EME site with evening scheds in the near future. The station is currently all apart during a renovation and revamp of some equipment. If you are interested in EME I can keep your email address for future scheds.

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"

2432. New version of MacGPS available

Newsgroup: rec.radio.amateur.space
Date: 1995-11-19 00:00:00 UTC
From: lwjames@ix.netcom.com
Message-ID: <48m1rf$qkq@ixnews2.ix.netcom.com>
Source record: 23594

A new version of MacGPS, free software for uploading/downloading waypoints, tracks, etc., from Garmin GPS receivers, is available from the info-mac mirror sites such as

ftp://mirrors.aol.com/pub/info-mac/sci/larrys-mac-gps

Larry James, KG0GB

2433. STS-74 Contact Without Good KEPS

Newsgroup: rec.radio.amateur.space
Date: 1995-11-19 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <48nsp4$7vv@superb.csc.ti.com>
Source record: 23595

Finally made contact with Atlantis. Just luck, since all the KEPS
I have found don't agree with NASA Select reportings of position. The
AF NORAD KEPS update clerk must be one of the "nonessential" government
employees since there are no new KEPS from that site. The ARRL KEPS
posted here are from yesterday and result in about 30 minutes error
in AOS. The pile up must have been tremendous cause KC5ACR was
acknowledging calls as fast as he could get on and off of the mike button.

If anyone knows of a good source of *fresh* KEPS, let me know so I
can use them for the next shuttle in case the political blackmail is
holding new KEPS hostage :)

HOORAY! K5MBV

2434. Re: Life elsewere ?? Was: UFO ...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-20 00:00:00 UTC
From: billp@io.com
Message-ID: <48p8kl$5pe@xanadu.io.com>
Source record: 23596
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <486lov$jda@mirv.unsw.edu.au>,
> We only assume that the reason life exists are those chemical
>reactions that occured on earth. What if we assume that the only reason life
>exists are the exact conditions as well as the order of events. When the earth
>cooled, what the temperature of the sun was and when. The creation
>of the layers of atmosphere since the earth began (no ozone layer now no life,
>if there was an ozone layer then no life). You cannot doubt the fact that

The argument against that, at least in my mind, is that life is very tenacious
and adaptable. Life at the bottom of the ocean lives off of volcanic vents
and uses a completely different metabolism than ours. Oxygen would kill it.
Life in Yellowstone lives in hot springs above the boiling point. I think
the constant rain of organic molecules (spread out in space) and the existance
of water-based terrestrial planets (predicted by comfortable planetary theories
of formulation) will create conditions close enough to allow life.
The real question is, WHEN and WHERE? Are they close enough, and current
enough?
BP
--

Disclaimer: my thoughts are not my own.

2435. Best WEFAX card?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-20 00:00:00 UTC
From: "John W. Edwards" <jedwards@accurate-automation.com>
Message-ID: <30B08899.125D2E8F@accurate-automation.com>
Source record: 23597

Could anyone suggest a good WEFAX card to me for the
GEOS sats which includes decent user interface software?

Any pointer would be appreciated...

--

John W. Edwards
Accurate Automation Corporation
jedwards@accurate-automation.com
Office - (615) 894 - 4646

2436. Re: I Just Worked Atlantis!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-20 00:00:00 UTC
From: xphile@ripco.com
Message-ID: <DICK84.H35@rci.ripco.com>
Source record: 23598
Cross-posted to: rec.radio.amateur.space,sci.space.shuttle

Brent Taylor (btaylor@mailserv.nbnet.nb.ca) wrote:
: I just spoke with Mission Specialist MacArthur, KC5ACR, at 1253 hrs
: UTC on Saturday, November 18th, 1995.

YOU LUCKY DUCK!!!!!!!!

--
+Ryan Szekeres Support NASA+
+gjgrgohg9yt2tbuty498goihihy9yuY'%(&'R$kfu7486chFY+
+Not PGP. Just fell asleep on the keyboard!!!!!!!!+

2437. ARLS025 Shuttle returns hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-20 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls025.1995@ampr.org>
Source record: 23599
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS025
ARLS025 Shuttle returns hams

ZCZC AS05
QST de W1AW
Space Bulletin 025 ARLS025
From ARRL Headquarters
Newington, CT November 20, 1995
To all radio amateurs

SB SPACE ARL ARLS025
ARLS025 Shuttle returns hams

The Space Shuttle Atlantis touched down at the Kennedy Space Center in Florida on November 20, 1995 at 1701 UTC. Its return to Earth concludes Amateur Radio activities for this shuttle mission, and follows a successful docking with the Russian Mir Space Station. Throughout the mission, the entire Amateur Radio-licensed crew delighted hams around the world with 2-meter FM voice contacts from Earth orbit.

Amateur Radio activities will again be conducted from Atlantis during mission STS-76, scheduled for launch in March 1996.

For more information about the Shuttle Amateur Radio EXperiment, or SAREX, telephone the ARRL Educational Activities Department at (860) 594-0301 or email sarex@arrl.org. SAREX is sponsored by ARRL, the Radio Amateur Satellite Corporation (AMSAT), and NASA.
NNNN
/EX

2438. JVFAX71 Problem

Newsgroup: rec.radio.amateur.space
Date: 1995-11-20 00:00:00 UTC
From: crscasio@pixi.com
Message-ID: <48r2mg$684@rigel.pixi.com>
Source record: 23600

Hi All, I have the shareware program JVFAX71. I am using the KPC-3 as the demodulator.

When I connect my computer, the S/W receiver has a hum on the speaker, as I connect the earphone wire. I know the hum is coming from the computer. Does anyone know how to kill this hum. I tried ferrite beads, and capacitors but no luck. Do I need a RS-232 isolation of some sort like optical isolation?

Thanks, Lawrence

2439. INSTANT TRACK V1.00..Win95 HELP

Newsgroup: rec.radio.amateur.space
Date: 1995-11-20 00:00:00 UTC
From: shale@north.nsis.com
Message-ID: <951120.092056.11854@banshee.uunet.ca>
Source record: 23601

I have a problem on my P75 with Win95...the map screen displays ok but all the numbers at bottom of screen are garbled...all other screens and numbers are ok...I've tried all usual stuff but no luck! Anyone know what to do. tnx Scott......shale@north.nsis.com

2440. Re: What some think about sexy hams

Newsgroup: rec.radio.amateur.space
Date: 1995-11-20 00:00:00 UTC
From: tip@mercury.aichem.arizona.edu
Message-ID: <tip-201195154709@pc176x1.phy.ohiou.edu>
Source record: 23602
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.shortwave,re

In article <48q0d2$nm8@news.cuny.edu>, Bob Crownfield
<Bob_Crownfield@QC.edu> wrote:
>
> Bill Funk <skypilot@starlink.com> wrote:
> >
> >>Speaking of HAM radios, could this group help me out? Every time I go and
> >>dive with my radio set, the fuse blows. What's the trick here?
> >>
> >
> >Ah, yes...
> >There was a time when having a HAM ticket *meant* something...
> >When a fuse blows consistantly, it's because there's more current going
> >thru the fuse than the fuse is rated to carry. The fuse, being a safety
> >device, blows to prevent this excess current from flowing, possibly
> >damaging something.
> >Check to make sure the fuse is the proper rating for the gear. Do *not*
> >replace it with a higher-rated fuse! If it is the correct fuse, then the
> >gear is drawing too much current. This needs to be corrected. Maybe it's a
> >short in the power line, maybe the gear is not a boat anchor. Either
> >extreme, and all points in between should be checked, and corrected.
> >Good luck.
> >Bill
> >
>
> Bill:
> Why are you talking about radios in rec.scuba? How did this ham
> chat get lost in rec.scuba in the first place?

Personally, I think a group of less than laudable people got together and
decided to have fun by posting a series of totally meaningless messages in
a set of totally inappropriate places. Theater of the absurd. Okay guys,
we've seen it; I give it a 3 on difficulty and a 4 on creativity. No
medal, not even honorable mention. So, wrap up the production, go away...
don't call us, we'll call you.

If I was smart, I'd have a clever .sig

2441. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: Daniel Calzaretta <pcrest@teleport.com>
Message-ID: <48rbap$2um@maureen.teleport.com>
Source record: 23603
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

I'm new to this. What does "spam" mean? Is it Italian or Latin for
something?

2442. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: Daniel Calzaretta <pcrest@teleport.com>
Message-ID: <48rbd7$34d@maureen.teleport.com>
Source record: 23604
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

I'm new to this. What does "spam" mean? Is it Latin or Italian for
something?

2443. Re: Life elsewere ?? Was: UFO ...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: Georgios Tsoukalas <s8989370>
Message-ID: <48r8ng$7jn@mirv.unsw.edu.au>
Source record: 23605
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <1995Nov13.173235.9022@nb.rockwell.com> manfredi@engr04.comsys.rockwell.com writes:
>In article <486lov$jda@mirv.unsw.edu.au>, Georgios Tsoukalas <s8989370> writes:

>>>4. And finally, to me this is a little bit like picking up a grain of
>>>sand on one beach, just one grain, and swearing that _this_ grain is
>>>fundamentally different from all other grains of sand in every beach
>>>on earth. Failing chemical analysis of even a single other grain, I
>>>suppose one might wonder if it were true. But most reasonable people
>>>would _speculate_ that bullshit, this grain is probably very similar to
>>>zillions of others.
>>
>> If the exact molecule count as well as the order those molecules
>>are aranged is what matters ... good luck finding a second.
>
>I'm not looking for a twin of earth. Just life elsewhere. There are plenty
>of suns out there, although I would challenge anyone to come up with
>one that is _identical_ to ours.

What I am trying to say is that if it's a particular characteristic
of the grain that we are looking into, then we will not find another match.
To add to that, if we take it to extreems ... due to the unsertainty principal
we will never be able to know if there are two grains alike ! A concept that
makes us feel even more lonely. If physics is such that it's not possible
to travel between any two star systems were life does exist. Say life exists
one thousand light years away. Imagine if there is a party of lucky stars sys
were they are teaming of life, and they have known of each other's existance
but earth is "blessed" to be forever alone. If were lucky, only to be able
to listen in. Now that would be a downer :-(

>
>Bert
>manfredi@engr05.comsys.rockwell.com
>

It is my opinion that we do not know yet what it takes to make life.
Any form of life, or anything as dynamic as life even if it's not life
as we know it. (Damn it I am trying to avoid sounding like a ST character :-)

So in the end you are concluding that life is possible out there.
I can only say that it spans from 100% that life is out there to 0%. In
essence I am saying nothing. And the unsertainty of the above range is
because we "know nothing" (Sargent Sultch: Hogans heroes :-) of what it
realy takes. Another note, don't let the 0..100% fool you because the
number "0" is a small component of the rest of the range. It's just

pshycological. The fact is that there are either none or any number of life forms other than on earth.

George

2444. Re: Life elsewere ?? Was: UFO ...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: Georgios Tsoukalas <s8989370>
Message-ID: <48r95j$7qi@mirv.unsw.edu.au>
Source record: 23606
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

>
>First of all, what's this stuff doing in a sci.space.* group?
>As for creationists, they're theory directly acknowledges their
>self-centeredness: our planet and the universe was created just for us.
>They've got it the other way around: we and everything else were created
>for this planet.
>
> Algis

Is that an argument against it ?! To be self centered is against
physical law so it's not possible ? When you dream in your sleep,
you may see a large environment teaming of people. You may play a small role
in it. Are you self centered that you make all this just for your self ?
In essence all this was created for your own benefit, none of the "beings"
in your dream have any other relevence.

The fact is that it is quite possible that everything was created
as a joke of one ... say person. Who will stop him ? It's just that the
current moral values of our society that make you argue in that way.

George

2445. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: Cal Eustaquio <ceustaqu@hertz.elee.calpoly.edu>
Message-ID: <Pine.ULT.3.91.951121074747.12984D-100000@hertz.elee.calpoly.edu>
Source record: 23607
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

Dan:
One meaning may be for "Society for the Presevation of Amplitude
Modulation." Otherwise, its a generic term for a meat product that was
invented during WW2 that is still put out in the market by Hormel (I think).

On 21 Nov 1995, Daniel Calzaretta wrote:

> I'm new to this. What does "spam" mean? Is it Italian or Latin for
> something?
>
>
>

2446. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: Jim Potter <jpotter@jpaw.com>
Message-ID: <30B26526.B2C@jpaw.com>
Source record: 23608
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

There's now "low fat" Spam. I think I'd expect the can to be empty.

--
James M. Potter, President E-mail: jpotter@jpaw.com
JP Accelerator Works, Inc. URL: www.jpaw.com/jpaw/
2245 47th Street Voice: 505-662-5804
Los Alamos, NM 87544-1604 FAX: 505-662-5210

2447. Re: I Just Worked Atlantis!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: gsnow@pacifier.com
Message-ID: <gsnow-2111951043550001@mac1.pacifier.com>
Source record: 23609
Cross-posted to: rec.radio.amateur.space,sci.space.shuttle

In article <48knf7$1afk@darwin.nbnet.nb.ca>, btaylor@mailserv.nbnet.nb.ca
(Brent Taylor) wrote:

> I just spoke with Mission Specialist MacArthur, KC5ACR, at 1253 hrs
> UTC on Saturday, November 18th, 1995.
>
> I was on the standard 2-meter 145.84/144.45 split.
>
> Atlantis was to my Northeast, near the end of its pass over my area.

Ok, you were on 2-meters, what was that exact equipment you were using,
antenna and all!

Great job!

Gary
---
gsnow@pacifier.com <----====()====-----> http://www.pacifier.com/~gsnow/
Vancouver, WA's On-Ramp to the Information SuperHighway (360) 693-0325
telnet to "pods.pacifier.com" (press return 2x) or dial the above to register

2448. Re: MIR/STS-74

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: gsnow@pacifier.com
Message-ID: <gsnow-2111951047110001@mac1.pacifier.com>
Source record: 23610

In article <ve7zvz-2111950126550001@206.12.26.26>, ve7zvz@dowco.com (Scott Leaf) wrote:

> We are envious hear in Vancouver, British Columbia area. Several
> excellent passes, heard many pileups being worked from Shuttle crew, but
> unable to get through with limited 10 minute window.
>
> I would rather have had a visual anyway, both times they have linked up
> now we have had cloudy skies.

Same for us down her in Vancouver, WA. Lots of great passes over us, but too cloudy this time of year to see anything.

Gary
---
gsnow@pacifier.com <----====()====-----> http://www.pacifier.com/~gsnow/
Vancouver, WA's On-Ramp to the Information SuperHighway (360) 693-0325
telnet to "pods.pacifier.com" (press return 2x) or dial the above to register

2449. Radiotelescopes

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: rferraro@ax.apc.org
Message-ID: <48r6d4$4ht@ax.apc.org>
Source record: 23611

Dear sirs,

I'd like to know if someone here had the experience of build na radiotelescope at home,

Which kind of resources should be needed for that ?

Thanks for some tips, Ricardo Ferraro.

PS: Please answer to my e-mail because I don't read this group often.

2450. Re: PLEASE IGNORE REQUEST TO REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: andeagle@execpc.com
Message-ID: <48rnpp$dcq@homer.alpha.net>
Source record: 23612
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

>In article <ghansen.322.30A312C4@accessone.com>, ghansen@accessone.com
>(Glenn Hansen) wrote:
>
>-> PLEASE REMOVE REC.RADIO.AMATEUR.SPACE OUT OF THE UFO LOOP.

>Take a pill Glen, if you dont like it learn how to use a 'KILL' file to
>stop the thread from showing up on YOUR screen.
>Scott Leaf VE7ZVZ
>ve7zvz@dowco.com
Gosh, Scott. I've been on INET for six or eight months and I don't know
anything about how to use a "KILL" file to stop the thread from showing
up on MY screen. If there is one thing I don't like about the 'net' it
is the tendency of experienced people flaming rather than aiding "newbies"!

Enlighten us. Tell us HOW, don't just tell us we should know how.

=== jim eagleson WB6JNN/9 the fresh faced kid lost in Wisconsin

2451. Re: MIR/STS-74

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-2111950126550001@206.12.26.26>
Source record: 23613

In article <48febi$mdc@ixnews5.ix.netcom.com>, wa5whn@ix.netcom.com (Jay Miller) wrote:

-> On the 5:56 AM MST pass over Albuquerque, New Mexico (Nov. 16, 1995),
-> there were no signals from either craft, on the frequencies specified
-> in previous bulletins (145.55 MHz, 145.84), however, a great visual of
-> a fast moving bright object (estimated magnitude of -1) (MIR/STS-74)
-> had made up for no VHF Amateur Radio activity from STS-74/MIR.
->
-> 73...Jay, WA5WHN

We are envious hear in Vancouver, British Columbia area. Several excellent passes, heard many pileups being worked from Shuttle crew, but unable to get through with limited 10 minute window.

I would rather have had a visual anyway, both times they have linked up now we have had cloudy skies.

73

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"

2452. Re: WHAT CAN BE DONE ABOUT ALL THE UFO POSTING ON THIS NEWSGROUP?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: gsteve490@aol.com
Message-ID: <48tor0$i9v@newsbf02.news.aol.com>
Source record: 23614

Take a Pill.

a reported "sighting" on a SAREX platform deserves room in the RRAS group
live with it, 'cause they're watching you..

2453. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: muehlber@plains.nodak.edu
Message-ID: <48t3tr$1mk@daily-planet.nodak.edu>
Source record: 23615
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

David Stockton (dstock@hpqmdla.sqf.hp.com) wrote:
: Burt Fisher (k1oik@ccsnet.com) wrote:

: : Then why do I get frequent messages that appreciate my comments?

: Is this the first contact with non-human sapient entities ?

: Or is someone going to suggest that any message that likes Burt's
: humour..... No, who would be so cruel ?

: Cheers,
: David

It's unfortunate that this tirade must continue. Even more unfortunate
that our younger readers must be exposed to this behavior by, I assume,
adults. I do not know Mr. Fisher, and even if I did, I would not comment
about him on the net. Making personal attacks on people in public is
just plain tacky. Do I sound like your mother? Well, yes. There is an
absolute right and wrong. You are wrong. God gave us free will, though,
but some still dont know what to do with it. I'll pray for you.--
****
_/_/_/_/ _/_/_/_/ _/_/ _/ _/_/ _/ _/ _/ _/
_/ _/ _/ _/ _/ _/ _/ _/ _/ _/ _/ _/
_/ _/_/ _/ _/ _/ _/ _/ _/_/_/_/ _/ _/ _/_/
_/ _/ _/ _/ _/ _/_/ _/ _/ _/_/ _/
_/_/_/_/ _/_/_/_/ _/ _/ _/ _/ _/ _/

SUPPORT YOUR MILITARY PERSONNEL +++ Jim Muehlberg MUEHLBER@PLAINS.NODAK.EDU
****

2454. ARLK064 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk064.1995@ampr.org>
Source record: 23616
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK064
ARLK064 Keplerian data

ZCZC SK89
QST de W1AW
Keplerian Bulletin 64 ARLK064
From ARRL Headquarters
Newington, CT November 21, 1995
To all radio amateurs

SB KEP ARL ARLK064
ARLK064 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95324.25232200 .00015361 00000-0 20642-3 0 3327
2 16609 51.6426 95.9868 0002384 344.1334 15.9583 15.58104037557284
HST
1 20580U 90037B 95323.86839644 +.00000362 +00000-0 +20655-4 0 07445
2 20580 028.4694 130.3957 0005751 125.9909 234.1217 14.90973913107162
AO-10
1 14129U 83058B 95317.82490987 -.00000390 00000-0 10000-3 0 3871
2 14129 26.4603 238.7537 5975683 326.1845 7.2342 2.05879708 65417
RS-10/11
1 18129U 87054A 95324.00281441 +.00000049 +00000-0 +37474-4 0 01363
2 18129 082.9228 303.8897 0012819 025.4306 334.7473 13.72359289421347
UO-11
1 14781U 84021B 95323.99256256 +.00000129 +00000-0 +29613-4 0 08651
2 14781 097.7873 319.2686 0012818 046.4545 313.7719 14.69400236626782
RS-12/13
1 21089U 91007A 95324.10742466 +.00000025 +00000-0 +96402-5 0 08598
2 21089 082.9228 345.1459 0030692 096.1338 264.3307 13.74062558240185
AO-13
1 19216U 88051B 95322.98259193 -.00000006 +00000-0 +22837-3 0 01116
2 19216 057.4311 152.1131 7349064 024.1047 357.5809 02.09728647025411
UO-14
1 20437U 90005B 95324.12711371 +.00000012 +00000-0 +21464-4 0 01565
2 20437 098.5605 045.9318 0011747 096.7539 263.4983 14.29903723304035
```

```
RS-15
1 23439U 94085A 95324.07133405 -.00000039 +00000-0 +10000-3 0 01059
2 23439 064.8149 002.8802 0166646 235.5931 122.9137 11.27524016037095
AO-16
1 20439U 90005D 95324.09295590 +.00000042 +00000-0 +33318-4 0 09442
2 20439 098.5727 047.7851 0012097 098.1896 262.0663 14.29958721304044
DO-17
1 20440U 90005E 95324.13600704 +.00000041 +00000-0 +32856-4 0 09452
2 20440 098.5745 048.3599 0012064 096.3662 263.8898 14.30100432304079
WO-18
1 20441U 90005F 95324.12144422 +.00000044 +00000-0 +33667-4 0 09568
2 20441 098.5743 048.3047 0012687 097.5316 262.7312 14.30070749304072
LO-19
1 20442U 90005G 95324.13296927 +.00000002 +00000-0 +17565-4 0 09482
2 20442 098.5758 048.7295 0013179 097.9553 262.3097 14.30175348304091
FO-20
1 20480U 90013C 95324.10753872 -.00000056 +00000-0 -46110-4 0 08575
2 20480 099.0621 023.6435 0539847 240.3889 114.2402 12.83231650270943
AO-21
1 21087U 91006A 95323.93334730 +.00000094 +00000-0 +82657-4 0 06585
2 21087 082.9378 117.3231 0036959 072.5841 287.9351 13.74561703241126
UO-22
1 21575U 91050B 95324.11896734 +.00000002 +00000-0 +15007-4 0 06544
2 21575 098.3802 031.4589 0007079 167.5172 192.6192 14.37000318227899
KO-23
1 22077U 92052B 95324.01452553 -.00000037 +00000-0 +10000-3 0 05669
2 22077 066.0792 269.5046 0002299 359.4515 000.6494 12.86293075153775
KO-25
1 22828U 93061F 95324.14984994 +.00000038 +00000-0 +32761-4 0 04193
2 22828 098.6018 038.4384 0010702 107.1832 253.0519 14.28120157080136
IO-26
1 22826U 93061D 95324.11941609 -.00000011 +00000-0 +12975-4 0 04348
2 22826 098.6061 038.3640 0009381 121.2745 238.9345 14.27786946112023
AO-27
1 22825U 93061C 95324.10720177 +.00000043 +00000-0 +35021-4 0 04342
2 22825 098.6057 038.2276 0008826 119.7783 240.4276 14.27679477112018
PO-28
1 22829U 93061G 95324.16365907 +.00000010 +00000-0 +21712-4 0 04366
2 22829 098.6011 038.4946 0010483 106.8567 253.3764 14.28100839112058

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
November 25, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2455. Re: Best WEFAX card?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: billh@gn2.getnet.com
Message-ID: <1995Nov21.143949.17833@schbbs.mot.com>
Source record: 23617

In article <30B08899.125D2E8F@accurate-automation.com>,

> Could anyone suggest a good WEFAX card to me for the
> GEOS sats which includes decent user interface software?
>
> Any pointer would be appreciated...
>
> --
> ----------

I have had very good luck with the Quorum Explorer card/software. The card contains the receiver and logic and the software is excellent. I dont have it handy but quorum has a bbs number.
73,
Bill W7JSW

2456. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: us015794
Message-ID: <30B2AA11.1123@pop3.interramp.com>
Source record: 23618
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

In my neck of the woods, spam = phony HAM
Mike@aa2hs.com
http://www.aa2hs.com

2457. * SpaceNews 20-Nov-95 *

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: magliaco@pilot.njin.net
Message-ID: <48t5qa$d8q@pilot.njin.net>
Source record: 23619
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.info

From: magliaco@pilot.njin.net (John Magliacane)
Subject: * SpaceNews 20-Nov-95 *
Date: 21 Nov 1995 13:29:30 -0500
Organization: Rutgers University
Message-ID: <48t5qa$d8q@pilot.njin.net>

SB NEWS @ AMSAT $SPC1120
* SpaceNews 20-Nov-95 *

BID: $SPC1120

=========
SpaceNews
=========

MONDAY NOVEMBER 20, 1995

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited free distribution.

* MIR QSL NEWS *
================
Dave Larsen, N6JLH, is now the new QSL manager for the USA for all Mir QSL
cards for the callsign R0MIR and R0MIR-1. All older callsigns have to go
to Russia.

Dave has been granted the privilege of acting as QSL manager from Sergji,
RV3DR. QSLs must include date, time, and mode of contact. Cards for SWL
reports will not be handled by Dave. If a contact is made with the Mir
packet radio personal message system, then the message number issued by
the PMS should be included on the QSL card.

QSLs must be sent along with a business-sized self-addressed stamped
envelope (the card will not fit in a regular-sized envelope). A "green
stamp" to cover postage would also be appreciated.

QSLs should be sent to:

N6JLH
P.O.B. 1501
Pine Grove, California 95665
U.S.A.

[Info via G. Miles Mann, WF1F]

* STS-74/SAREX NEWS *
=====================

The SAREX Astronauts were very active on STS-74, making numerous voice contacts with groundstations on 2-meter FM. It should be noted that Canadian Astronaut Chris Hadfield, KC5RNJ, received his Canadian Amateur License last week. His Canadian callsign is VA3OOG. He used this callsign on several passes other North America, particularly when the Shuttle traversed over Canada.

Last week, the Atlantis astronauts completed 5 scheduled ham radio contacts with US students as part of the Shuttle Amateur Radio EXperiment or SAREX. These groups included students from Franklin Junior High School in Pocatello, Idaho, Norwalk County schools in Connecticut, Lake Street Elementary School in Crown Point, Indiana, Round Lake-area schools in Illinois, and Quimby Oak Junior High School in San Jose, California. The students were assisted by their local Amateur Radio clubs and many AMSAT SAREX volunteers.

QSL cards and reports may be sent to ARRL EAD, STS-74 QSL, 225 Main Street, Newington, CT 06111-1494, USA. Include the following information in your QSL or report: STS-74, date, time in UTC, frequency and mode (FM voice). In addition, you must also include a SASE using a large, business-sized envelope (#10) if you wish to receive a card. The Greater Norwalk Amateur Radio Club in Norwalk, CT has generously volunteered to manage the cards for this mission.

[Info via Frank H. Bauer, KA3HDO, of the SAREX Working Group]

* INFRARED SPACE OBSERVATORY (ISO) IN ORBIT *
==========

The 80th launch of a European Ariane booster was successful on the night of November 16, 1995. The Ariane 44P rocket liftoff was performed from the Guiana Space Center in Kourou, French Guiana, South America.

Built by Aerospatiale for the European Space Agency (ESA), the spacecraft will have a major impact on every field of astronomy, spanning from solar systems, the birth and death of stars, and the most extragalactic sources.

The Infrared Space Observatory (ISO) was placed in highly elliptical orbit of 570 km by 71,499 km, inclined 5.2 degrees, with a period of 24 hours. The primary objective of the mission is to provide spectroscopic, photometric, imaging, and polarimetric observations of selected celestial sources.

NASA's Deep Space Network (DSN) will support the mission after the launch and early orbit phase (LEOP) is complete. The Goldstone, California 26 meter and 34 meter antennas will provide support for real-time telemetry and commanding. The ISO Control Center is located in Villafranca, Spain. Tracking support from Goldstone will be provided during a 8 to 10 hour period per day. Telemetry and tracking data will be downlinked from the spacecraft at 2266.5 MHz with a real-time data rate ranging between 4,096 - 32,768 bits per second.

[Info via Keith Stein]

* SORRY! *
==========
Sorry, but due to a very busy schedule and a minor health problem, there
was no SpaceNews issued last week (13-Nov-95). Thanks to all who sent
messages and news items during the week.

* FEEDBACK/INPUT WELCOMED *
==========================
Comments and input for SpaceNews should be directed to the editor (John,
KD2BD) via any of the paths listed below:

FAX : 1-908-747-7107
FTP : pilot.njin.net cd to /pub/SpaceNews
WWW : http://www.njin.net:80/~magliaco/
PACKET : KD2BD @ KS4HR.NJ.USA.NA
INTERNET : kd2bd@amsat.org, magliaco@pilot.njin.net
SATELLITE : AMSAT-OSCAR-16, LUSAT-OSCAR-19

MAIL : John A. Magliacane, KD2BD
Department of Engineering and Technology
Advanced Technology Center
Brookdale Community College
Lincroft, New Jersey 07738
U.S.A.

<<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

2458. Re: JVFAX71 Problem

Newsgroup: rec.radio.amateur.space
Date: 1995-11-21 00:00:00 UTC
From: ajsklar@aztec.asu.edu
Message-ID: <48rt60$b5h@news.asu.edu>
Source record: 23620

>From: crscasio@pixi.com (Lawrence Koga)
>Newsgroups: rec.radio.amateur.space
>Subject: VFAX71 Problem
>Date: Mon Nov 20 16:24:00 1995

>Hi All, I have the shareware program JVFAX71. I am using the KPC-3
>as the demodulator.

>When I connect my computer, the S/W receiver ha a hum on the speaker, as
>I connect the earphone wire. I know the hum is coming from the
>computer. Does anyone know how to kill this hum. I trie ferrite beads,
>and capacitors but no luck. Do I need a RS-232 isolation of some sort
>like optical isolation?

>Thanks, Lawrence

Hi Lawrence,

First, what kind of hum is it????
What kind of antenna are you using???
Have you checked the shells of the rs232 cable with a VOM???
Allen Sklar AA7BJ
--

2459. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: dougrand@i-2000.com
Message-ID: <48tp5c$h4n@i-2000.com>
Source record: 23621
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

Cal Eustaquio <ceustaqu@hertz.elee.calpoly.edu> wrote:

People used (perhaps still do) spread it on bread .. Hence spaming -
or spreading..

xxDan:
xxOne meaning may be for "Society for the Presevation of Amplitude
xxModulation." Otherwise, its a generic term for a meat product that
was
xxinvented during WW2 that is still put out in the market by Hormel (I
think).

xxOn 21 Nov 1995, Daniel Calzaretta wrote:

xx> I'm new to this. What does "spam" mean? Is it Italian or Latin
for
xx> something?
xx>
xx>
xx>

2460. Re: I Just Worked Atlantis!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <48u022$t5k@over.mhv.net>
Source record: 23622
Cross-posted to: rec.radio.amateur.space,sci.space.shuttle

Brent Taylor (btaylor@mailserv.nbnet.nb.ca) wrote:
: I just spoke with Mission Specialist MacArthur, KC5ACR, at 1253 hrs
: UTC on Saturday, November 18th, 1995.

: I was on the standard 2-meter 145.84/144.45 split.

: Atlantis was to my Northeast, near the end of its pass over my area.

: Brent S.D. Taylor - VE1JH | Central Park 1965-1971
: Doaktown on the Miramichi | Meadowbrook 1971-1973
: New Brunswick, Canada | Lachine High 1973-1975
: Grid Square FN66WN | Looking for exiles...
: r.a.s.n./ NASCAR / MWDX / 6M VUCC #5481

Congrats! I heard him on one pass but there was quite the pile up. I couldn't raise him. Better luck in MArch with the next Sarex mission! For now I'll just have to keep trying Mir.

Tom - KB2SMS

2461. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <48v9lu$72g@kocrsv08.delcoelect.com>
Source record: 23623
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

pbarry@perth.DIALix.oz.au (Paul Barry) writes:
>Anthony John Xenos (ax823092@oak.cats.ohiou.edu) probably wrote:
>:
>: The idea (detailed below) that we can assume much about whether life exists on
>: other planets based on two premises (life exists on earth, so it is possible,
>: and the universe is big) is ridiculous. Think about the beach analogy.
>: Imagine that it is a pebbly rather than sandy beach you are sitting on. You
>: reach down and the first thing you pick up happens to be a dime. Would you
>: assume that the beach was made of dimes? Of course not. You could only begin
>[deleted] ^^^^^^^^^^^^^
>
>Maybe not, but it sure WOULD be reasonable to conclude that the chances
>of finding another dime on a large beach is very high, as is the
>possibility of finding another civilized planet in a large universe.

No. It would NOT be reasonable to make those conclusions based on a
single sample. That's the point here. We don't have ANY basis for a
statistical analysis of the situation. You picked up one thing, and
it was a dime. You can't assume anything about the distribution of
dimes on the beach, so you can't conclude anything about the total
number of dimes present. You picked up something, and it wasn't a
baseball, but you can't conclude that baseballs are rare. We have
but a single example of a life-bearing planet, so we have no way of
extrapolating -- a statistical analysis based on a sample size of one
has a 100% margin of error.

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson # Ignorance can be fixed, but stupidity is permanent.
(I do not speak for Delco Electronics, and DE does not speak for me.)

2462. I see UFO.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: wave@mindspring.com
Message-ID: <490an6$he8@firehose.mindspring.com>
Source record: 23624

yes.

I did.

2463. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: us015794
Message-ID: <30B3675A.3FA2@pop3.interramp.com>
Source record: 23625
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

In my neck of the woods "spam" = phony HAM.
Mike@aa2hs.com

2464. Re: THE biggest THE ham THE problem.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: aranders@kosepc01.delcoelect.com
Message-ID: <48vu6u$a1i@kocrsv08.delcoelect.com>
Source record: 23626
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

Burt Fisher <k1oik@ccsnet.com> writes:
> Frequently I hear hams say, THE name HERE is_____.
>How often do you say when you meet someone (assuming your name
>is Charlie), THE name HERE is Charlie? You never do that right?

It's a different culture, Burt, and you're experiencing culture shock. Amateur Radio has been around a lot longer than you have, and it has developed its own "code of conduct" and a particular way of speaking. In Mexico, one does not say "My name is ____" -- to do so would be considered an EXTREMELY impersonal statement! One says instead "I am called ____" -- and that's just the way it is.

You seem to be ridiculing a common practice merely because it sounds impersonal to you. From the other point of view, you are attempting to use face-to-face speaking conventions when you are communicating with voice only, and that sounds just as strange to many "oldtimers" as the way it's done now sounds to you.

Remember that for the most part, radio communication is just barely interactive; while you are talking, there is no feedback from your listener(s). Don't expect to be able to use the same conversational style in all situations. For instance, how often do you begin a short monologue with the phrase "Three minutes ago, so-and-so said:" and a direct quotation? How often do you punctuate your sentences with "emotion" indicators? Be flexible. When in Rome, do as the Romans do. Don't flame them lest you be burned yourself. (Oh, sorry. Too late.)

= === === === = = = === === === === = = === = = = === = = === =
Alan Anderson # Ignorance can be fixed, but stupidity is permanent.
(I do not speak for Delco Electronics, and DE does not speak for me.)

2465. Re: STS-73 Sees UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: jwc@a.crl.com
Message-ID: <48vkpe$at0_001@sat1.as.crl.com>
Source record: 23627

Since this has nothing to do with radio, can we stop this thread in rec.radio.amateur.space. Thanks

Jim Chandler, N0VAH
jwc@a.crl.com
1024-bit Key fingerprint = 74 B4 7C BF 51 ED A6 00 F5 2C 6E 99 A7 0D 29 D2
2048-bit Key fingerprint = 82 30 8D 56 43 22 3A 2F 4D EA 37 DE B9 B4 21 52

2466. Re: Best WEFAX card?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: Rick Bates <rbates@wco.com>
Message-ID: <48vuab$3di@news.wco.com>
Source record: 23628

"John W. Edwards" <jedwards@accurate-automation.com> wrote:
>Could anyone suggest a good WEFAX card to me for the
>GEOS sats which includes decent user interface software?
>
>Any pointer would be appreciated...

I have one of the first generation Quorum cards (without the receiver on board etc.). It works quite well, even with the newest QFAX software (available on ftp.qcom.com in demo form too).

They have a good rep too.

Rick

rbates@wco.com

2467. !!! WWW TECHNO SITES !!!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-22 00:00:00 UTC
From: amsoft@epix.net
Message-ID: <NEWTNews.817094226.22055.amsoft@486dx4_120>
Source record: 23629
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc

Covering Amateur Radio, Electronics, Engineering, Space, Scanners
Shortwave, and many more interesting Technical Areas. Includes a
FTP link to our CD-ROM with over 23,000 files online.

http://hamster.business.uwo.ca/~amsoft

Surf The World from here today!

2468. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: pfeuffer@on-ramp.ior.com
Message-ID: <492qos$ibc@express.ior.com>
Source record: 23630
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

Society for the Preservation of Amplitude Modulation.

In article <48rbap$2um@maureen.teleport.com>, pcrest@teleport.com says...
>
>I'm new to this. What does "spam" mean? Is it Italian or Latin for
>something?
>

2469. Re: What is SPAM???

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: flash@lopez.marquette.MI.US
Message-ID: <1995Nov23.220411.15807@lopez.marquette.MI.US>
Source record: 23631
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

In <491ju8$atm@ixnews2.ix.netcom.com> robert-s@ix.netcom.com (Robert I Sinclair) writes:

>Yes it is canned meat, yes it is spread on things and yes it is usually
>scorned!

>Spamming is a term for placing a message in many different groups on
>the net typically refering to advertising.

AND in Ham Radio, SPAM is a group.

The Society to Preserve Ancient Modulation. You know, those signals you hear
on 3885 on into the night....

--
/ Gary Bourgois, WB8EOH, The Birdwatcher: Marquette Michigan USA \
([-o Keeper of The r.v.s.t. FAQ, Wildfeeds List, and Radio Guides o-])
\ flash@lopez.marquette.mi.us REALAUDIO SITE AT: http://ttn.nai.net /
Friday Night Live T2/21 5.8 8PM-Midnight ET FAX: (906) 228-7477

2470. Antenna assistance

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: kyrrin@wolfenet.com
Message-ID: <kyrrin.822.00AB2946@wolfenet.com>
Source record: 23632

Hello, fellow hamateurs...

Considering that I've not done anything remotely resembling antenna math for at least ten years, I need a bit of assistance.

Specifically, I'd like to construct an antenna that will allow me to pick up the GOES West bird at 468.8250. This is due to my acquisition of a neat little clock that will display NIST time based on the sat signal, and will also provide an IRIG-B time code output.

I'm told that I'll need circular polarization, right-handed, and some suggested types so far have been quadrifilar, Yagi, or helical. Based on my own limited knowledge, and the fact that I'm in an apartment and cannot put up any sort of supporting structure, I feel that a helical would be best. Please correct me if this is a bad assumption.

The clock unit has a receiver built in. All I need is to connect an appropriate antenna and let it lock on to the bird. What I need are design specs for such an antenna, hopefully something that I can build without more than hand tools or breaking the bank.

Another option is to purchase a surplus commercially-made antenna. If anyone knows of a source for such, that would also be appreciated.

For reference, the clock involved is a Kinemetrics/Truetime model 468-DC. The manufacturer is already sending me a manual for it.

Thanks in advance. E-mail to kyrrin@wolfenet.com, please.

==Bruce

2471. Sounds from space

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: asphodel@interport.net
Message-ID: <493165$m1s@park.interport.net>
Source record: 23633

Does anyone know where I can get or download sounds from radio telescopes/stars ?

Thanks

asphodel@interport.net

2472. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-2311950115060001@206.12.26.34>
Source record: 23634
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

In article <48lekf$b9k@detroit.freenet.org>, aa024@detroit.freenet.org
(Kenneth Vito Zichi) wrote:

-> If you guys want to spam all the rec radio amateur gorups I couldn't
care less
-> but why the H*ll are these stupid ham debate posts spilling into the
-> shortwave, scanner and puzzles (among others) groups. Watch the
-> reply lines guys. One spam is bad enough but when you all reply to all
-> the groups it is just plain RUDE.
->
-> Leave the rest of us in peace -- and if your must spam, do it via e-mail
-> to the original poster and again, leave the rest of us in peace.
->
-> Thanks for letting me rant. 73 //kvz
->
->
-> --
-> kv zichi, aa024@detroit.freenet.org
-> (PGP Public Key Available on Request)
-> "Lasciate ogni speranza, voi ch'entrante" --Dante
-> Kind of appropriate for the Internet, eh?

The root cause of this problem are the 'original' postings of one BURT FISHER.
His garbage gets replied to by others who inadvertently post to all the
newsgroups the original spammer included in the distribution list.

In the future forward a copy of spam messages from Burt Fisher to the
postmaster at his service provider. Fisher's address is:
k1oik@ccsnet.com therefore you can forward his crap back to place it came
from at postmaster@ccnet.com.

If enough of us do it he will get tired of it and take steps to stop it.
There is no need to even write anything on the forwarded message. They
know who Burt Fisher is, do you think your the first one to complain!? :)

--
Scott Leaf VE7ZVZ
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"

2473. Re: Societies Unwashed: The sin and the apology

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: Steve Sampson <ssampson>
Message-ID: <49233r$ke@news.icon.net>
Source record: 23635
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space

I used to be shocked when my private electronic mail was published. About as shocked as my love letters being printed in a book. I find there are no morals in America, and no self discipline. Only a scum would resort to publishing a private letter. I used to put a little line in my signature that said PRIVATE, but then the scum just erased that part.

I'm glad you identified the scum who published your private mail. Said scum should be banished from the net. Write his postmaster.

2474. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: demetre@helios.intranet.gr
Message-ID: <4918ao$2hl@helios.intranet.gr>
Source record: 23636
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

Cal Eustaquio (ceustaqu@hertz.elee.calpoly.edu) wrote:
: Dan:
: One meaning may be for "Society for the Presevation of Amplitude
: Modulation." Otherwise, its a generic term for a meat product that was
: invented during WW2 that is still put out in the market by Hormel (I think).

: On 21 Nov 1995, Daniel Calzaretta wrote:

: > I'm new to this. What does "spam" mean? Is it Italian or Latin for
: > something?
: >
: >
: >

Isn't SPAM a sort of processed caned meat ????

73's

2475. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: skuter@tcgcs.com
Message-ID: <492ab0$jfm@alterdial.UU.NET>
Source record: 23637
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

Daniel Calzaretta <pcrest@teleport.com> wrote:

>I'm new to this. What does "spam" mean? Is it Latin or Italian for
>something?

Aside from being a processed nuclear survival food, spam has its own endearing definition as it related to the Internet.

"Spamming" is when a message is posted to serveral, even all, newsgroups at once. Prime examples of spamming occur when some goober posts a "Make 20 Zillion Dollars by Picking Your Nose" post to every single newsgroup in existence. Then, in each of those newsgroups 50 people post a response saying "I picked my nose and only made $.73 you &***#$%!!!!". Most usenet programs will then post that reply to every group the original post appeared in.

I notice that I am posting this response to all the rec.radio.xxx groups. Since I don't know where this thread originated, I'll leave it that way....and now I too have become a "spammer"!!!

Hope it is now clear as mud!

Scott Eveland Ham call: KB0FKN
skuter@tcgcs.com skuter911@aol.com
Dispatcher Hastings (NE) PD
Reserve Officer Hastings (NE) PD
Reserve FF/EMT-A Hastings (NE) FD
Boy, I do too much....
And nothing I say here represents the opinions
of either of the above departments.

2476. Re: THE biggest THE ham THE problem.

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: skuter@tcgcs.com
Message-ID: <492aib$jfm@alterdial.UU.NET>
Source record: 23638
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

aranders@kosepc01.delcoelect.com (Alan Anderson) wrote:

>It's a different culture, Burt, and you're experiencing culture shock.
>Amateur Radio has been around a lot longer than you have, and it has
SNIP
>Don't flame them lest you be burned yourself. (Oh, sorry. Too late.)

>= === === === = = = === === === === = = === = = = === = = === =
># Alan Anderson # Ignorance can be fixed, but stupidity is permanent. #
> (I do not speak for Delco Electronics, and DE does not speak for me.)

Wow Alan! As a former subsciber of Ham-L, and primarilly a lurker to
the rec.radio.xxx groups, I've never seen anybody with such a
well-written rebuttal for one of Burt's tired old questions.

I hope someday Burt will stop asking the same old questions, and maybe
even get out of the hobby he so dearly hates.

Scott Eveland Ham call: KB0FKN
skuter@tcgcs.com skuter911@aol.com
Dispatcher Hastings (NE) PD
Reserve Officer Hastings (NE) PD
Reserve FF/EMT-A Hastings (NE) FD
Boy, I do too much....
And nothing I say here represents the opinions
of either of the above departments.

2477. Probability

Newsgroup: rec.radio.amateur.space
Date: 1995-11-23 00:00:00 UTC
From: Jeff.Root@f2006.n282.z1.fidonet.org
Message-ID: <105_9511230615@mmbbs.com>
Source record: 23639

AA> We have but a single example of a life-bearing planet, so we
AA> have no way of extrapolating -- a statistical analysis based
AA> on a sample size of one has a 100% margin of error.

Alan,

The use of the term "100%" here is mathematically in error, as
is the application of statistical analysis. You are treating
the question as though induction were the only method available
to find a solution, and as though there were only one or two
pertinent facts available. Neither is the case.

In your analogy, you specified that the person is on a beach and
finds a dime. That implies familiarity with the characteristics
of both beaches and dimes. Our familiarity with those things
skews the inductive process you are trying to exemplify,
nullifying your point.

The real question being asked might be expressed as "How likely
is it that there is life on another planet within X light-years
of Earth?" A wealth of information is available that bears on
this question -- information both on the many living things we
know about on this planet, and on the things that can be seen or
otherwise detected in Space, where other planets might exist.
Both induction and deduction can be used to infer a great deal
about the nature and likelyhood of life on other planets.

Unfortunately, "likelyhood" is just a synonym for "probability",
and nobody really seems to know what probability is. It is one
of the most frequently misunderstood and mis-used concepts.
Even in simple situations like games of chance, the "laws" of
probability are constantly mis-applied.

It's true that from a single data point, no inference can be
drawn, but there are heaps of data available, and many kinds
of analysis that it may be subjected to.

-- Jeff, in Minneapolis

2478. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-11-24 00:00:00 UTC
From: croaker@access.digex.net
Message-ID: <znr817238843k@Digex>
Source record: 23640
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio

In article <492ab0$jfm@alterdial.UU.NET> skuter@tcgcs.com writes:

> >I'm new to this. What does "spam" mean? Is it Latin or Italian for
> >something?
>
> "Spamming" is when a message is posted to serveral, even all,
> newsgroups at once. Prime examples of spamming occur when some goober
> posts a "Make 20 Zillion Dollars by Picking Your Nose" post to every
> single newsgroup in existence. Then, in each of those newsgroups 50
>
> I notice that I am posting this response to all the rec.radio.xxx
> groups. Since I don't know where this thread originated, I'll leave
> it that way....and now I too have become a "spammer"!!!

Not really. You have posted 'velveeta' (Vegetarian spam).

The difference is that velveeta is crossposted (note the newsgroup line). On the internet, this message will cross the backbone once, and be stored on the ISP host harddrives once, with references to the crossposted newsgroups. It can't even really be called velveeta because you were answering a valid question, even if it was off-topic for the newsgroup in question.

Spam is a message, usually commercial in nature, that is posted once for every newsgroup. In this case, the same message will cross the backbone and be stored on the harddrive once for each newsgroup, resulting in massive waste of bandwidth and disk space.

Internet lore: the term was derived from the Monty Python skit, were 'spam' was said/sung numerous times. It was a really funny skit, too.

Hope this helps.

73s

Frank Ney EMT-A N4ZHG LPWV NRA(L) GOA CCRKBA LEAA JPFO 'M-O-U-S-E'
Sponsor, BATF Abuse Page http://www.access.digex.net/~croaker/batfabus.html
"A wise man once pointed out that the American eagle eats carrion, never picks on anything its own size and will soon be extinct. That being so, perhaps Americans ought to select a symbol more in keeping with their current condition, like a milked cow, a sheared sheep, a plucked chicken, or a slaughtered steer."
- L. Neil Smith, speaking as W.W. Curringer, _Pallas_

2479. Re: Even my wife thinks hams are...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-24 00:00:00 UTC
From: mulveyr@vivanet.vivanet.com
Message-ID: <4952h8$n9e@vivanews.vivanet.com>
Source record: 23641
Cross-posted to: radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

Dennis A. Mason (damason) wrote:
: Burt must be a Chicken Bander.

Please, we don't appreciate fowl language here.

Rich Mulvey, aa2ys Rochester, NY USA
mulveyr@vivanet.com
aa2ys@net.wb2psi.ampr.org
aa2ys@wb2psi.#wny.ny.us

2480. Re: Sounds from space

Newsgroup: rec.radio.amateur.space
Date: 1995-11-24 00:00:00 UTC
From: stephens@ngis.geod.emr.ca
Message-ID: <DIJwCE.Ioq@emr1.emr.ca>
Source record: 23642

Tom Clark (clark@tomcat.gsfc.nasa.gov) wrote:
: Except for the pulsars (at UHF and low microwave frequencies) and Jupiter (at HF
: frequencies), all the radio stars, external galaxies, etc are wideband noise. They
: sound exactly the same as you get when you tune in "dead air" on your radio.

: When heard with enough sensitivity, the pulsars have a sound that is something
: like a clock ticking at rates from a fraction of a second to a couple of
: seconds.

: If you have enough sensitivity in the 15-20 MHz range, Jupiter can sound like
: waves breaking on a beach, occasionally punctuated with a few "machine gun"
: bursts.

: So Radio Astronomers seldom really "listen" to the signals because they are
: very boring! The "see" the objects by clever signal processing and computer
: image enhancement. You can see some of the "pictures" by looking at the
: National Radio Astronomy Observatory's WWW pages. To start, click on "VLA" at

: http://www.nrao.edu/

: and in particular take a look at

: http://www.nrao.edu/doc/vla/html/VLA-images.html

: 73 de Tom, W3IWI

A more interesting group of 'sounds from space' are the whistlers,
chirp and chorus at ELF frequencies caused by the noise generated
by lightening flashes bouncing along the Earth's magnetic field
between the ionosphere in the northern and southern hemispheres.
All frequencies can be heard with a long wire, a quiet site and
a sensitive amplifier since they are 'audio frequencies'. That is
they do not have to be detected like a radio signal.

Whistlers sound like decending tones, Chorus like a flock of
birds chirping and chirp, well.... chirps.

73 de VE3GSC/VE3PYG

--
Dave Stephenson
Geological Survey of Canada *Who ever knew the heavens menace so?
Ottawa, Ontario, Canada *Those that have known the earth so
Internet: stephens@geod.emr.ca *full of faults! [W.S. (JC. A1, S3)]

2481. Re: Sounds from space

Newsgroup: rec.radio.amateur.space
Date: 1995-11-24 00:00:00 UTC
From: Tom Clark <clark@tomcat.gsfc.nasa.gov>
Message-ID: <493ha1$p7t@post.gsfc.nasa.gov>
Source record: 23643

Except for the pulsars (at UHF and low microwave frequencies) and Jupiter (at HF frequencies), all the radio stars, external galaxies, etc are wideband noise. They sound exactly the same as you get when you tune in "dead air" on your radio.

When heard with enough sensitivity, the pulsars have a sound that is something like a clock ticking at rates from a fraction of a second to a couple of seconds.

If you have enough sensitivity in the 15-20 MHz range, Jupiter can sound like waves breaking on a beach, occasionally punctuated with a few "machine gun" bursts.

So Radio Astronomers seldom really "listen" to the signals because they are very boring! The "see" the objects by clever signal processing and computer image enhancement. You can see some of the "pictures" by looking at the National Radio Astronomy Observatory's WWW pages. To start, click on "VLA" at

http://www.nrao.edu/

and in particular take a look at

http://www.nrao.edu/doc/vla/html/VLA-images.html

73 de Tom, W3IWI

2482. Re: I Just Worked Atlantis!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-24 00:00:00 UTC
From: btaylor@mailserv.nbnet.nb.ca
Message-ID: <494fjg$p64@darwin.nbnet.nb.ca>
Source record: 23644
Cross-posted to: rec.radio.amateur.space,sci.space.shuttle

gsnow@pacifier.com (Gary Snow) wrote:

>Ok, you were on 2-meters, what was that exact equipment you were using,
>antenna and all!

It was a simple Kenwood (1987 vintage) TH-205 AT, emitting about 5
watts into a 30W linear amplifier, up a 70' run of RG-213 and into an
11-element vertically polarized yagi at 60 feet.

>Great job!

Thanks! I worked them again the day after. I'll be watching next
time.

Brent S.D. Taylor - VE1JH | Central Park 1965-1971
Doaktown on the Miramichi | Meadowbrook 1971-1973
New Brunswick, Canada | Lachine High 1973-1975
Grid Square FN66WN | Looking for exiles...
r.a.s.n./ NASCAR / MWDX / 6M VUCC #5481

2483. Re: I Just Worked Atlantis!

Newsgroup: rec.radio.amateur.space
Date: 1995-11-24 00:00:00 UTC
From: btaylor@mailserv.nbnet.nb.ca
Message-ID: <494fjh$p64@darwin.nbnet.nb.ca>
Source record: 23645
Cross-posted to: rec.radio.amateur.space,sci.space.shuttle

Thomas.Randall@bbs.mhv.net (Thomas Randall) wrote:

> Congrats! I heard him on one pass but there was quite the pile up. I
>couldn't raise him. Better luck in MArch with the next Sarex mission! For
>now I'll just have to keep trying Mir.

>Tom - KB2SMS

I think I had quite a bit of luck because some of the northerly passes
were probably not well-heard in W1, 2 and 3 land. I had much of the
pass all to myself.

That's two (Atlantis and Discovery) down and two to go.

(I just wish I was on the other end of the pile-up!)

Brent S.D. Taylor - VE1JH | Central Park 1965-1971
Doaktown on the Miramichi | Meadowbrook 1971-1973
New Brunswick, Canada | Lachine High 1973-1975
Grid Square FN66WN | Looking for exiles...
r.a.s.n./ NASCAR / MWDX / 6M VUCC #5481

2484. Re: Sounds from space

Newsgroup: rec.radio.amateur.space
Date: 1995-11-24 00:00:00 UTC
From: dlleigh@frank.harvard.edu
Message-ID: <494s81$tnb@satisfied.apocalypse.org>
Source record: 23646

In article <493165$m1s@park.interport.net>, asphodel@interport.net (erik gilbert) writes:
> Does anyone know where I can get or download sounds from radio
> telescopes/stars ?

Why bother downloading anything? You can make the sounds yourself.
They generally go: "sssssssssssssssssssssssssssssssss...."

Almost anything more interesting that you hear will be RFI. :-(

Darren Leigh -- kc6euy
dlleigh@frank.harvard.edu

2485. Re: Antenna assistance

Newsgroup: rec.radio.amateur.space
Date: 1995-11-24 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-2411950109410001@206.12.26.47>
Source record: 23647

In article <kyrrin.822.00AB2946@wolfenet.com>, kyrrin@wolfenet.com (Bruce Lane) wrote:

-> Hello, fellow hamateurs...
->
-> Considering that I've not done anything remotely resembling antenna math for
-> at least ten years, I need a bit of assistance.
->
-> Specifically, I'd like to construct an antenna that will allow me to pick up
-> the GOES West bird at 468.8250. This is due to my acquisition of a neat little
-> clock that will display NIST time based on the sat signal, and will also
-> provide an IRIG-B time code output.
->
-> I'm told that I'll need circular polarization, right-handed, and some
-> suggested types so far have been quadrifilar, Yagi, or helical. Based on my
-> own limited knowledge, and the fact that I'm in an apartment and cannot put
-> up any sort of supporting structure, I feel that a helical would be best.
-> Please correct me if this is a bad assumption.
->
-> The clock unit has a receiver built in. All I need is to connect an
-> appropriate antenna and let it lock on to the bird. What I need are design
-> specs for such an antenna, hopefully something that I can build without more
-> than hand tools or breaking the bank.
->
-> Another option is to purchase a surplus commercially-made antenna. If anyone
-> knows of a source for such, that would also be appreciated.
->
-> For reference, the clock involved is a Kinemetrics/Truetime model 468-DC. The
-> manufacturer is already sending me a manual for it.
->
-> Thanks in advance. E-mail to kyrrin@wolfenet.com, please.
->
-> ==Bruce

Your best bet is to get yourself a copy of "THE ARRL ANTENNA HANDBOOK" which is available at almost any store that caters to Hams. Further I used to borrow it from my local library before I purchased my own copy.

I would reccomend a cross polarized yagi, elements are short and you can get lots of them on a relatively short boom, since you are not transmitting you do not have to be as precise as someone trying to uplink to the bird. You wont need too many elements but 12 or so would still be nice and small.

--
Scott Leaf VE7ZVZ CN89
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"
Coquitlam Radio Club VE7SCC - "The Satellite Seniors"

2486. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-11-25 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <497kd4$nk2@superb.csc.ti.com>
Source record: 23648
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

In article <ve7zvz-21119514013700001@206.12.26.30>, ve7zvz@dowco.com (Scott
Leaf) says:
>
>
>Its elementary Jim:
>
>1) Get a Net News viewer that supports 'KILL' files
>
>2) Read document on how to use it.
>
>3) Use it
>
>hope this clears up any confusion
>
>

~~~~~~``
Scott, could you suggest a Net News viewer that does the job? None of
my newsreaders seem to have the function.

Ken K5MBV mbv@ti.com
~~~~~~

2487. December 2 Colorado ATV/Repeater Balloon Launch

Newsgroup: rec.radio.amateur.space
Date: 1995-11-26 00:00:00 UTC
From: au156@yfn.ysu.edu
Message-ID: <498kop$d53@news.ysu.edu>
Source record: 23649

EOSS-25: CENTRAL COLORADO REPEATER/ATV BALLOON LAUNCH

Region: Central Colorado

Date/Time: December 2 / 8:00 AM MST, 15:00 UTC

Location: Colorado Springs, US AIr Force Academy
Site Coordinates: 39' 00.56" North Lat.
104' 52.90" West Long.
ATV: a. [EOSS] 426.25 MHz AM (1 watt output) NTSC color
b. [AFA] 439.25 MHz AM (1 watt output) NTSC color
VHF/UHF Repeater: 446.000 MHz FM Input
147.555 MHz FM Output
Beacons: 144.34 MHz Morse ID audio on FM
(periodic; frequency shared with packet
telemetry)
Telemetry: a. [EOSS] 144.340 MHz FM (1 Watt output)
AX.25, 1200 baud mostly plain english text;
includes APRS position data string.
b. [AFA] 146.455 Mhz FM, AX.25, 1200 baud;
special telemetry format.
HF Net: 7.235 Mhz SSB

For additional launch data and general Edge of Space Sciences (EOSS)
information:

http://www.usa.net/~rickvg/eoss.htm
maintained by Rick von Glahn
rickvg@usa.net
---
posted by Hank Riley, N1LTV

Please email news of upcoming balloon launches and post-flight
reports for distribution on the Net.

h1riley@umassd.edu
au156@yfn.ysu.edu

2488. Re: What is SPAM???

Newsgroup: rec.radio.amateur.space
Date: 1995-11-26 00:00:00 UTC
From: wa6ube@aol.com
Message-ID: <49aco6$ru5@newsbf02.news.aol.com>
Source record: 23650
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

In amateur radio parlance, SPAM is a an amateur radio interest group that promotes the use of A.M. (Amplitude Modulation) using older, usually vacuum tube transmitters.

SPAM: Society for the Preservation of Amplitude Modulation

check 75 meters around 3870-3885 KHz in the evenings if you live on the west coast of the U.S.

Trish
WA6UBE@aol.com "The Vertical Skywave Girl"
Mobile radio repair shop supervisor - City of San Jose, GSA-Communications

2489. Re: Even my wife thinks hams are...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-26 00:00:00 UTC
From: mcovingt@ai.uga.edu
Message-ID: <49a9on$o9l@hobbes.cc.uga.edu>
Source record: 23651
Cross-posted to: radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

Burt Fisher (k1oik@ccsnet.com) wrote:
: I received a call today from a ham who would not identify himself. I
: repeatedly asked him who he was, even saying to him that if he had an
: opinion worth anything it is reasonable to expect he state who he was.
: Still he he refused. I then commented that he was "so typical ham, no guts."

Why do you presume he was a properly licensed ham?

--
Michael A. Covington http://www.ai.uga.edu/faculty/covington/
Artificial Intelligence Center <><
The University of Georgia Unless specifically indicated, I am
Athens, GA 30602-7415 U.S.A. not speaking for the University.

2490. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-11-26 00:00:00 UTC
From: bob@texas.net
Message-ID: <4993q0$a3n@news.texas.net>
Source record: 23652
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

durham@lobby.ti.com (Ken Durham) wrote:

>~~~~~~``
>Scott, could you suggest a Net News viewer that does the job? None of
>my newsreaders seem to have the function.

>Ken K5MBV mbv@ti.com

Forte's Agent (commercial version) supports killing postings by
subject or author.

Bob

2491. Re: Sounds from space

Newsgroup: rec.radio.amateur.space
Date: 1995-11-26 00:00:00 UTC
From: tsmithers@cix.compulink.co.uk
Message-ID: <DInwBr.767@cix.compulink.co.uk>
Source record: 23653

Contact Jim Sky at Radio Sky Publishing...radiosky@aol.com
He has a tape of major radio astronomy events, pulsars, jupiter noise
storms, solar storms etc.

2492. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-11-26 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <49accu$m2c@superb.csc.ti.com>
Source record: 23654
Cross-posted to: sci.space.shuttle,sci.space,rec.radio.amateur.space

In article <4993q0$a3n@news.texas.net>, bob@texas.net (Bob) says:
>
>durham@lobby.ti.com (Ken Durham) wrote:
>
>
>>~~~~~~``
>>Scott, could you suggest a Net News viewer that does the job? None of
>>my newsreaders seem to have the function.
>
>>Ken K5MBV mbv@ti.com
>
>Forte's Agent (commercial version) supports killing postings by
>subject or author.
>
>Bob
>
~~~~~~
Forte's Agent download instructions say it takes 10 Meg of disk space
and the commercial version costs $29.95. Are there any free ones out there
that support Killfiles?

The reason I'm posting here is because of the interest that has been
generated by responses to a SPAMed post here and in sci.space.shuttle.
It looks like we may be needing an easy way to filter out the offsubject
responses by those not willing to edit their headers.

Ken K5MBV mbv@ti.com
~~~~~~

2493. need people for underground zine

Newsgroup: rec.radio.amateur.space
Date: 1995-11-26 00:00:00 UTC
From: Amit_Kalra@cyberden.com
Message-ID: <772866014.17330933@cyberden.com>
Source record: 23655

i am putting together a zine that covers
noize,ambient,industrial,goth,experimental,acid,gabber,hardcore,acid
core,house,punk,goth,goa,chill out, electro,acid
house,ethereal,trip-hop,grrrl
jungle,trance,emo,acid jazz, and whatever other obscure form of music there
is.....
i need help with writers from every corner of the world...i would simply ask
of you to review any concerts, raves,rituals,books,movies,or albums that you
saw orbought...i would also take commentary on any issue on what you feels
relates to the underground and it's well being......also how clubs are
doing.....anything.......fashion,advertizers welcome to question.....
I want writers with some writing capability, a sense of style, and an
opinion no matter what it is....
What i don't want are stupid fools who don't know shit about what they are
saying and who are just writing to piss people off...i want this thing to get
somewhere..and i have realized that by myself and a few others i cannot
handle a project this big...that is why i ask the help of you and many
others.............

Please email me back at Kush Arora@cyberden.com or AmitKalr@ix.netcom.com

``i am the light with no source"

2494. re tr9500 pwr mod needed

Newsgroup: rec.radio.amateur.space
Date: 1995-11-26 00:00:00 UTC
From: Danie Brynard <danie.brynard@pixie.co.za>
Message-ID: <4993jf$dak@hawk.pix.za>
Source record: 23656

I am looking for a mod for the Kenwood TR-9500 to vary the output
power.

2495. Instant Track Problem on P75/Win95

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: shale@north.nsis.com
Message-ID: <951127.070946.21076@banshee.uunet.ca>
Source record: 23517

My satelite tracking program (Instant Track V1.00) is not working
properly since I upgraded to a p75 with Win95. The numbers and letters
at bottom of map screen are garbled. All the rest of program works
fine. I've tried many fixes including the new config/autoexec
suggested for DOS but no luck so far...can anyone help.
shale@north.nsis.com

2496. Shuttle transmission frequency list

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: brutschy@ix.netcom.com
Message-ID: <49dgq8$t4u@ixnews6.ix.netcom.com>
Source record: 23518

I used to have a list of shuttle/mission control voice frequencies,
along with a list of repeaters. Does anyone know where I could find
such a list? Thanks in advance!

Marc Brutschy
---
brutschy@ix.netcom.com
Dublin, Calif.

2497. Re: INSTANT TRACK V1.00..Win95 HELP

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: Hank Blackstock <wa5jrh@ionet.net>
Message-ID: <49bc9b$8vd@ionews.ionet.net>
Source record: 23657

I've got the same problem and was told it was related to video
card..Seems it is not compatable with newer cards. There is
supposed to be a patch being written I was told but I haven't
seen it on Amsat FTP. Of course my info may be incorrect.
74 Hank WA5JRH

2498. Re: Burt Fisher jokes not funny

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: dstock@hpqmdla.sqf.hp.com
Message-ID: <DIp4wt.Gpw@hpqmoea.sqf.hp.com>
Source record: 23658
Cross-posted to: rec.radio.swap,rec.radio.shortwave,rec.radio.scanner,rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment,rec.radio.amateur.digital.misc,rec.radio.amateur.antenna

James E Muehlberg (muehlber@plains.nodak.edu) wrote:

: It's unfortunate that this tirade must continue.

True!

: Even more unfortunate
: that our younger readers must be exposed to this behavior by, I assume,
: adults.

Youngsters seem to (usually) be more sophisticated and sensible than
adults (usually) credit them with.

:I do not know Mr. Fisher, and even if I did, I would not comment
: about him on the net.

Your restraint is commendable, though, as yet, untested.

: Making personal attacks on people in public is
: just plain tacky.

Engaging in a little banter with a wind-up merchant is not quite the
same as no-holds-barred-go-for-the-jugular hatred propelled flame wars that
sometimes erupt. May I suggest you read Burt's earlier postings? He's
quite right about there being plenty of boring radio amateurs (I may be
one of them..), but, unfortunately, he forgets those who do not fit his
stereotypes, and lumps everyone together. He seems to be having fun
stirring people up. While I've enjoyed watching this, I did consider his
remarks about Germans to be unreasonable and tasteless.

:Do I sound like your mother?

No

: Well, yes. There is an
: absolute right and wrong. You are wrong.

Your opinion is that *I* am wrong. I do not believe that I have any
right to declare anything to be absolutely right or absolurely wrong.

: God gave us free will, though,
: but some still dont know what to do with it. I'll pray for you.--

Thank you, but please do not. I think it most important that people
take responsibility for their thoughts and actions, and, if ever judged, I
should be judged fairly on my own performance without aid from others.

Cheers
David GM4ZNX

: SUPPORT YOUR MILITARY PERSONNEL +++ Jim Muehlberg MUEHLBER@PLAINS.NODAK.EDU

Isn't warfare evil?

2499. Re: What is SPAM???

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: santa@northpole.com
Message-ID: <49cntv$kbl@its.hooked.net>
Source record: 23659
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio.swap

wa6ube@aol.com (WA6UBE) wrote:

>In amateur radio parlance, SPAM is a an amateur radio interest group that
>promotes the use of A.M. (Amplitude Modulation) using older, usually
>vacuum tube transmitters.
>
>SPAM: Society for the Preservation of Amplitude Modulation
>
>check 75 meters around 3870-3885 KHz in the evenings if you live on the
>west coast of the U.S.
>
>Trish
>WA6UBE@aol.com "The Vertical Skywave Girl"
>Mobile radio repair shop supervisor - City of San Jose, GSA-Communications

SPAM is also idiots like JOE and his frend Brandis whoever who post
off topic messages, or people who cross post a "Call me, I'm horny.
011-32-4443-22332. Only 10 cents a minute" to EVERY newsgroup,
including binaries.

2500. Re: Even my wife thinks hams are...

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: cnc23a@b4pph13e.bnr.ca
Message-ID: <49ch3e$st8@crchh327.rich.bnr.ca>
Source record: 23660
Cross-posted to: radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space

In article <4952h8$n9e@vivanews.vivanet.com>, mulveyr@vivanet.vivanet.com (Rich Mulvey) writes:
|> Dennis A. Mason (damason) wrote:
|> : Burt must be a Chicken Bander.
|>
|> Please, we don't appreciate fowl language here.
|>
|>
Well, it's in the same family, seeing as Burt's a turkey. BTW, do ol' Burt survive Thanksgiving ? %^)
--
==========

Ken M. Edwards, PE Bell Northern Research, Research Triangle Park, NC
(919) 991-4769 email: cnc23a@bnr.ca Ham: N4ZBB Packet: n4zbb@n1gmv.nc
DX PacketCluster (tm) Node : W4DW

All opinions are my own and do not necessarily reflect the views of my employer or co-workers, family, friends, congress, or president.

2501. Mode K satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: djadams@silver.ucs.indiana.edu
Message-ID: <49d24j$1ar@usenet.ucs.indiana.edu>
Source record: 23661

Well, I have put together a mode K (15/10) station
but don't really know where to go from there.
Could someone give me a run down on any and
all mode K sats and how to use 'em (freqs, keps data
sites, etc). Perhaps there is an all-telling faq?

Thanks and 73,
dave, n9uxu

2502. Dove-17 Status?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: wday@dfw.net
Message-ID: <wday-2711950029430001@fw5.dfw.net>
Source record: 23662

Is Dove-17 still on the air (AX.25 1200 baud packet on 145.825)? I've just started looking at the channel, again, and haven't received a single packet from the satellite in two days of listening.

73 Wayne KF5ZC

Wayne Day KF5ZC Fort Worth,Texas,USA |
CompuServe: 76703,376 Internet: 76703.376@CompuServe.Com | ,__o
or Internet: wday@dfw.net |--_<,
Member: Bicycle Mobile Hams of America (*)/'(*)
For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net
---

2503. need sat- antenna infos

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: brunel@hugo.rz.fh-ulm.de
Message-ID: <brunel.72.0009ED67@hugo.rz.fh-ulm.de>
Source record: 23663

Hi...
I would like to receive signals from the MIR- space- station or the shuttle.
Unfortunately changed my qth and now I am allowed to put (only) a turnstyle
or a gp at the top of a mast with TV- antennas. Can anyone tell me which
antenna does the best job?
Many thanks es 73 de Roman (DL2SFE)

2504. Re: Dove-17 Status?

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: Thomas.Randall@bbs.mhv.net
Message-ID: <49crpm$ck2@over.mhv.net>
Source record: 23664

Wayne Day (wday@dfw.net) wrote:
: Is Dove-17 still on the air (AX.25 1200 baud packet on 145.825)? I've just
: started looking at the channel, again, and haven't received a single
: packet from the satellite in two days of listening.

: 73 Wayne KF5ZC

: --
: Wayne Day KF5ZC Fort Worth,Texas,USA |
: CompuServe: 76703,376 Internet: 76703.376@CompuServe.Com | ,__o
: or Internet: wday@dfw.net |--_<,
: Member: Bicycle Mobile Hams of America (*)/'(*)
: For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net
: --

Yes, she's still on the air. The s-band is on again also.

Tom - KB2SMS

2505. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: schanj@smd4.jsc.nasa.gov
Message-ID: <49d3jg$vl7@cisu2.jsc.nasa.gov>
Source record: 23665
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

In article <49accu$m2c@superb.csc.ti.com>,
durham@lobby.ti.com (Ken Durham) wrote:
>In article <4993q0$a3n@news.texas.net>, bob@texas.net (Bob) says:
>>
>>durham@lobby.ti.com (Ken Durham) wrote:
>>
>>
>>>~~~~~~``
>>>Scott, could you suggest a Net News viewer that does the job? None of
>>>my newsreaders seem to have the function.
>>
>>>Ken K5MBV mbv@ti.com
>>
>>Forte's Agent (commercial version) supports killing postings by
>>subject or author.
>>
>>Bob
>>
>~~~~~~
~
> Forte's Agent download instructions say it takes 10 Meg of disk space
>and the commercial version costs $29.95. Are there any free ones out
there
>that support Killfiles?
>
> The reason I'm posting here is because of the interest that has been
>generated by responses to a SPAMed post here and in sci.space.shuttle.
>It looks like we may be needing an easy way to filter out the
offsubject
>responses by those not willing to edit their headers.
>
>Ken K5MBV mbv@ti.com

News Xpress is a freeware newsreader that supports killfiles.
I'm not sure where to find it. Try CICA or the simtel archives.

Killfiles sure comes in handy for losers like Mark Hines.

+-------------------------+---------------------------------+
John Schan	The opinions expressed by the
Engineer	said person do not reflect or
Lockheed Engineering and	represent the views of NASA
Sciences Co.	or Lockheed-Martin.
Houston, TX 77058	(and damn proud of it!)

2506. * Space Tourism Survey *

Newsgroup: rec.radio.amateur.space
Date: 1995-11-27 00:00:00 UTC
From: chrisl@SEDS.LPL.Arizona.EDU
Message-ID: <49bv35$pk6@news.ccit.arizona.edu>
Source record: 23666

What are your feelings about space tourism? Is this the type of thing
that you have been waiting for? Do you think there is no market for
space tourism? Yay or nay, let your voices be heard!

This year the topic of Space Tourism is finally starting to get serious
recognition from private and government circles. In early September, NASA,
in conjunction with the Space Transportation Association (STA) kicked off
a Tourism Study of their own to focus on orbital tourism and be completed
in a year. The "X" Prize Survey will serve as input for the NASA Study,
but intends to be completed in 3 months, reach world-wide for input, and
focus on parabolic flights and sub-orbital flights as well as orbital
flights.

Please take 5 minutes to have your input heard and recorded. We are
interested in responses from _all_ walks of life, not just space
enthusiasts.

The survey may be accessed at http://www.seds.org/xprize/survey
Postscript and Adobe Acrobat(tm) versions are available for download at
this URL as well. We welcome you to distribute this survey to your peers
and mail in the forms.

More information about the "X" Prize Foundation and it's goals can be
found at http://www.seds.org/xprize

Thank you. We look forward to launching the Space Tourism industry together.

X Prize Foundation Contact Information:

U.S. Mail:
X Prize Foundation
10721 Gloxinia Dr.
Rockville, MD 20852

Telephone: (301) 881-2001

Fax: (301) 468-5553

Email: Xprize@aol.com

World Wide Web: http://www.seds.org/xprize

2507. Info wanted: Ten Tec 2510

Newsgroup: rec.radio.amateur.space
Date: 1995-11-28 00:00:00 UTC
From: kharker@cs.utexas.edu
Message-ID: <kharker-2811951537110001@slip-58-4.ots.utexas.edu>
Source record: 23519
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.equipment

I was window shopping inside Austin Amateur Radio Supply this
afternoon, and I came across a really old (1985) radio review reprinted in
a small booklet about satellite operations that seemed to focus mainly on
Oscar-10. The review was for the Ten Tec 2510, which apparently coupled
a 10w 440MHz SSB/CW transmitter with a 2m<->10m ssb/cw transverter and
preamp.
While this wouldn't cover every satellite mode, and it most certainly
wouldn't handle 9600bps packet (I'm also interested in working pacsats
some day)
if one could be had cheaply, it might make for a good starting point for
me. I've already acquired a cheap HTX-100 10m ssb/cw rig I could use with
it.
Does anyone own one of these rigs or have any comments on them?
About how much would I expect to pay if I found someone selling one?
Anyone know of a source selling these?

Kenneth E. Harker kharker@cs.utexas.edu
University of Texas at Austin
Department of the Computer Sciences Amateur call: N1PVB
Taylor Hall TAY 2.124
Austin, TX 78712-1188 USA http://www.cs.utexas.edu/users/kharker/

2508. Self contained RTTY/Morse decoder, with 5" inch ? screen/sep kb

Newsgroup: rec.radio.amateur.space
Date: 1995-11-28 00:00:00 UTC
From: oddjob@cix.compulink.co.uk
Message-ID: <DIrv1p.DBx@cix.compulink.co.uk>
Source record: 23520

Self contained RTTY/Morse decoder, with 5" inch ? screen and detached keyboard.

supports baud 45.5/50/57/75/110/300 Shift 170/425/850

supports tx/rx of morse, rtty, ASCII, baudot with built-in circuits, connects to optional printer.

Runs off 12v supply.

200 ukp or nearest offer.

Stephen , g7VFY, Tel 0171-431-1204 or better still 0956-544202

ODDJOB@cix.compulink.co.uk

2509. ARLK066 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-11-28 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk066.1995@ampr.org>
Source record: 23521
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK066
ARLK066 Keplerian data

ZCZC SK91
QST de W1AW
Keplerian Bulletin 66 ARLK066
From ARRL Headquarters
Newington, CT November 28, 1995
To all radio amateurs

SB KEP ARL ARLK066
ARLK066 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95330.15297535 .00003272 00000-0 49157-4 0 03472
2 16609 51.6455 66.3982 0002903 4.7417 355.3603 15.58135460458203
HST
1 20580U 90037B 95330.02683225 .00000417 00000-0 26076-4 0 07683
2 20580 28.4692 90.8165 0005200 193.6241 166.4191 14.90977506108083
AO-10
1 14129U 83058B 95329.96720599 -.00000166 00000-0 10000-3 0 3909
2 14129 26.4196 236.7543 5978448 329.3785 6.5768 2.05882839 65669
RS-10/11
1 18129U 87054A 95330.05418519 .00000036 00000-0 22669-4 0 01404
2 18129 82.9226 299.4142 0012520 9.5751 350.5638 13.72359434422177
UO-11
1 14781U 84021B 95329.98501429 .00000136 00000-0 30869-4 0 08520
2 14781 97.7871 324.9825 0012557 28.9208 331.2701 14.69402322627661
RS-12/13
1 21089U 91007A 95330.07848894 .00000049 00000-0 35848-4 0 08708
2 21089 82.9222 340.7170 0030996 80.8726 279.5932 13.74062836241001
AO-13
1 19216U 88051B 95330.61143659 -.00000157 00000-0 18516-3 0 1121
2 19216 57.4237 150.6267 7353064 24.6444 357.3872 2.09730182 25574
UO-14
1 20437U 90005B 95330.14494070 .00000011 00000-0 21242-4 0 01651
2 20437 98.5602 51.8473 0011905 80.3114 279.9412 14.29904319304899
```

```
RS-15
1 23439U 94085A 95330.10252644 -.00000039 00000-0 10000-3 0 01169
2 23439 64.8139 353.1273 0166498 234.5644 123.9634 11.27523844037779
AO-16
1 20439U 90005D 95330.18052402 .00000007 00000-0 19618-4 0 09552
2 20439 98.5727 53.7789 0012189 80.7181 279.5376 14.29959027304917
DO-17
1 20440U 90005E 95330.15300749 -.00000005 00000-0 14738-4 0 09536
2 20440 98.5744 54.2871 0012335 80.0276 280.2298 14.30100536304936
WO-18
1 20441U 90005F 95330.13856926 -.00000015 00000-0 11031-4 0 09475
2 20441 98.5741 54.2309 0012862 80.5515 279.7114 14.30070866304938
LO-19
1 20442U 90005G 95330.14965212 .00000008 00000-0 19889-4 0 09623
2 20442 98.5756 54.6576 0013251 80.7686 279.4990 14.30176095204950
FO-20
1 20480U 90013C 95330.11113885 -.00000039 00000-0 -89241-5 0 08380
2 20480 99.0612 28.5226 0540032 226.7598 128.7225 12.83231755271713
AO-21
1 21087U 91006A 95329.90224039 .00000094 00000-0 82657-4 0 06544
2 21087 82.9372 112.9033 0036792 56.5630 303.9035 13.74562023241948
UO-22
1 21575U 91050B 95330.10711931 .00000032 00000-0 25142-4 0 06640
2 21575 98.3793 37.2872 0007403 148.6720 211.4909 14.37001347228752
KO-23
1 22077U 92052B 95330.00132085 -.00000037 00000-0 10000-3 0 05479
2 22077 66.0781 256.9687 0002145 356.4682 3.6316 12.86292955154544
KO-25
1 22828U 93061F 95330.66561953 .00000019 00000-0 25169-4 0 4129
2 22828 98.6013 44.8541 0010846 87.5598 272.6830 14.28120720 81068
IO-26
1 22826U 93061D 95330.14615598 .00000003 00000-0 18997-4 0 04455
2 22826 98.6055 44.2982 0009661 104.0797 256.1458 14.27787585112889
AO-27
1 22825U 93061C 95330.13439785 -.00000021 00000-0 92456-5 0 04437
2 22825 98.6052 44.1603 0009103 102.8318 257.3880 14.27679421112870
PO-28
1 22829U 93061G 95330.18907456 -.00000007 00000-0 14663-4 0 04506
2 22829 98.6010 44.4284 0010778 90.0090 270.2329 14.28101342112911

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
December 2, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2510. Re: Mode K satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-11-28 00:00:00 UTC
From: mbv@ti.com
Message-ID: <49ftmp$lh2@superb.csc.ti.com>
Source record: 23522

In article <49d24j$1ar@usenet.ucs.indiana.edu>, djadams@silver.ucs.indiana.edu says...
>
>
>all mode K sats and how to use 'em (freqs, keps data
>sites, etc). Perhaps there is an all-telling faq?
>~~~~~~
Sorry about the previous response. My Newsreader is not working too good
at times. I lost the first response.

Try: http//www.amsat.org/amsat/AmsatHome.html
and: http://www.teleport.com/~n7ryw/asatpage.html

AMSAT membership gets you a lot of helpful information. I got free tracking
software and some "How To" handouts for a sign-up bonus. The dues help pay
for satellite constructuion and launches too.

Ken K5MBV

>
>

2511. Re: Mode K satelites

Newsgroup: rec.radio.amateur.space
Date: 1995-11-28 00:00:00 UTC
From: mbv@ti.com
Message-ID: <49ftab$lh2@superb.csc.ti.com>
Source record: 23523

In article <49d24j$1ar@usenet.ucs.indiana.edu>, djadams@silver.ucs.indiana.edu says...
>
>
~~~~~~~~~~~~~~~~~~`
testing response
~~~~~~~~~~~~~~~~~~

2512. Dec-2-95 Balloon Flight EOSS-25 planned

Newsgroup: rec.radio.amateur.space
Date: 1995-11-29 00:00:00 UTC
From: tcline@lvld.hp.com
Message-ID: <49galv$nse@hplvec.lvld.hp.com>
Source record: 23524

For more info: http://usa.net/~rickvg/eoss.htm

Edge of Space Sciences (EOSS) is a Denver, Colorado based non-profit organization that promotes science and education by exploring frontiers in amateur radio and high altitude balloons.

EOSS conducts four or five balloon projects each year, sending scientific payloads to approximately 100,000 feet. An on-board computer and command and telemetry system provide for control and real time data down link of experiment data in the payload package. In many cases, live video from the payload is available and views of the earth and the edge of space have been made. Educational institutions and other scientific oriented organizations are encouraged to participate in EOSS projects and programs.

FLIGHT PROFILE FOR EOSS 25

LAUNCH DATE: 2-Dec-1995
LAUNCH SITE: United States Air Force Academy

LAUNCH SITE COORDINATES:

* 39'00.56 N
* 104'52.90 W

LAUNCH TIME: 15:00 UTC
EXPECTED TRACK: Between 45 degrees and 145 degrees azimuth
FLIGHT EXPERIMENT: USAFA Satellite Experiment and RMRL crossband repeater
PROJECT INTEGRATOR: USAFA and EOSS

FREQUENCIES:

* Telemetry:
o 144.340 MHz FM (1 Watt output) - The Packet telemetry stream is in ax.25 format at 1200 baud and is readable in plain english for the most part. Included in each telemetry frame is an APRS position string (APRS users see note below). Every few minutes a CW ID is transmitted on this frequency.
o AFA Telemetry Stream will be on 146.455. This will be in ax.25 format at 1200 baud. However, the data that appears on screen may not be intelligible as it is formatted for AFA groundstation computers.
* VHF/UHF Crossband Repeater
o Input 446.000 MHz
o Output 147.555 MHz

* ATV:
o EOSS Shuttle Video - 426.250 MHz AM (1 Watt output) - NTSC video
o AFA Video - 439.250 MHz AM (1 Watt output) - NTSC video
* Foxhunters:
o No repeater set yet - Airborne repeater will serve as emergency backup.
* HF Net:
o 7.235 MHz no net control set as of this writing

PURPOSE OF THE FLIGHT:

The United States Air Force Academy will be testing a prototype attitude sensing system using multiple GPS receivers. EOSS will be assisting with video, backup telemetry and backup GPS. EOSS will provide recovery services.

notes:

Automatic Position Reporting System (APRS):

* EOSS Shuttle controllers now beacon on the packet telemetry frequency with an APRS position string. If you are running APRS you should be able to graphically track the progress of the flight on the "CODENVER.MAP" map file. The Shuttle is not a TNC equipped packet station. It only reads data from various sensors and experiments and formats and transmits that data in AX.25. Therefore, beacons from other APRS stations will NOT be retransmitted (digi). So, inorder to minimize possible interference with hams in your area, we request you turn off the position beacons in APRS. Thanks!

ATV:

* The Amateur Video Signals from the payload may be picked up by a cable ready TV set on channel 58. However, you need to be very close to the balloon, and have a directional antenna to do this as cable receivers do not have much sensitivity (why should they?). If you don't have a cable ready set, try tuning DOWN from UHF channel 14. Some sets can receive the signal there too.

Who Can Hear It:

* Almost all our transmitters are on VHF or above frequencies. Therefore, you need to be line of site to the payload to hear/see it. Since the payload rises to an altitude of over 90,000 feet on most missions, reception is usually possible for folks in most of Kansas, most of Nebraska, most of Wyoming, extreme south eastern Idaho, eastern Utah, north eastern Arizona, most of New Mexico, northern Texas, and western Oklahoma. DO NOT BE DISCOURAGED by the apparent low power of our signals. I usually monitor the Beacon with an HT from the ground station throughout the flight. The signal is strong even at 130 miles and I only lose it when the balloon descends below my horizon.

last edit 20-Nov-95
maintained by Rick von Glahn, <rickvg@usa.net>

Ted Cline, N0RQV
tcline@lvld.hp.com Home: 4702 SW 14 St
N0RQV@N0MPI.#NECO.CO.USA Loveland, CO 80537-9115 USA
Day: 970-679-2352 970-593-9303

2513. Re: Shuttle transmission frequency list

Newsgroup: rec.radio.amateur.space
Date: 1995-11-29 00:00:00 UTC
From: gsteve490@aol.com
Message-ID: <49ibjg$hr9@newsbf02.news.aol.com>
Source record: 23525

steer your web browser toward http://www.osf.hq.nasa.gov/shuttle

click on how to get a launch pass. Prego.

n2lzh@amsat.org

2514. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-11-30 00:00:00 UTC
From: Julian Bordas <JBordas@VCAGMKT1.telecom.com.au>
Message-ID: <49iva8$981@cdn_news.telecom.com.au>
Source record: 23526
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

How do you use a kill file with Netscape?

Ta

Julian

--
Australia the land down under that's so good,
even Skylab dropped in.

2515. (no subject)

Newsgroup: rec.radio.amateur.space
Date: 1995-11-30 00:00:00 UTC
From: "K. Hatch" <khatch@primenet.com>
Message-ID: <49jm2d$58n@nnrp2.news.primenet.com>
Source record: 23527

Does anyone know the latest phone number for the Celestial BBS run by Dr. TS Kelso. The latest number I have is 205.409.9280 which doesn't seem to work anymore. I used to use his BBS to download NASA two-line orbital elements sets. Any suggestions where else on the net they might be found?

Thanks in advance.

K. Hatch

2516. Substitute Astronaut Starts Training In Russia

Newsgroup: rec.radio.amateur.space
Date: 1995-11-30 00:00:00 UTC
From: wecare@teleport.com
Message-ID: <49l964$6ds@maureen.teleport.com>
Source record: 23528

From my local paper, reprinted here without permission.

MOSCOW - A NASA astronaut began training Monday for a mission aboard Russia's MIR Space Station, replacing another American who lost the job because he was too tall.

Michael Foale, 38, will have to cram the 18 month course into a year, the ITAR Tass news agency said. Russian space officials last month removed his predecessor, Scott Parazynski.

The 6-foot-2 Parazynski was 2 inches too tall to meet the height requirement for the tiny Soyuz capsules that ferry cosmanauts to the MIR. Although he was supposed to arrive at the MIR and return to Earth on an American space shuttle, in an emergency he would have to leave on a Soyuz.

NASA officials said they knew of the height requirement but hoped that a Soyuz could be modified for Parazynski, an option the Russians said was impossible.

- end -

73's all

John KB7VZL

2517. PACKARD BELL >>WILL<< SCREW YOU!!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-01 00:00:00 UTC
From: Bruce Herder <bherder@netport.com>
Message-ID: <49mqnu$eca@netport.com>
Source record: 23529
Cross-posted to: rec.radio.amateur.antennna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb

> BE FORWARNED!!! BEFORE YOU BUY A PACKARD BELL
> COMPUTER, KNOW THAT THEY WILL TAKE YOUR MONEY, BUT IF
> ANYTHING GOES >>WRONG<< WITH IT, YOU >>WILL<< BE
> IGNORED!!!!
> I bought a Packard Bell computer in Dec.94'. Every-
> ting was fine until a few months ago when the hard-drive
> started to go south. It was a Seagate 720 mb (which I
> later found out that PB had a whole bunch of them with
> problems) that started to lose sectors. 13 mb's worth
> and growing.
> I took the hard-drive into the local "Packard Bell
> factory authorized service center" to have it
> warrenty repaired/replaced. I had even bought the 3-year
> extended warrenty at time of purchase.
> It has now been >>12 WEEKS<< and I have heard
> NOTHING. I stopped by the "service center" to find out what
> was going on, and THE GOD-DAMN HARD-DRIVE WAS STILL
> SITTING ON THEIR SHELF, WAITING FOR A "RETURN AUTHORIZATION
> NUMBER".....>>>>12 WEEKS!!!!!!<<<< FOR A FREEKING
> >>>NUMBER!!!!!<<<< And then who knows how long the idiots
> at PB would have it before they "did" anything about it???
> I have tried for 12 solid days to get ahold of someone
> on one of their "800" numbers. Yeah right......
> I have also sent E-mail with NO response of course.
> PACKARD BELL DOSN'T GIVE A SHIT ABOUT THEIR CUSTOMERS!!
> THEY ARE MORE THAN HAPPY TO TAKE YOUR MONEY, BUT IF YOU HAVE
> A PROBLEM, IT'S "SCREW-YOU PAL..."
> If you are in the market for a new computer...make
> damn sure they are going to back it up! Packard Bell WON'T!!
>
> Bruce Herder
> bherder@netport.com
> Palmdale, Ca.
>

2518. Re: PACKARD BELL >>WILL<< SCREW YOU!!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-01 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-0112951126580001@ppp39.dowco.com>
Source record: 23530
Cross-posted to: rec.radio.amateur.antennna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb

In article <49mqnu$eca@netport.com>, Bruce Herder <bherder@netport.com> wrote:

-> > BE FORWARNED!!! BEFORE YOU BUY A PACKARD BELL
-> > COMPUTER, KNOW THAT THEY WILL TAKE YOUR MONEY, BUT IF
-> > ANYTHING GOES >>WRONG<< WITH IT, YOU >>WILL<< BE
-> > IGNORED!!!!
-> > I bought a Packard Bell computer in Dec.94'. Every-
-> > ting was fine until a few months ago when the hard-drive
-> > started to go south. It was a Seagate 720 mb (which I
-> > later found out that PB had a whole bunch of them with
-> > problems) that started to lose sectors. 13 mb's worth
-> > and growing.
-> > I took the hard-drive into the local "Packard Bell
-> > factory authorized service center" to have it
-> > warrenty repaired/replaced. I had even bought the 3-year
-> > extended warrenty at time of purchase.
-> > It has now been >>12 WEEKS<< and I have heard
-> > NOTHING. I stopped by the "service center" to find out what
-> > was going on, and THE GOD-DAMN HARD-DRIVE WAS STILL
-> > SITTING ON THEIR SHELF, WAITING FOR A "RETURN AUTHORIZATION
-> > NUMBER".....>>>>12 WEEKS!!!!!!<<<< FOR A FREEKING
-> > >>>NUMBER!!!!!<<<< And then who knows how long the idiots
-> > at PB would have it before they "did" anything about it???
-> > I have tried for 12 solid days to get ahold of someone
-> > on one of their "800" numbers. Yeah right......
-> > I have also sent E-mail with NO response of course.
-> > PACKARD BELL DOSN'T GIVE A SHIT ABOUT THEIR CUSTOMERS!!
-> > THEY ARE MORE THAN HAPPY TO TAKE YOUR MONEY, BUT IF YOU HAVE
-> > A PROBLEM, IT'S "SCREW-YOU PAL..."
-> > If you are in the market for a new computer...make
-> > damn sure they are going to back it up! Packard Bell WON'T!!

If you really want to get their attention post this message to some of the comp.sys hierarchy. In the great scheme of things there just are not that many hams!

good luck

--
Scott Leaf VE7ZVZ CN89os
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"
Coquitlam Radio Club VE7SCC - "The Satellite Seniors"

2519. Colorado Balloon Launch Delay to December 9

Newsgroup: rec.radio.amateur.space
Date: 1995-12-01 00:00:00 UTC
From: au156@yfn.ysu.edu
Message-ID: <49mbgr$800@news.ysu.edu>
Source record: 23531

There has been a one week launch delay because of a technical glitch
involving the complex payload.

The date has been changed from Dec. 2 to 9, with a scrub date
of Dec. 10.

One more complete bulletin will be issued next week noting a
minor frequency change on one telemetry channel.

EOSS-25: CENTRAL COLORADO REPEATER/ATV BALLOON LAUNCH

Region: Central Colorado

Date/Time: December 9 / 8:00 AM MST, 15:00 UTC
Scrub Date: December 10

Location: Colorado Springs, US AIr Force Academy

HF Net: 7.235 Mhz SSB

For additional launch data and general Edge of Space Sciences (EOSS)
information:

http://www.usa.net/~rickvg/eoss.htm
maintained by Rick von Glahn
rickvg@usa.net

---
posted by Hank Riley, N1LTV

Please email news of upcoming balloon launches and post-flight
reports for distribution on the Net.

h1riley@umassd.edu
au156@yfn.ysu.edu

2520. Re: Dove-17 Status?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-01 00:00:00 UTC
From: graham@mceurope.demon.co.uk
Message-ID: <817825414.14780@mceurope.demon.co.uk>
Source record: 23532

wday@dfw.net (Wayne Day) wrote:

>Is Dove-17 still on the air (AX.25 1200 baud packet on 145.825)? I've just
>started looking at the channel, again, and haven't received a single
>packet from the satellite in two days of listening.

>73 Wayne KF5ZC

> --
> Wayne Day KF5ZC Fort Worth,Texas,USA |
> CompuServe: 76703,376 Internet: 76703.376@CompuServe.Com | ,__o
> or Internet: wday@dfw.net |--_<,
> Member: Bicycle Mobile Hams of America (*)/'(*)
> For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net
> --

I have also listened for Dove during the last two days - 145.825
appears to be very quiet !

73 Graham G8DMR
Engineering Support Manager
Music Choice Europe

2521. Are you interested in Space Exploration?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-01 00:00:00 UTC
From: jdl5945@tam2000.tamu.edu
Message-ID: <49lvmg$hf9@news.tamu.edu>
Source record: 23533

```
************************************************************
* ATTENTION: Are you truly intrested in the exploration *
* of space? Do you find yourself wondering *
* how to get off of this planet in a logical *
* and realistic manner? Then this message is *
* for you! *
************************************************************

On Tuesday, December 5th, 1995, at 5:30 pm CST (11:30 pm GMT), Space Now will
hold an organisational IRC session on channel #spacenow. A brief description
of Space Now follows. See you in IRCspace!

- Space Now -

Q: What the heck is Space Now?

A: We are a small group of students at Texas A&M University
deeply interested in the exploration of space. We have a life goal
to explore space, by whatever means neccessary. So, we're looking
for other people who are just as devoted to space exploration.
What we're initially interested in doing is setting up a planning
group to talk about the many problems that must be overcome to
explore space, on any scale. We eventually plan to start a
private corportion to actually explore space.

Q: How can *I* get involved, then?

A: At the moment, we're especially looking for interested
people in the Bryan/College Station area, to facilitate regular
meetings. However, this by no means precludes your participation
if you are not from this area. All are invited and welcomed at
our upcoming IRC session; it is during this that we plan to
consolidate our core group. In addition, keep watching this news
group for notices as further developments occur. We plan big
things.

Q: What can I do *now*?

A: For starters, spread the word! Feel free to distribute
this article among people who may be interested (in unedited form
only, please). Drop in on our IRC session; besides developing
a network among interested people, we'd very much like to find
people in the Bryan/College Station area and anyone with the time
and resources to help establish and administrate a quality web page.
Any other ways in which you can generate exitement can only help
our cause.
Also, keep an open mind! Explore *any* promising ideas
```

related to space travel, so that when our first big conference occurs (tentatively in the first half of 1996) you can contribute to a meaningful dialogue. We plan to acheive our goals by whatever means neccessary, and this is your opportunity to get in on the ground floor.

Q: Who do I contact?

Presently, we are limiting our contact availiability in order to avoid growing too fast and tripping up on our own feet. More specific data shall follow as our group grows, but the best means of contact at the moment is via our upcoming IRC session. Further bulletins will be posted to this newsgroup as they become availiable.

Thanks for reading this far! Once again, please meet with us on channel #spacenow in IRCspace at 5:30 pm CST on December fifth. See you then!

2522. SPARTAN PACKET RADIO EXPERIMENT (SPRE) in January!!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-01 00:00:00 UTC
From: tedwards@Glue.umd.edu
Message-ID: <49nlf2$375@volt.isr.umd.edu>
Source record: 23534
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.misc,sci.space.shuttle

SPARTAN PACKET RADIO EXPERIMENT (SPRE)

General Information (long)

By: Ken McCaughey (N3FZX)
File: spre02pr.txt
Date: 29-Nov-95

The Spartan Packet Radio Experiment (SPRE) is an Amateur Radio (HAM radio) communications experiment. The primary mission is to test satellite tracking using amateur packet radio and a Global Positioning System (GPS). SPRE was developed and built by the University of Maryland Amateur Radio Association (UMARA) with assistance from NASA, volunteer engineers, and volunteer software professionals.

SPRE is one of four experiments on NASA's Spartan/OAST-Flyer spacecraft. The Spartan spacecraft is scheduled for launch on January 11, 1996 aboard the space shuttle Endeavour as part of mission STS-72. The spacecraft is a cube shaped, battery powered, retrievable satellite. Spartan will be deployed by the shuttle's robot arm and likewise retrieved after approximately 48 hours of free flight.

Mission Objectives:

* Promote amateur radio and amateur satellite communications.
* Test GPS and packet radio based tracking system using a Low Earth Orbit (LEO) satellite.
* Provide an educational tool to inspire elementary and high school students to pursue science and engineering.
* Provide a unique hands-on educational opportunity for college students.

SPRE is designed to relay ground station positions and transmit telemetry containing the GPS location of the spacecraft and housekeeping data. The GPS data is generated by another Spartan experiment.

Special software called APRtrak (tm) will be used at SPRE ground stations to plot the positions of stations and objects world-wide using SPRE transmissions. APRtrak uses full color maps and graphics with the capability to display detail maps of selected geographic regions. Amateur radio ground stations can transmit their locations to SPRE, and if heard, SPRE will relay GPS information back to Earth. All ground stations within range of SPRE will see the relayed stations plotted at the on the map at the correct geographic location. The APRtrak software will also decode and display SPRE housekeeping telemetry including temperatures, voltages, and system status. This software is freely available on the Internet for

installation on IBM compatible computers.

This technology has many applications in the amateur radio as well as the commercial worlds. Low cost Low Earth Orbit (LEO) satellites could be used to track storms, weather balloons, boats at sea, trucks, etc. Satellites could collect the location data from ground targets and download it to ground control stations. If the SPRE mission is successful, this capability may be incorporated into future amateur spacecraft, thus supporting the amateur's effort for technological improvement.

The operational aspects of SPRE will include amateur radio operators throughout the world. Elementary and High Schools are encouraged to enlist the aid of local amateur radio operators to set up ground stations and participate in the SPRE experiment. SPRE can be used as an educational tool in many classes including math, science, and geography.

SPRE can still be used as an educational tool even if a school is not in session during a fly-over. A simple amateur packet radio station can be configured to listen to the SPRE telemetry and record the data for later study.

Amateurs and schools who participate are encouraged to send the data they collect to the SPRE Project to help to piece together a composite picture of the mission. The final results will be made available to participating schools and the amateur radio community.

SPRE will use a ground control network, SPREnet, consisting of specially equipped amateur radio stations to distribute data via the Internet. These control stations will monitor the health and activity of SPRE.

In addition to the amateur radio experiment, the SPRE system will forward to Earth a sampling of real-time telemetry for two of OAST Flyer's experiments: REFLEX and GADACS. Spartan is equipped with on-board recorders to capture data from each of the experiments. Traditionally, an experimenter must wait several weeks to receive the mission data. SPRE provides a low cost, innovative solution giving experimenters the opportunity view a small sample of data during the mission while advancing amateur radio satellite technology.

The sample REFLEX data from the mass spectrometer will be used by the experimenters to provide feedback on how well their experiment is performing. SPRE will be providing GPS location and time information from the GADACS experiment. This information will provide some insight on the health of the GADACS GPS receivers as well as indicate the current location of the Spartan satellite. Using the APRtrak software described above, amateur radio stations and schools will be able to observe the track of the satellite as it passes overhead.

Data is transmitted on a downlink frequency of 145.55 MHz. The is the same frequency used by the MIR space station and the Shuttle Amateur Radio EXperiment (SAREX). The data format is completely printable ASCII characters and therefore is fully compatible with all amateur packet radio

equipment in common use today.

All of the hardware and software has been designed and constructed by students and volunteers. This low cost project has provided a great hands-on opportunity to gain experience in space communications. So far, several students have earned college credit for their work on SPRE. It has also helped some graduating students secure employment in the aerospace industry.

Information Summary

Mission: STS-72, Space Shuttle Endeavour (OV-105)

Launch: January 11, 1996 at 09:18 UTC (60 minute launch window)
Orbit: 28.45 Degrees

SPRE Deployment: 3 days 2 hours mission elapsed time
SPRE mission: Approximately 46 hours

Operating Mode: FM, AFSK 1200 baud packet radio
Frequencies: 145.550 MHz Simplex

Landing: January 20, 1996 at 04:54 UTC at KSC

WWW Home Page: http://w3eax.umd.edu
Anon. FTP site: w3eax.umd.edu /pub/spre directory

Ground Stations:

* Any amateur radio station or school with packet radio capability
* ARPtrak Software (available on the Internet)
- Runs on an IBM compatible PC
- Displays SPRE telemetry
- Unattended data collection capability
- Can replay satellite passes
* Simple packet radio station setup
- Licensed Amateur Radio Operator
- Terminal Node Controller (TNC)
- VHF Radio (amplifier recommended if transmitting to SPRE)
- VHF Antenna (beam recommended if transmitting to SPRE)
- PC Compatible Computer
- APRtrak Software Package4
- Satellite Tracking Software (Recommended)

To Participate:

Schools wishing to participate should contact the SPRE Project for more information and the APRtrak software. Send electronic mail (e-mail) to Ken McCaughey at kenneth@w3eax.umd.edu. Or send a self addressed stamped envelop and a 3.5 inch high density floppy disk to:

Attn: SPRE Project
Century Computing Inc.

8101 Sandy Spring Road
Laurel, MD 20707

For information on local amateur radio clubs, operators, and volunteer instructors please contact Peter Budnik from the Amateur Radio Relay League (ARRL). Send mail or e-mail to:

Peter Budnik
ARRL
225 Main Street
Newington, CT 06111

e-mail: pbudnik@arrl.org

2523. NORAD Two-Line Orbital Element Sets (TLE715)

Newsgroup: rec.radio.amateur.space
Date: 1995-12-01 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.817859229@dolphin>
Source record: 23535

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #715 -
Alouette 1
1 00424U 62049A 95331.90328313 .00000376 00000-0 43294-3 0 1556
2 00424 80.4494 123.3442 0021375 193.8626 166.1904 13.67857873654684
ATS 1
1 02608U 66110A 95331.64723805 .00000020 00000-0 10000-3 0 9475
2 02608 14.6386 354.9668 0007539 70.6286 289.4414 1.00393173 22834
ATS 3
1 03029U 67111A 95332.54566516 -.00000123 00000-0 10000-3 0 4233
2 03029 14.8970 1.9507 0009736 264.5556 251.4621 1.00272951102747
Cosmos 398
1 04966U 71016A 95334.88501580 .01003038 11506-4 20702-3 0 1403
2 04966 51.3725 131.0942 0160145 348.7289 11.0148 16.04903716850812
Starlette
1 07646U 75010A 95332.90096183 -.00000142 00000-0 -11436-5 0 9319
2 07646 49.8296 223.0186 0205650 285.5935 72.2329 13.82189719 51123
LAGEOS
1 08820U 76039A 95332.85412777 .00000029 00000-0 10000-3 0 1533
2 08820 109.8506 317.0325 0044435 172.1406 187.9872 6.38664326200975
ETS-2
1 09852U 77014A 95326.32466543 .00000107 00000-0 10000-3 0 499
2 09852 12.9642 35.3161 0004640 109.6347 250.3684 1.00005805 15567
GOES 2
1 10061U 77048A 95334.59451688 .00000056 00000-0 00000+0 0 6081
2 10061 12.0670 39.4169 0013308 132.7396 295.7172 1.00280024 12445
IUE
1 10637U 78012A 95335.26550870 -.00000216 00000-0 10000-3 0 1988
2 10637 35.4666 86.3233 1342530 51.5395 354.4709 1.00284568 17947
GPS BI-01
1 10684U 78020A 95330.32534109 -.00000050 00000-0 10000-3 0 4066
2 10684 64.9031 29.9144 0060545 163.6331 196.6221 1.98069433115373
```

```
GPS BI-02
1 10893U 78047A 95331.95060582 -.00000028 00000-0 10000-3 0 1990
2 10893 63.2671 267.4680 0225573 14.2856 346.3641 2.01627411128733
GOES 3
1 10953U 78062A 95334.27242712 -.00000032 00000-0 10000-3 0 5730
2 10953 11.0521 42.2211 0007149 149.2543 215.0490 1.00380460 17057
SeaSat 1
1 10967U 78064A 95332.43050522 -.00000025 00000-0 36355-4 0 4462
2 10967 107.9974 117.3053 0002040 236.0980 123.9968 14.38071778912440
GPS BI-03
1 11054U 78093A 95333.98040334 -.00000056 00000-0 10000-3 0 3666
2 11054 62.9522 266.0593 0045309 180.7592 179.2341 1.93505243124784
Nimbus 7
1 11080U 78098A 95334.63237340 -.00000049 00000-0 -63338-5 0 5476
2 11080 98.9730 201.2578 0009218 139.9496 220.2315 13.83700373863573
GPS BI-04
1 11141U 78112A 95332.14881047 -.00000068 00000-0 10000-3 0 161
2 11141 64.9112 31.9527 0049322 27.9657 332.3706 1.92894820 13984
GPS BI-05
1 11690U 80011A 95332.42357244 -.00000067 00000-0 10000-3 0 9572
2 11690 65.2617 31.3874 0151301 192.7320 166.9872 2.00568993130158
GPS BI-06
1 11783U 80032A 95328.90409064 -.00000004 00000-0 10000-3 0 1139
2 11783 62.3908 260.5498 0221954 29.4021 331.8396 2.03456654114650
GOES 5
1 12472U 81049A 95334.18475814 -.00000227 00000-0 10000-3 0 8951
2 12472 7.8277 52.2778 0005914 52.1685 307.7659 1.00218582 11091
Cosmos 1383
1 13301U 82066A 95333.85909412 .00000007 00000-0 -92703-5 0 4530
2 13301 82.9285 280.6663 0029221 71.8848 288.5479 13.68069904669984
LandSat 4
1 13367U 82072A 95334.14011495 .00000673 00000-0 15906-3 0 8054
2 13367 98.1007 25.8029 0008039 45.7240 314.4615 14.57169920711383
DMSP B5D2-1
1 13736U 82118A 95335.06357118 .00000007 00000-0 21377-4 0 9010
2 13736 98.6223 161.6305 0007749 250.1279 109.9065 14.25764776572695
IRAS
1 13777U 83004A 95335.07316167 -.00000173 00000-0 -89321-4 0 1550
2 13777 98.9667 159.8086 0012025 284.5345 75.4485 13.99235318325524
Cosmos 1447
1 13916U 83021A 95332.48110760 .00000026 00000-0 11543-4 0 5490
2 13916 82.9444 340.2323 0038391 356.8156 3.2753 13.74331766636037
TDRS 1
1 13969U 83026B 95331.64728263 .00000084 00000-0 00000+0 0 5027
2 13969 8.6511 45.6585 0004515 184.6896 289.2640 1.00274633 19356
GOES 6
1 14050U 83041A 95332.20717084 -.00000223 00000-0 10000-3 0 4668
2 14050 6.6487 55.5772 0002637 31.6815 328.1905 1.00313997104170
OSCAR 10
1 14129U 83058B 95334.82392991 -.00000421 00000-0 10000-3 0 3916
```

```
2 14129 26.4097 235.9909 5978339 330.6728 6.2527 2.05883476 65766
LandSat 5
1 14780U 84021A 95335.20670502 .00017005 00000-0 37797-2 0 3905
2 14780 98.3577 27.6988 0003193 149.4818 210.1979 14.57050289624958
UoSat 2
1 14781U 84021B 95333.52600334 .00000139 00000-0 31355-4 0 8445
2 14781 97.7872 328.3594 0012323 18.4947 341.6706 14.69403619628186
GPS BI-09
1 15039U 84059A 95334.04635408 -.00000077 00000-0 10000-3 0 3777
2 15039 64.5768 26.2579 0082037 18.9920 341.3693 1.92302271 83586
Cosmos 1574
1 15055U 84062A 95332.19191519 .00000043 00000-0 29898-4 0 7506
2 15055 82.9579 34.9204 0026859 180.8996 179.2110 13.73629048573257
GPS BI-10
1 15271U 84097A 95332.07087584 -.00000031 00000-0 10000-3 0 816
2 15271 62.0852 260.9030 0158552 355.7876 4.0962 2.00606440 81213
Cosmos 1602
1 15331U 84105A 95334.43046395 .00000197 00000-0 20359-4 0 4354
2 15331 82.5316 300.1635 0018177 247.2887 112.6408 14.84696839603335
NOAA 9
1 15427U 84123A 95334.77228389 .00000075 00000-0 63295-4 0 4937
2 15427 98.9790 34.3233 0015177 154.7161 205.4753 14.13746257465457
GPS BI-11
1 16129U 85093A 95335.20876409 -.00000078 00000-0 10000-3 0 6903
2 16129 65.2470 29.6021 0155572 85.6432 276.1899 1.89368049 18153
Mir
1 16609U 86017A 95334.57834998 .00005030 00000-0 71908-4 0 3419
2 16609 51.6442 44.2047 0002777 24.2838 335.8286 15.58178293458895
SPOT 1
1 16613U 86019A 95334.95839785 .00000090 00000-0 62356-4 0 8757
2 16613 98.6354 42.4541 0001199 94.4635 265.6677 14.20078670192034
Cosmos 1766
1 16881U 86055A 95332.14017119 .00000225 00000-0 24274-4 0 3507
2 16881 82.5191 0.1100 0017668 286.6162 73.3110 14.83684868503888
EGP
1 16908U 86061A 95333.87079536 -.00000083 00000-0 10000-3 0 462
2 16908 50.0102 252.8600 0011320 222.9090 137.0861 12.44413269 91460
NOAA 10
1 16969U 86073A 95334.85517001 .00000022 00000-0 27688-4 0 4114
2 16969 98.5151 332.7486 0012186 214.4695 145.5696 14.24965755378219
MOS-1
1 17527U 87018A 95334.81952100 -.00000043 00000-0 00000+0 0 3537
2 17527 98.9688 35.8987 0019701 158.8727 201.3262 14.00393104447082
GOES 7
1 17561U 87022A 95334.33315885 .00000078 00000-0 10000-3 0 6568
2 17561 2.6633 71.0103 0000561 244.8273 97.5188 1.00272456 15298
Kvant-1
1 17845U 87030A 95335.15554773 .00009872 00000-0 13468-3 0 4520
2 17845 51.6444 41.3140 0003274 17.6700 342.3479 15.58186578493092
DMSP B5D2-3
```

```
1 18123U 87053A 95334.75093993 -.00000018 00000-0 13197-4 0 2322
2 18123 98.7741 163.2782 0015002 101.6637 258.6222 14.15424969336288
RS-10/11
1 18129U 87054A 95334.42867017 .00000008 00000-0 -74313-5 0 1415
2 18129 82.9228 296.1799 0012294 357.8853 2.2247 13.72359250422770
Meteor 2-16
1 18312U 87068A 95335.01346169 .00000039 00000-0 21406-4 0 4421
2 18312 82.5561 150.0628 0013964 61.0746 299.1812 13.84066908418621
Meteor 2-17
1 18820U 88005A 95334.68768113 .00000051 00000-0 32173-4 0 7897
2 18820 82.5426 205.7962 0017197 122.6628 237.6184 13.84747923395917
DMSP B5D2-4
1 18822U 88006A 95334.09694552 -.00000004 00000-0 16637-4 0 1272
2 18822 98.3919 170.5942 0005315 227.6447 132.4282 14.23173443406112
Glonass 34
1 19163U 88043A 95334.62158305 -.00000001 00000-0 10000-3 0 354
2 19163 65.1866 92.5694 0007664 155.2964 204.7532 2.13102423 57984
Glonass 36
1 19165U 88043C 95331.39338798 .00000028 00000-0 10000-3 0 4423
2 19165 65.1702 92.6380 0001035 293.6938 66.2856 2.13102176 58539
METEOSAT 3
1 19215U 88051A 95326.93750000 -.00000072 00000-0 10000-3 0 2211
2 19215 2.8170 68.2720 0004390 129.8040 124.6270 0.96952553 15162
AO-13
1 19216U 88051B 95333.94907252 -.00000076 00000-0 12582-3 0 1168
2 19216 57.4286 150.0054 7352866 25.0548 357.3560 2.09728659 25643
OKEAN 1
1 19274U 88056A 95331.42635161 .00000197 00000-0 21559-4 0 500
2 19274 82.5128 101.3804 0021876 71.3851 288.9734 14.82415658399339
Meteor 3-2
1 19336U 88064A 95331.24331969 .00000051 00000-0 10000-3 0 4407
2 19336 82.5374 310.0342 0018561 24.8441 335.3562 13.16975109352762
Glonass 39
1 19503U 88085C 95330.95324594 -.00000029 00000-0 10000-3 0 3347
2 19503 65.6504 331.5776 0006356 161.4266 198.6181 2.13101800 56016
NOAA 11
1 19531U 88089A 95334.77193369 .00000035 00000-0 43768-4 0 3030
2 19531 99.1953 342.6172 0012543 80.5332 279.7261 14.13073536270284
TDRS 2
1 19548U 88091B 95332.67741287 -.00000195 00000-0 10000-3 0 1618
2 19548 2.1064 73.2194 0009290 157.1405 165.7339 1.00265259 13504
Glonass 40
1 19749U 89001A 95334.27610862 .00000002 00000-0 10000-3 0 5503
2 19749 65.1386 92.1176 0004336 262.9000 97.0387 2.13101541 53596
Glonass 41
1 19750U 89001B 95329.63873749 .00000026 00000-0 10000-3 0 4587
2 19750 65.1514 92.3404 0008336 218.7129 141.2116 2.13101912 53518
GPS BII-01
1 19802U 89013A 95334.71536628 .00000048 00000-0 10000-3 0 1508
2 19802 55.2375 118.5598 0026145 173.7620 186.2704 2.00560244 49712
```

```
Akebono
1 19822U 89016A 95333.09221907 .00010736 00000-0 59703-3 0 6125
2 19822 75.1098 240.2000 3760365 257.5976 58.7806 7.88907258150805
Meteor 2-18
1 19851U 89018A 95333.79268783 .00000051 00000-0 32623-4 0 4400
2 19851 82.5189 80.8682 0013746 172.2928 187.8449 13.84400163341103
MOP-1
1 19876U 89020B 95334.73905468 -.00000085 00000-0 10000-3 0 1637
2 19876 1.5765 71.8312 0018767 275.6634 92.6305 0.97109242 4688
TDRS 3
1 19883U 89021B 95333.06696759 -.00000275 00000-0 10000-3 0 1418
2 19883 0.0801 67.1018 0003716 218.2750 125.1802 1.00266825197102
GPS BII-02
1 20061U 89044A 95331.06448987 -.00000045 00000-0 10000-3 0 1458
2 20061 54.3327 294.7755 0151477 217.3027 141.6239 2.00562919 47383
Nadezhda 1
1 20103U 89050A 95334.80708509 .00000047 00000-0 34036-4 0 5985
2 20103 82.9593 255.7005 0036094 249.0699 110.6588 13.73860415221304
GPS BII-03
1 20185U 89064A 95334.39188595 .00000051 00000-0 10000-3 0 1672
2 20185 55.0735 119.1342 0016605 327.7960 32.1112 2.00560978 46025
GMS 4
1 20217U 89070A 95329.69278451 -.00000369 00000-0 10000-3 0 2734
2 20217 1.3586 75.6241 0001006 317.7365 39.8790 1.00258193 23360
INTERCOSMOS 24
1 20261U 89080A 95332.27265683 .00000148 00000-0 36834-4 0 4577
2 20261 82.5946 39.6889 1242873 140.7602 229.0609 12.47304007280733
GPS BII-04
1 20302U 89085A 95333.93260377 -.00000041 00000-0 10000-3 0 1584
2 20302 53.3171 234.5855 0013992 148.2799 211.8566 2.00560873 44812
Meteor 3-3
1 20305U 89086A 95335.16308709 .00000044 00000-0 10000-3 0 4469
2 20305 82.5451 262.1653 0008688 69.1304 291.0683 13.04414351192259
COBE
1 20322U 89089A 95332.47921018 -.00000049 00000-0 -31783-5 0 1698
2 20322 98.9546 346.0220 0008206 239.1562 120.8806 14.03449962308630
Kvant-2
1 20335U 89093A 95335.15554773 .00009872 00000-0 13468-3 0 4462
2 20335 51.6444 41.3140 0003274 17.6700 342.3479 15.58186578342105
GPS BII-05
1 20361U 89097A 95330.45345258 -.00000036 00000-0 10000-3 0 9962
2 20361 55.8672 61.3436 0084885 129.0006 231.7788 2.00562833 34227
COSMOS 2054 (Altair-1)
1 20391U 89101A 95333.52275444 -.00000142 00000-0 10000-3 0 2524
2 20391 3.4577 64.7927 0002749 143.9192 31.1086 1.00265799 21987
SPOT 2
1 20436U 90005A 95335.23007916 .00000169 00000-0 10000-3 0 38
2 20436 98.7180 47.0556 0001574 91.3732 268.7566 14.20031279303600
UO-14
1 20437U 90005B 95334.27344694 .00000018 00000-0 23699-4 0 1436
```

```
2 20437 98.5603 55.9068 0012001 68.9087 291.3375 14.29904773305480
UO-15
1 20438U 90005C 95333.20100918 .00000012 00000-0 21780-4 0 9394
2 20438 98.5553 53.1226 0010978 76.3837 283.8570 14.29219651305216
PACSAT
1 20439U 90005D 95331.71990876 -.00000014 00000-0 11411-4 0 9415
2 20439 98.5725 55.2941 0012229 76.8287 283.4264 14.29958971305132
DO-17
1 20440U 90005E 95331.27244791 .00000035 00000-0 30537-4 0 9418
2 20440 98.5744 55.3899 0012429 77.2885 282.9683 14.30101054305097
WO-18
1 20441U 90005F 95333.77682714 .00000036 00000-0 30665-4 0 9465
2 20441 98.5737 57.8135 0012923 69.8599 290.3973 14.30071786305451
LO-19
1 20442U 90005G 95331.19907277 .00000021 00000-0 24814-4 0 9401
2 20442 98.5757 55.6921 0013253 77.7828 282.4838 14.30176314205109
GPS BII-06
1 20452U 90008A 95330.84974201 .00000051 00000-0 10000-3 0 1010
2 20452 54.0318 175.0457 0060063 84.7495 275.9983 2.00556282 42736
MOS-1B
1 20478U 90013A 95332.24361870 .00000090 00000-0 10000-3 0 8652
2 20478 99.1318 39.0763 0002157 43.6812 316.4495 13.94864619216407
DEBUT
1 20479U 90013B 95332.66458293 .00000024 00000-0 13026-3 0 9418
2 20479 99.0593 30.7659 0539768 220.5347 135.4356 12.83337644272054
FO-20
1 20480U 90013C 95333.69773208 -.00000001 00000-0 75094-4 0 8385
2 20480 99.0603 31.4363 0540165 218.6430 137.4828 12.83232508272174
MOS-1B R/B
1 20491U 90013D 95335.19100617 -.00000704 00000-0 -12649-2 0 1909
2 20491 99.0691 91.4221 0470549 40.3843 323.1238 13.02962487275943
LACE
1 20496U 90015A 95332.89124487 .00001739 00000-0 58177-4 0 6002
2 20496 43.1033 272.0041 0009530 195.8676 164.1881 15.35130685322881
Nadezhda 2
1 20508U 90017A 95334.66902958 -.00000000 00000-0 -16247-4 0 5971
2 20508 82.9543 30.3659 0044018 199.3064 160.6425 13.73501287188506
OKEAN 2
1 20510U 90018A 95333.65862245 .00000212 00000-0 25850-4 0 4597
2 20510 82.5235 52.1209 0016946 255.5132 104.4209 14.78551331310049
GPS BII-07
1 20533U 90025A 95333.24740776 -.00000059 00000-0 10000-3 0 1260
2 20533 54.6896 295.3642 0042547 107.2546 253.2068 2.00573476 41556
PegSat
1 20546U 90028A 95334.28566366 .00006786 00000-0 13133-3 0 8688
2 20546 94.1259 238.5856 0065732 58.1205 302.6442 15.45406374314110
HST
1 20580U 90037B 95333.03910789 .00000337 00000-0 18140-4 0 7410
2 20580 28.4696 71.4582 0005007 229.1085 130.9035 14.90978459108532
MACSAT 2
```

```
1 20608U 90043B 95332.56688252 .00000135 00000-0 20198-4 0 1429
2 20608 89.9296 175.1174 0108216 41.6240 319.3158 14.64880998296770
Glonass 44
1 20619U 90045A 95335.11371835 -.00000032 00000-0 10000-3 0 2476
2 20619 65.2462 330.7720 0025612 206.7726 153.1262 2.13102501 43061
Glonass 45
1 20620U 90045B 95330.07055409 -.00000030 00000-0 10000-3 0 2483
2 20620 65.2467 330.9281 0007146 46.4229 313.6586 2.13102527 42992
Glonass 46
1 20621U 90045C 95328.26053628 -.00000025 00000-0 10000-3 0 8393
2 20621 65.2722 331.0571 0011157 197.2384 162.7468 2.13101860 42952
Kristall
1 20635U 90048A 95335.15554773 .00009872 00000-0 13468-3 0 2386
2 20635 51.6444 41.3140 0003274 17.6700 342.3479 15.58186578312936
ROSAT
1 20638U 90049A 95333.53661715 .00000139 00000-0 27911-4 0 5126
2 20638 52.9900 122.5976 0011091 230.8061 129.1937 15.07308164302057
Meteor 2-19
1 20670U 90057A 95334.53544933 .00000042 00000-0 23980-4 0 9404
2 20670 82.5444 146.4465 0017317 93.1335 267.1801 13.84150578274120
CRRES
1 20712U 90065A 95330.90343434 .00000038 00000-0 18800-3 0 1894
2 20712 18.1272 333.2989 7189769 225.6482 46.6285 2.35644007 38326
GPS BII-08
1 20724U 90068A 95335.06695404 .00000039 00000-0 10000-3 0 9724
2 20724 54.8833 116.6623 0123441 177.0504 183.0098 2.00565276 37453
Feng Yun1-2
1 20788U 90081A 95334.53911451 .00000038 00000-0 53662-4 0 6675
2 20788 98.8088 341.8987 0014400 339.8894 20.1699 14.01351233268131
Meteor 2-20
1 20826U 90086A 95334.32446835 .00000015 00000-0 26094-6 0 9511
2 20826 82.5240 83.3708 0013878 5.9546 354.1831 13.83618576261200
GPS BII-09
1 20830U 90088A 95334.61868437 -.00000076 00000-0 10000-3 0 9803
2 20830 55.8183 59.1539 0067511 100.6976 260.0693 2.00558376 38087
GPS BIIA-10
1 20959U 90103A 95329.53666348 .00000045 00000-0 10000-3 0 9417
2 20959 55.0751 118.9012 0103300 231.0791 127.9918 2.00568518 36575
DMSP B5D2-5
1 20978U 90105A 95334.77070261 .00000140 00000-0 65306-4 0 4304
2 20978 98.6240 42.2916 0080070 39.1030 321.5899 14.32603501161169
Glonass 47
1 21006U 90110A 95332.50857588 .00000020 00000-0 10000-3 0 8139
2 21006 65.1189 91.5176 0058393 187.2254 172.6831 2.13102682 38719
Glonass 48
1 21007U 90110B 95329.41343587 .00000025 00000-0 10000-3 0 9388
2 21007 65.1244 91.7008 0035515 180.3585 179.6268 2.13101083 38636
Glonass 49
1 21008U 90110C 95333.52925886 .00000010 00000-0 00000+0 0 1565
2 21008 65.1076 91.5043 0008826 263.6786 96.2115 2.13098819 38716
```

```
AO-21
1 21087U 91006A 95332.88668515 .00000094 00000-0 82657-4 0 6546
2 21087 82.9368 110.6934 0036569 47.8595 312.5658 13.74562165242353
RS-12/13
1 21089U 91007A 95334.08346749 .00000040 00000-0 26178-4 0 8487
2 21089 82.9216 337.7450 0031094 70.4885 289.9622 13.74062950241550
MOP-2
1 21140U 91015B 95329.64603545 -.00000007 00000-0 10000-3 0 1214
2 21140 0.1357 43.4074 0001940 212.4272 41.0354 1.00279989 19554
Nadezhda 3
1 21152U 91019A 95334.85464533 .00000035 00000-0 21156-4 0 2881
2 21152 82.9219 293.4222 0041656 175.1225 185.0345 13.73526241136384
Glonass 50
1 21216U 91025A 95332.05824330 -.00000030 00000-0 10000-3 0 4607
2 21216 65.0005 330.4911 0006149 193.4259 166.5788 2.13102788 36219
Glonass 51
1 21217U 91025B 95333.53559197 -.00000029 00000-0 10000-3 0 8655
2 21217 64.9872 330.4329 0011606 222.5730 137.3567 2.13101764 36231
Glonass 52
1 21218U 91025C 95331.30055147 -.00000030 00000-0 10000-3 0 3416
2 21218 64.9862 330.4864 0013708 313.9444 45.9604 2.13102663 36197
GRO
1 21225U 91027B 95331.84223856 .00001831 00000-0 34035-4 0 3165
2 21225 28.4616 155.3050 0003078 86.5656 273.5294 15.43368410138632
Meteor 3-4
1 21232U 91030A 95331.52889829 .00000050 00000-0 10000-3 0 8500
2 21232 82.5406 156.0710 0012652 312.7347 47.2671 13.16470285220873
NOAA 12
1 21263U 91032A 95334.81342932 .00000098 00000-0 62843-4 0 7313
2 21263 98.5753 354.5032 0013330 130.7073 229.5280 14.22579274136119
OKEAN 3
1 21397U 91039A 95331.47714601 .00000188 00000-0 23721-4 0 1498
2 21397 82.5230 327.7447 0022481 342.4448 17.5987 14.76431003241456
GPS BIIA-11
1 21552U 91047A 95334.29736867 -.00000076 00000-0 10000-6 0 9157
2 21552 56.1102 56.9103 0067760 243.8901 115.4301 2.00554479 32263
ERS-1
1 21574U 91050A 95333.68974860 -.00000363 00000-0 -11846-3 0 2232
2 21574 98.5484 45.6277 0001474 89.3089 270.8264 14.32241937228741
UO-22
1 21575U 91050B 95335.19008077 .00000047 00000-0 30282-4 0 6483
2 21575 98.3789 42.2356 0007846 133.8370 226.3460 14.37002402229489
ORBCOMM-X
1 21576U 91050C 95334.71951515 .00000023 00000-0 22238-4 0 7437
2 21576 98.3757 39.9862 0003888 138.2165 221.9319 14.36412924229312
TUBSAT-A
1 21577U 91050D 95335.19226942 .00000006 00000-0 16689-4 0 6422
2 21577 98.3761 41.0059 0006572 136.2253 223.9454 14.36502028229417
SARA
1 21578U 91050E 95332.19928147 .00000267 00000-0 10031-3 0 8421
```

```
2 21578 98.4014 44.6112 0004945 137.9451 222.2114 14.39103239229283
TDRS 4
1 21639U 91054B 95331.00000000 .00000076 00000-0 00000+0 0 9690
2 21639 0.0139 300.6849 0002161 304.7970 5.6160 1.00271184109851
Meteor 3-5
1 21655U 91056A 95330.88739956 .00000051 00000-0 10000-3 0 8488
2 21655 82.5488 104.0522 0012917 323.9685 36.0567 13.16842300205918
UARS
1 21701U 91063B 95333.07678504 -.00000052 00000-0 16554-4 0 7216
2 21701 56.9855 195.9074 0005338 102.4431 257.7202 14.96459655230251
DMSP B5D2-6
1 21798U 91082A 95334.76394743 .00000038 00000-0 43419-4 0 812
2 21798 98.9569 346.8545 0013818 72.9743 287.2942 14.13931508106740
Glonass 53
1 21853U 92005A 95334.32789959 -.00000001 00000-0 10000-3 0 538
2 21853 65.0537 91.1335 0007370 184.9577 175.0088 2.13102300 29863
Glonass 54
1 21854U 92005B 95333.20870403 .00000013 00000-0 10000-3 0 2163
2 21854 65.0643 91.1649 0015055 20.6393 339.4260 2.13104134 29822
Glonass 55
1 21855U 92005C 95334.21254629 .00000001 00000-0 00000+0 0 2119
2 21855 65.0626 91.1452 0008357 198.4619 161.4975 2.13102069 29830
JERS-1
1 21867U 92007A 95333.22856758 .00000991 00000-0 87426-4 0 7200
2 21867 97.7052 48.1881 0001816 104.1550 255.9874 14.98645093107768
GPS BIIA-12
1 21890U 92009A 95333.75791502 -.00000040 00000-0 10000-3 0 7255
2 21890 53.8623 234.9072 0054764 184.7505 175.2439 2.00565420 27624
GPS BIIA-13
1 21930U 92019A 95331.47359105 -.00000073 00000-0 10000-3 0 7130
2 21930 55.7131 356.7234 0034952 179.1073 180.9370 2.00560902 26505
EUVE
1 21987U 92031A 95332.54258557 .00000876 00000-0 30688-4 0 5025
2 21987 28.4312 98.5305 0009394 7.0424 353.0243 15.19552268192973
SAMPEX
1 22012U 92038A 95333.02103380 .00000229 00000-0 17427-4 0 6770
2 22012 81.6694 331.6859 0119860 108.6541 252.7744 14.91516671185240
GPS BIIA-14
1 22014U 92039A 95332.01123397 .00000052 00000-0 00000+0 0 6117
2 22014 54.8272 176.6684 0088444 319.1834 40.2169 2.00563582 18354
Glonass 56
1 22056U 92047A 95334.58089054 -.00000032 00000-0 00000+0 0 1199
2 22056 64.8310 330.4814 0007235 272.4077 87.5334 2.13103177 25932
Glonass 57
1 22057U 92047B 95333.93810106 -.00000030 00000-0 00000+0 0 1084
2 22057 64.8394 330.5251 0008743 305.1606 54.7773 2.13102410 25895
Glonass 58
1 22058U 92047C 95333.40859443 -.00000030 00000-0 10000-3 0 639
2 22058 64.8359 330.5495 0010300 259.9192 99.9845 2.13103169 25933
TOPEX
```

```
1 22076U 92052A 95333.87764363 -.00000038 00000-0 10000-3 0 9246
2 22076 66.0422 268.7242 0007867 265.6476 94.3631 12.80931126154463
KO-23
1 22077U 92052B 95332.87809283 -.00000037 00000-0 10000-3 0 5387
2 22077 66.0781 250.9457 0002386 354.6154 5.4835 12.86293005154918
S80/T
1 22078U 92052C 95331.21473678 -.00000037 00000-0 10000-3 0 5357
2 22078 66.0811 253.1518 0004241 13.3262 346.7861 12.86577831154784
GPS BIIA-15
1 22108U 92058A 95333.96880159 -.00000042 00000-0 10000-3 0 6613
2 22108 54.0969 235.7058 0114443 154.7649 205.8591 2.00555105 23571
FREJA
1 22161U 92064A 95334.22531131 .00000057 00000-0 63693-4 0 5657
2 22161 62.9879 28.0480 0824021 1.0638 359.1909 13.21860924151999
LAGEOS II
1 22195U 92070B 95331.54420766 -.00000009 00000-0 10000-3 0 4496
2 22195 52.6383 119.7212 0137765 348.1159 11.6169 6.47294395 73150
GPS BIIA-16
1 22231U 92079A 95331.65934371 .00000049 00000-0 10000-3 0 6271
2 22231 54.6527 177.8180 0025144 287.3460 72.4354 2.00558842 22103
GPS BIIA-17
1 22275U 92089A 95333.80138156 .00000067 00000-0 10000-3 0 6603
2 22275 54.6313 175.2495 0023206 258.3424 101.4669 2.00571468 21559
TDRS 5
1 22314U 93003B 95334.62972426 -.00000286 00000-0 10000-3 0 5895
2 22314 2.2274 70.9233 0002576 215.7869 323.0663 1.00278117 10587
GPS BIIA-18
1 22446U 93007A 95334.86630237 -.00000073 00000-0 10000-3 0 6381
2 22446 54.3467 295.4732 0085417 355.6988 4.1793 2.00568645 20563
Glonass 59
1 22512U 93010A 95334.32953124 -.00000001 00000-0 10000-3 0 7521
2 22512 65.0636 90.9890 0009029 188.6082 171.3668 2.13102032 21434
Glonass 60
1 22513U 93010B 95332.39136607 .00000020 00000-0 00000+0 0 8397
2 22513 65.0647 91.0613 0008313 190.5014 169.4732 2.13102433 21585
Glonass 61
1 22514U 93010C 95332.68486456 .00000018 00000-0 00000+0 0 8331
2 22514 65.0910 91.0448 0011482 184.9092 175.0726 2.13102360 21595
ASTRO-D
1 22521U 93011A 95335.21233476 .00001382 00000-0 91534-4 0 4545
2 22521 31.1053 253.5107 0056276 353.9364 6.0592 15.02610580152513
UFO F1
1 22563U 93015A 95334.38643352 -.00000200 00000-0 00000+0 0 4733
2 22563 25.6869 291.7914 0009405 285.4461 101.8176 0.99250175 14116
GPS BIIA-19
1 22581U 93017A 95332.01784055 -.00000075 00000-0 10000-3 0 4835
2 22581 55.2391 356.1916 0058266 34.7467 325.6652 2.00567641 19565
ARSENE
1 22654U 93031B 95329.41880734 -.00000100 00000-0 10000-3 0 3415
2 22654 2.9717 78.2469 2885825 225.4824 107.7921 1.42201851 8681
```

```
GPS BIIA-20
1 22657U 93032A 95335.14717563 -.00000075 00000-0 10000-3 0 5610
2 22657 55.1526 355.8322 0073961 214.2803 145.2740 2.00557387 14951
RADCAL
1 22698U 93041A 95332.89430905 .00000051 00000-0 17276-4 0 4486
2 22698 89.5369 281.9039 0088912 262.3567 96.7511 14.21359265125836
GPS BIIA-21
1 22700U 93042A 95333.61334490 -.00000042 00000-0 10000-3 0 4752
2 22700 54.2618 236.5221 0044106 350.1222 9.8349 2.00569304 17729
NOAA 13
1 22739U 93050A 95334.86489463 -.00000043 00000-0 11495-5 0 9423
2 22739 99.0156 284.0620 0010805 66.5873 293.6439 14.10948957 18942
GPS BIIA-22
1 22779U 93054A 95334.70273952 -.00000072 00000-0 10000-3 0 5458
2 22779 54.4719 295.5052 0019701 254.3756 105.3964 2.00556181 16505
Meteor 2-21
1 22782U 93055A 95330.98624211 .00000037 00000-0 20272-4 0 4448
2 22782 82.5463 148.1811 0021698 184.0871 176.0117 13.83042954113041
UFO F2
1 22787U 93056A 95334.79633619 -.00000077 00000-0 00000+0 0 5795
2 22787 4.3468 325.7376 0003709 248.1180 213.9315 1.00269378 6836
SPOT 3
1 22823U 93061A 95333.72076750 -.00000044 00000-0 00000+0 0 4907
2 22823 98.7224 45.6238 0000685 70.1378 289.9872 14.20033925112787
STELLA
1 22824U 93061B 95331.69478589 -.00000044 00000-0 -85060-7 0 4322
2 22824 98.6033 45.2644 0007179 99.8900 260.3084 14.27103068113058
AO-27
1 22825U 93061C 95332.72749168 .00000006 00000-0 20059-4 0 4355
2 22825 98.6049 46.7128 0009315 97.0368 263.1874 14.27679862113240
IO-26
1 22826U 93061D 95331.75795796 -.00000003 00000-0 16432-4 0 4343
2 22826 98.6054 45.8854 0009820 100.3802 259.8487 14.27787624113119
HEATHSAT
1 22827U 93061E 95331.20387954 .00000032 00000-0 30320-4 0 4957
2 22827 98.6025 45.2610 0009964 88.2808 271.9504 14.27916471113042
ITAMSAT
1 22828U 93061F 95334.72921387 .00000033 00000-0 30595-4 0 4137
2 22828 98.6009 48.8550 0010974 77.5568 282.6844 14.28121297 81645
PO-28
1 22829U 93061G 95331.16995524 .00000018 00000-0 24915-4 0 4263
2 22829 98.6009 45.3943 0010838 87.5158 272.7271 14.28101689113057
KO-25
1 22830U 93061H 95332.21116386 -.00000012 00000-0 12424-4 0 4451
2 22830 98.4985 37.7289 0012577 64.1343 296.1131 14.28101944113203
GPS BIIA-23
1 22877U 93068A 95334.25108910 -.00000076 00000-0 10000-3 0 3567
2 22877 55.5416 57.1412 0020696 308.9344 50.9026 2.00565805 15388
METEOSAT 6
1 22912U 93073B 95335.14526620 -.00000089 00000-0 10000-3 0 3849
```

```
2 22912 0.4743 280.7662 0002307 343.1371 207.9779 1.00274185 5869
HST Array
1 22920U 90037C 95331.55965970 .00005148 00000-0 36302-3 0 4025
2 22920 28.4709 23.4990 0004019 124.0921 236.0051 15.02801256108890
Meteor 3-6
1 22969U 94003A 95334.22721401 .00000051 00000-0 10000-3 0 2147
2 22969 82.5614 41.5884 0016207 21.9815 338.2028 13.16733109 88734
TUBSAT-B
1 22970U 94003B 95331.74596076 .00000051 00000-0 10000-3 0 2051
2 22970 82.5577 43.2556 0017339 24.7123 335.4816 13.16826428 88415
GPS BIIA-24
1 23027U 94016A 95332.33953301 -.00000077 00000-0 10000-3 0 2861
2 23027 55.0829 358.0338 0066363 201.5997 158.1599 2.00566764 12650
Glonass 62
1 23043U 94021A 95333.23222331 -.00000030 00000-0 00000+0 0 2849
2 23043 64.7173 330.9125 0006733 208.7944 151.1837 2.13102451 12725
Glonass 63
1 23044U 94021B 95334.52259958 -.00000032 00000-0 00000+0 0 2558
2 23044 64.7056 330.8619 0031218 207.0391 152.8285 2.13102931 12758
Glonass 64
1 23045U 94021C 95332.35287462 -.00000031 00000-0 00000+0 0 2637
2 23045 64.7004 330.9606 0009708 29.5397 330.5342 2.13102499 12704
GOES 8
1 23051U 94022A 95333.65575916 -.00000256 00000-0 00000+0 0 4308
2 23051 0.3638 85.0459 0004296 150.7483 352.5397 1.00254849 13352
MSTI 2
1 23101U 94028A 95334.55120150 .00005960 00000-0 99908-4 0 2614
2 23101 97.0878 165.4877 0011864 347.9118 12.1853 15.52132907 88314
STRV-1A
1 23125U 94034B 95334.17241507 .00003861 00000-0 92866-3 0 2315
2 23125 7.5778 323.0700 7258736 255.8388 20.3444 2.31559027 11486
STRV-1B
1 23126U 94034C 95331.20000000 .00005834 00000-0 13272-2 0 1974
2 23126 7.4510 324.4890 7259919 253.0280 88.2940 2.31348983 11458
Nadezhda 4
1 23179U 94041A 95335.19011131 .00000051 00000-0 37272-4 0 1490
2 23179 82.9463 24.0920 0036163 322.2592 37.6022 13.75674709 69438
Glonass 65
1 23203U 94050A 95332.95993033 .00000009 00000-0 00000+0 0 2217
2 23203 64.7696 210.8791 0007479 142.0491 218.0808 2.13101866 10114
Glonass 66
1 23204U 94050B 95332.25534876 .00000011 00000-0 00000+0 0 2300
2 23204 64.7646 210.9271 0015385 350.8080 9.2332 2.13102005 10097
Glonass 67
1 23205U 94050C 95333.07663030 .00000009 00000-0 00000+0 0 2157
2 23205 64.7658 210.8935 0001387 327.2066 32.8600 2.13102446 10118
DMSP B5D2-7
1 23233U 94057A 95334.70354192 .00000094 00000-0 74503-4 0 5805
2 23233 98.8551 31.1053 0013255 30.0260 330.1666 14.12659286 64662
OKEAN 1-7
```

```
1 23317U 94066A 95332.82680792 .00000169 00000-0 22237-4 0 1128
2 23317 82.5430 244.2461 0027580 18.3910 341.8291 14.73978688 60877
ELEKTRO
1 23327U 94069A 95331.86368508 -.00000108 00000-0 00000+0 0 1036
2 23327 0.4262 257.7860 0002514 221.1624 334.3104 1.00272173 3978
RESURS 1-3
1 23342U 94074A 95334.07016923 .00000081 00000-0 21660-4 0 3970
2 23342 97.9950 30.5825 0001038 80.4942 279.6368 14.69793214 57411
Glonass 68
1 23396U 94076A 95331.51213176 .00000025 00000-0 00000+0 0 1747
2 23396 65.0059 91.1590 0031072 189.9685 169.9557 2.13102493 7929
Glonass 69
1 23397U 94076B 95331.69719778 .00000024 00000-0 00000+0 0 1802
2 23397 64.9851 91.1648 0011477 318.1253 49.0116 2.13102399 7920
Glonass 70
1 23398U 94076C 95334.38690538 -.00000002 00000-0 00000+0 0 1924
2 23398 64.9773 91.0534 0002286 260.0631 99.9004 2.13101870 7990
LUCH (Altair-2)
1 23426U 94082A 95333.45324434 -.00000282 00000-0 00000+0 0 2087
2 23426 1.8479 271.2593 0001769 338.0998 76.6128 1.00280252 3496
RS-15
1 23439U 94085A 95334.44853270 -.00000039 00000-0 10000-3 0 958
2 23439 64.8133 346.0986 0166428 233.7809 124.7629 11.27523720 38263
NOAA 14
1 23455U 94089A 95334.82169360 .00000104 00000-0 81956-4 0 4126
2 23455 98.9212 276.1601 0010402 82.4413 277.7951 14.11551653 47320
ODERACS II A
1 23471U 95004C 95335.24104189 .00064903 12966-4 15955-3 0 2518
2 23471 51.6424 339.6533 0011038 34.4218 325.7455 15.96194784 47723
Glonass 71
1 23511U 95009A 95333.40847342 -.00000030 00000-0 00000+0 0 1232
2 23511 64.7326 331.1739 0007732 225.9578 133.9984 2.13102945 5690
Glonass 72
1 23512U 95009B 95333.05697101 -.00000030 00000-0 00000+0 0 1331
2 23512 64.7192 331.1914 0007314 304.8982 55.0523 2.13102086 5687
Glonass 73
1 23513U 95009C 95333.35008612 -.00000030 00000-0 00000+0 0 1439
2 23513 64.7230 331.2045 0015048 207.2381 152.7040 2.13102514 5695
SFU
1 23521U 95011A 95333.44543767 .00003423 00000-0 10037-3 0 1248
2 23521 28.4501 26.8322 0013104 288.7461 71.1631 15.31840029 39265
GMS 5
1 23522U 95011B 95330.39785894 -.00000289 00000-0 10000-3 0 763
2 23522 0.6451 310.1156 0001422 121.9726 275.9628 1.00277031 2402
DMSP B5D2-8
1 23533U 95015A 95334.85283383 -.00000001 00000-0 22940-4 0 3100
2 23533 98.8364 334.9535 0006340 264.5497 95.4960 14.12713622 35480
Microlab 1
1 23547U 95017C 95333.27544625 .00000224 00000-0 80598-4 0 679
2 23547 69.9801 276.2821 0010321 111.4861 248.7361 14.45451769 34636
```

```
OFEQ 3
1 23549U 95018A 95334.85847912 .00020373 00000-0 55238-3 0 1571
2 23549 143.3672 96.9232 0241009 265.4699 91.8657 15.11228908 36157
GFZ-1
1 23558U 86017JE 95333.60343602 .00003067 00000-0 41889-4 0 791
2 23558 51.6527 44.4549 0006724 182.2433 177.8554 15.61028503558661
ERS-2
1 23560U 95021A 95333.22271031 .00000042 00000-0 31597-4 0 1418
2 23560 98.5532 45.1851 0000993 95.3364 264.7935 14.32245378 31802
Spektr
1 23579U 95024A 95335.15554773 .00009872 00000-0 13468-3 0 1979
2 23579 51.6444 41.3140 0003274 17.6700 342.3479 15.58186578 30416
GOES 9
1 23581U 95025A 95334.56077640 -.00000189 00000-0 00000+0 0 976
2 23581 0.2099 269.8139 0004069 352.4053 278.6584 1.00266945 1925
Helios 1A
1 23605U 95033A 95333.25152504 .00000108 00000-0 29694-4 0 1202
2 23605 98.1038 267.0359 0001191 76.9455 283.1881 14.63853736 21153
UPM SAT 1
1 23606U 95033B 95335.20782954 .00000018 00000-0 11761-4 0 933
2 23606 98.0837 269.3599 0007576 87.2231 272.9840 14.66910787 21548
CERISE
1 23607U 95033C 95334.22761876 .00000210 00000-0 45978-4 0 442
2 23607 98.0868 268.4549 0009905 94.1905 266.0431 14.67181581 21308
TDRS 6
1 23613U 95035B 95333.52642218 .00000121 00000-0 00000+0 0 961
2 23613 0.2603 85.0074 0004093 185.6754 197.0438 1.00287155 1376
Glonass 74
1 23620U 95037A 95334.07308902 .00000013 00000-0 00000+0 0 714
2 23620 64.8302 210.6832 0018248 164.1690 195.9637 2.13102825 2747
Glonass 75
1 23621U 95037B 95334.24966463 .00000015 00000-0 00000+0 0 796
2 23621 64.8367 210.6808 0017094 174.7952 185.2899 2.13101926 2741
Glonass 76
1 23622U 95037C 95333.36968133 .00000010 00000-0 00000+0 0 756
2 23622 64.8348 210.7074 0036727 163.2148 196.9829 2.13102399 2726
Prognoz-M2
1 23632U 95039A 95328.45778960 -.00001651 00000-0 00000+0 0 191
2 23632 68.3490 253.2810 9033793 317.8920 314.9500 0.26356000 300
SICH-1
1 23657U 95046A 95334.47843205 -.00000037 00000-0 -89815-5 0 364
2 23657 82.5341 24.3802 0027690 341.5711 18.4522 14.73434688 13423
Soyuz TM-22
1 23665U 95047A 95335.15554773 .00009872 00000-0 13468-3 0 890
2 23665 51.6444 41.3140 0003274 17.6700 342.3479 15.58186578 13851
Progress M-29
1 23678U 95053A 95335.15554773 .00009872 00000-0 13468-3 0 532
2 23678 51.6444 41.3140 0003274 17.6700 342.3479 15.58186578 8332
Cosmos 2322
1 23704U 95058A 95332.45890477 -.00000029 00000-0 10000-4 0 122
```

```
2 23704 71.0176 333.3429 0002990 358.2112 1.8999 14.12562710 3906
1995058B
1 23705U 95058B 95333.20605549 -.00000047 00000-0 00000+0 0 158
2 23705 71.0108 331.6233 0010616 40.6110 319.5795 14.14146681 4013
1995058C
1 23706U 95058C 95331.23995913 .00000264 00000-0 29284-3 0 99
2 23706 71.0020 339.2929 0201837 33.4510 327.9155 13.71670273 3624
1995058D
1 23707U 95058D 95334.48142706 -.00000041 00000-0 00000+0 0 101
2 23707 71.0114 333.0536 0205330 51.3871 310.5420 13.70144835 4067
1995058E
1 23708U 95058E 95334.17436225 -.00000042 00000-0 00000+0 0 123
2 23708 71.0710 334.0032 0187186 30.9250 330.2726 13.74266819 4074
1995058F
1 23709U 95058F 95332.25327612 -.00000041 00000-0 00000+0 0 107
2 23709 71.0421 337.8197 0200134 59.8258 302.2500 13.72045983 3763
Radarsat
1 23710U 95059A 95335.20310016 -.00065762 00000-0 -25561-1 0 583
2 23710 98.5852 339.7291 0002635 109.5462 250.5957 14.30324397 3809
SURFSAT
1 23711U 95059B 95333.87401668 -.00000045 00000-0 00000+0 0 175
2 23711 100.6372 337.9857 0368775 181.5785 178.4187 13.12211780 3317
ISO
1 23715U 95062A 95332.66666667 -.00000417 00000-0 10000-3 0 78
2 23715 5.1716 308.8998 8241910 116.2430 186.6197 1.00212926 110
1995063A
1 23717U 95063A 95333.15156108 -.00000029 00000-0 00000+0 0 96
2 23717 0.1194 346.2029 0017666 28.1130 182.0450 0.99978779 10
1995063B
1 23718U 95063B 95325.02726286 .22072120 12879-4 98252-4 0 191
2 23718 51.6145 262.6890 0001889 15.4163 70.3187 16.56114990 563
1995063C
1 23719U 95063C 95322.26697917 .13379302 12353-4 11943-2 0 46
2 23719 51.6095 278.2213 0005927 87.8436 272.7159 16.38218014 89
1995063D
1 23720U 95063D 95324.59054499 -.00000191 00000-0 00000+0 0 21
2 23720 0.2253 300.6155 0035334 42.6204 17.6302 1.00158199 30
1995063E
1 23721U 95063E 95334.86634766 .00002403 00000-0 75988-3 0 123
2 23721 47.4073 278.0505 7287818 3.4600 359.4898 2.27086925 268
1995063F
1 23722U 95063F 95334.88961857 .00000500 00000-0 53017-3 0 79
2 23722 47.4525 278.1028 7268125 3.4279 359.6127 2.26662973 319
1995064A
1 23723U 95064A 95334.05634113 .00004278 00000-0 74984-3 0 52
2 23723 25.5901 243.0332 7249181 180.3753 178.5234 2.33380857 40
1995064B
1 23724U 95064B 95335.12297975 .01286570 -81150-5 46771-3 0 101
2 23724 28.0090 223.6331 0064306 169.0992 191.1104 16.18058848 437
1995064C
```

```
1 23725U 95064C 95334.48261841 .00052617 00000-0 70052-2 0 45
2 23725 25.5763 242.8628 7252364 180.6919 176.6984 2.33414080 33
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

2524. Where to get NASA two-line keps

Newsgroup: rec.radio.amateur.space
Date: 1995-12-01 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-0112950116250001@ppp49.dowco.com>
Source record: 23536

In article <49jm2d$58n@nnrp2.news.primenet.com>, "K. Hatch"
<khatch@primenet.com> wrote:

-> Does anyone know the latest phone number for the Celestial BBS run by
-> Dr. TS Kelso. The latest number I have is 205.409.9280 which doesn't
-> seem to work anymore. I used to use his BBS to download NASA two-line
-> orbital elements sets. Any suggestions where else on the net they might
-> be found?

The Nasa 2 Line set is uploaded to this newsgroup weekly further you can
obtain it on demand at: http://www.amsat.org/amsat/keps/menu.html

--
Scott Leaf VE7ZVZ CN89
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"
Coquitlam Radio Club VE7SCC - "The Satellite Seniors"

2525. Re: PACKARD BELL >>WILL<< SCREW YOU!!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-02 00:00:00 UTC
From: jdear@mail.bayou.com
Message-ID: <49q0ve$8a8@news.dx.net>
Source record: 23537
Cross-posted to: rec.radio.amateur.antennna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb

In article <ve7zvz-0112951126580001@ppp39.dowco.com>, ve7zvz@dowco.com says...
>
>In article <49mqnu$eca@netport.com>, Bruce Herder <bherder@netport.com> wrote:
>
>-> > BE FORWARNED!!! BEFORE YOU BUY A PACKARD BELL
>-> > COMPUTER, KNOW THAT THEY WILL TAKE YOUR MONEY, BUT IF
>-> > ANYTHING GOES >>WRONG<< WITH IT, YOU >>WILL<< BE
>-> > IGNORED!!!!

I sold computers at a local dealership for about a year.
We also built custom computers as well. I was hired because
I had experience building computers from scratch. In March
of '95 we picked up the PB Line and man was I amazed. We
discovered that PB was putting very slow hard drives, very
slow video cards, and other parts that were not what I would
call "current". Our 486 DX2-66 computers would exceed the
performance of PB's Pentium systems up to 75 Mhz. We also
built 486 DX4 80 & 100 systems that blew the socks off PB's
Pentium 90 & 100 systems. What gives??? Their poor
supporting hardware (HDD, HDD controller, Video controller)
seems to bottleneck what is otherwise a fantastic processor.
As far as service was concerned, when someone had a problem,
we simply exchanged the computer for up to 1 year!! We were
the #1 PB dealer in the area so we could easily make PB eat
it or drop their line!

My suggestion to computer buyers is to build your own!! If
you don't know how, find someone that does. You can then
hand pick each piece that goes into it and get a good
performance machine. Another rule of thumb I use is to NEVER
buy a computer based on the software packaged with it. It is
only a sales gimmick!

Price wise custom built computers run a little higher but the
performance advantage is worth it in the future. And by
hand picking good, brand-name parts, you'll have less service
problems.

btw...we commonly referred to the PB as our best POS (Piece of
$hit) computers!

Jim Dear, KG5VE
jdear@mail.bayou.com

2526. Amsat mailing list

Newsgroup: rec.radio.amateur.space
Date: 1995-12-02 00:00:00 UTC
From: bmm1@freenet3.scri.fsu.edu
Message-ID: <49qa2t$2dq@freenet3.scri.fsu.edu>
Source record: 23538

I used to be on an Amsat mailing list. It had excelent content but I
didn't always have time to keep up with it so I unsubscribed. Is this
mailing list archived anywhere so that I can go back and read it as
time permits?

Thanks Bruce N4USH
--
Bruce M. Marshall bmm1@freenet.fsu.edu voice 615 481 0990 fax 615 481 8039

2527. ARLK067 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-12-02 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk067.1995@ampr.org>
Source record: 23539
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK067
ARLK067 Keplerian data

ZCZC SK92
QST de W1AW
Keplerian Bulletin 67 ARLK067
From ARRL Headquarters
Newington, CT December 2, 1995
To all radio amateurs

SB KEP ARL ARLK067
ARLK067 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95332.20533790 .00005198 00000-0 74157-4 0 3406
2 16609 51.6444 56.1070 0002778 18.1033 342.0041 15.58155462458527
AO-10
1 14129U 83058B 95330.93855044 -.00000269 00000-0 10000-3 0 03940
2 14129 26.4114 236.6069 5978423 329.6318 6.5100 2.05883401065687
RS-10/11
1 18129U 87054A 95332.02270337 .00000029 00000-0 15340-4 0 1395
2 18129 82.9226 297.9584 0012445 4.1650 355.9609 13.72359427422444
UO-11
1 14781U 84021B 95332.02789287 .00000147 00000-0 32651-4 0 08678
2 14781 97.7873 326.9309 0012487 22.7042 337.4712 14.69403123627965
RS-12/13
1 21089U 91007A 95332.04456993 .00000030 00000-0 15661-4 0 08602
2 21089 82.9220 339.2582 0031050 75.9088 284.5519 13.74062766241275
AO-13
1 19216U 88051B 95332.51865445 -.00000312 00000-0 22059-3 0 1148
2 19216 57.4214 150.2463 7355086 24.7321 357.3808 2.09732319 25612
UO-14
1 20437U 90005B 95332.17420654 .00000023 00000-0 25800-4 0 01559
2 20437 98.5604 53.8430 0011961 75.0043 285.2462 14.29904614305186
RS-15
1 23439U 94085A 95332.14248834 -.00000039 00000-0 10000-3 0 01048
2 23439 64.8133 349.8273 0166378 234.2444 124.2896 11.27523812038003
```

```
AO-16
1 20439U 90005D 95332.20971263 -.00000007 00000-0 13993-4 0 09430
2 20439 98.5726 55.7767 0012218 75.4706 284.7835 14.29959055305203
DO-17
1 20440U 90005E 95332.11202895 .00000006 00000-0 19297-4 0 09453
2 20440 98.5742 56.2164 0012437 75.4620 284.7932 14.30100894305218
WO-18
1 20441U 90005F 95332.16759773 .00000033 00000-0 29498-4 0 09590
2 20441 98.5736 56.2281 0012903 74.7644 285.4962 14.30071559305225
LO-19
1 20442U 90005G 95332.17853174 .00000033 00000-0 29454-4 0 09482
2 20442 98.5756 56.6569 0013284 75.2471 285.0182 14.30176566205243
FO-20
1 20480U 90013C 95332.13834035 .00000026 00000-0 13641-3 0 08508
2 20480 99.0608 30.1701 0540073 222.1796 133.6538 12.83232559271973
AO-21
1 21087U 91006A 95331.86760697 .00000094 00000-0 82657-4 0 06716
2 21087 82.9371 111.4489 0036543 50.3315 310.1055 13.74562130242214
UO-22
1 21575U 91050B 95332.12637829 .00000051 00000-0 31535-4 0 06551
2 21575 98.3793 39.2539 0007575 142.6551 217.5164 14.37001846229047
KO-23
1 22077U 92052B 95332.17833763 -.00000037 00000-0 10000-3 0 05649
2 22077 66.0780 252.4106 0002301 355.2264 4.8726 12.86292964154826
KO-25
1 22828U 93061F 95332.13692170 -.00000015 00000-0 11633-4 0 04206
2 22828 98.6011 46.3022 0010827 83.6706 276.5708 14.28120591081270
IO-26
1 22826U 93061D 95332.10834962 -.00000009 00000-0 13912-4 0 04359
2 22826 98.6055 46.2306 0009850 99.3844 260.8442 14.27787579113160
AO-27
1 22825U 93061C 95332.16682296 .00000001 00000-0 18099-4 0 04526
2 22825 98.6051 46.1614 0009241 97.9865 262.2370 14.27679743113166
PO-28
1 22829U 93061G 95332.15083511 .00000069 00000-0 45141-4 0 04335
2 22829 98.6008 46.3602 0010893 84.1951 276.0470 14.28102316113195

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
December 5, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2528. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-12-03 00:00:00 UTC
From: jimeagle@execpc.com
Message-ID: <49r5lu$oqn@homer.alpha.net>
Source record: 23540
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

In article <49iva8$981@cdn_news.telecom.com.au>, Julian Bordas
<JBordas@VCAGMKT1.telecom.com.au> says:
>
>How do you use a kill file with Netscape?

I second the question. I'm not about ready to go out and spend money on
software I don't need to filter out posts way off subject of the newsgroup
I'm trying to read.

The volume on rec.amateur.space is three times what it used to be and most
of it is totally extraneous!

jim eagleson, WB6JNN/9, Wisconsin

2529. AO-10 transponder noise

Newsgroup: rec.radio.amateur.space
Date: 1995-12-03 00:00:00 UTC
From: Danie Brynard <danie.brynard@pixie.co.za>
Message-ID: <49t43u$smi@hawk.pix.za>
Source record: 23541

This morning I thought I could hear the transponder noise from
AO-10 as it was flying over at a mere 5000 km. I use a linear pol.
yagi and the noise was coming and going at a rate of abt 0.5Hz.

When I listened outside the transponder BW I did not here anything.
Any other people who would like to comment on this effect ? What
is the phase noise contribution of AO-10 on the mode B transponder
and what is the average noise power coming from the 2m downlink ?

May be it is very high and that's why I could hear it with my
non-optimal antennas:-)

danie zs6awk

2530. SAT freq's

Newsgroup: rec.radio.amateur.space
Date: 1995-12-03 00:00:00 UTC
From: Michael Hoehn <Michael.Hoehn@frankfurt.netsurf.de>
Message-ID: <49t61e$bbl@gazette.omnilink.net>
Source record: 23542

Hi !

I search all freq's of weather satellites (like OKEAN, NOAA etc.) and
information of the status !

Who can help me ?

Bye mike

2531. Re: SAT freq's

Newsgroup: rec.radio.amateur.space
Date: 1995-12-04 00:00:00 UTC
From: John Boyer <john.boyer@rd.bbc.co.uk>
Message-ID: <49v5sb$sjh@bbcnews.rd.bbc.co.uk>
Source record: 23543

The APT Freqs are as follows.

Noaa 12& Noaa 14 137.5MHz
Okean 1-7(or 4) & Sich-1 137.4MHz
Meteor 3-5 & Meteor 2-21 137.85MHz

Ther are some SHF freqs for the Noaas, but I can't remember them off the
top of my head.
--
Regards John B

internet: john.boyer@rd.bbc.co.uk
packet: g6sed@g6sed.ampr.org (44.131.244.84)

home page: http://www.bbc.co.uk/john_wxpics/index.html

2532. Re: AO-10 transponder noise

Newsgroup: rec.radio.amateur.space
Date: 1995-12-04 00:00:00 UTC
From: Douglas Braun <dbraun>
Message-ID: <49vdv0$cu2@news.jf.intel.com>
Source record: 23544

I'd bet you are hearing noise on the 70cm uplink being retransmitted.
If nobody was working the satellite, the transponder AGC should turn
up the gain way high. In fact, if you DIDN'T hear noise under those
conditions, it would be a problem...

Doug Braun (SV/N1OWU)

2533. Re: 2m FM and RS-15 ???

Newsgroup: rec.radio.amateur.space
Date: 1995-12-04 00:00:00 UTC
From: "George J. Molnar" <gmolnar@nexus.interealm.com>
Message-ID: <30C39D7A.36F6@nexus.interealm.com>
Source record: 23545

Robert Miller wrote:
>
> Has anyone used a FM 2m rig to access the satellites ?
>
> I am curious if this is OK to do. I would like to get onto this
> bird but lack a ssb station.
>
> Any thoughts or considerations ??While you could TECHNICALLY do it just fine, it is considered poor
practice since FM puts an inordinate drain on the spacecraft's power systems. This stresses the batteries (reducing lifetime) and reduces available power for other users (unfriendly).

You may be able to modify your rig to operate cw, after a fashion. That's a better solution than running any other mode.

Good luck & 73,

--
George J. Molnar
Highlands Ranch, Colorado
Packet: KF2T@N0QCU.#NECO.CO.USA.NOAM
http://www.interealm.com/p/gmolnar/index.html

2534. 2m FM and RS-15 ???

Newsgroup: rec.radio.amateur.space
Date: 1995-12-04 00:00:00 UTC
From: rrm@ornews.intel.com
Message-ID: <49vmb6$bnl@ornews.intel.com>
Source record: 23546

Has anyone used a FM 2m rig to access the satellites ?

I am curious if this is OK to do. I would like to get onto this
bird but lack a ssb station.

Any thoughts or considerations ??

Thanks

2535. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-12-04 00:00:00 UTC
From: jwc@a.crl.com
Message-ID: <49u15l$asg_001@sat1.as.crl.com>
Source record: 23547
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

In article <49r5lu$oqn@homer.alpha.net>,
jimeagle@execpc.com (Jim Eagleson) wrote:
>In article <49iva8$981@cdn_news.telecom.com.au>, Julian Bordas
<JBordas@VCAGMKT1.telecom.com.au> says:
>>
>>How do you use a kill file with Netscape?
>
>I second the question. I'm not about ready to go out and spend money on
>software I don't need to filter out posts way off subject of the newsgroup
>I'm trying to read.
>
>The volume on rec.amateur.space is three times what it used to be and most
>of it is totally extraneous!
>
>jim eagleson, WB6JNN/9, Wisconsin

Use News Express, it is freeware.

Jim Chandler, N0VAH
jwc@a.crl.com
1024-bit Key fingerprint = 74 B4 7C BF 51 ED A6 00 F5 2C 6E 99 A7 0D 29 D2
2048-bit Key fingerprint = 82 30 8D 56 43 22 3A 2F 4D EA 37 DE B9 B4 21 52

2536. Re: Hams please read ....

Newsgroup: rec.radio.amateur.space
Date: 1995-12-04 00:00:00 UTC
From: smason@agt.net
Message-ID: <4a00l7$5r5@news.agt.net>
Source record: 23548
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.noncomm,rec.radio.scanner,rec.radio

In article <znr817238843k@Digex>, croaker@access.digex.netï¿½ says...

>Internet lore: the term was derived from the Monty Python skit, were 'spam'
>was said/sung numerous times. It was a really funny skit, too.

Bloody Vikings!!

I guess Nye Vikings to get back on topic...

Steve

2537. New version of MacGPS available

Newsgroup: rec.radio.amateur.space
Date: 1995-12-04 00:00:00 UTC
From: lwjames@ix.netcom.com
Message-ID: <49vfup$ka1@ixnews7.ix.netcom.com>
Source record: 23549

The new version of MacGPS, freeware for transferring data between a Macintosh and a Garmin GPS receiver, is available now on the infomac mirror sites such as

ftp://mirrors.aol.com/pub/info-mac/sci/larrys-mac-gps-0.4b5.hqx

Larry James
KG0GB

2538. SUNSAT launch in January?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: mbv@ti.com
Message-ID: <4a1mci$6m@superb.csc.ti.com>
Source record: 23550

Does anyone have the particulars re: SUNSAT? Launch date, transponder freqs
or band edges, etc.? Is this project still on?

Ken K5MBV mbv@ti.com

2539. KO-23 Dead now?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: Gerald Schmitt <kc5egg@eule.lanl.gov>
Message-ID: <4a0dq0$8pk@newshost.lanl.gov>
Source record: 23551

This evening I got a great big nothing on the KO-23 downlink
has anyone else been having any trouble with it. Just what we needed
with KO-25 already kaput is another one down. Looking for info.

73 de Jerry

2540. Re: Chinese Satellite to re-enter earths atmosphere

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: galen@lamar.ColoState.EDU
Message-ID: <4a1t9p$meg@lamar.ColoState.EDU>
Source record: 23552

Stephen Walters (oddjob@cix.compulink.co.uk) wrote:
: Does anyone know when this 1000Kg Satellite is going to re-enter the
: Earths atmosphere. I Don't know the Satellite's name or function except
: that it's BIG. Is there any telemetry? Is it nuclear powered? Is this
: another COSMOS 954 or Skylab.

I heard (on the news) that it's as big as a VW Bug and designed to
survive re-entry! The same news story either didn't say when or started
by saying when, before I was paying attention.

Galen, KF0YJ

2541. Oscar sat. schedules?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: George La Belle <george_labelle@ccm.hf.intel.com>
Message-ID: <4a27ud$cn1@ornews.intel.com>
Source record: 23553

I've been away for a while. Where can I get the mode schedules for
the amateur satellites these days? I got the keps already.

TNX
George
WB6YZZ

2542. ARLK068 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk068.1995@ampr.org>
Source record: 23554
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK068
ARLK068 Keplerian data

ZCZC SK93
QST de W1AW
Keplerian Bulletin 68 ARLK068
From ARRL Headquarters
Newington, CT December 5, 1995
To all radio amateurs

SB KEP ARL ARLK068
ARLK068 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95338.55467747 .00002569 00000-0 39921-4 0 3474
2 16609 51.6454 24.2676 0003633 24.0167 336.0997 15.58207718459516
HST
1 20580U 90037B 95337.72486774 .00000513 00000-0 35603-4 0 07589
2 20580 28.4699 41.3414 0005457 287.5848 72.4150 14.90982368109239
AO-10
1 14129U 83058B 95334.82392991 -.00000421 00000-0 10000-3 0 3916
2 14129 26.4097 235.9909 5978339 330.6728 6.2527 2.05883476 65766
RS-10/11
1 18129U 87054A 95338.00116472 .00000038 00000-0 25169-4 0 01545
2 18129 82.9225 293.5380 0011780 348.5456 11.5426 13.72359643423262
UO-11
1 14781U 84021B 95338.02033074 .00000144 00000-0 32147-4 0 8453
2 14781 97.7875 332.6460 0012074 4.4494 355.6816 14.69405315628849
RS-12/13
1 21089U 91007A 95338.45253129 .00000019 00000-0 37461-5 0 8496
2 21089 82.9189 334.5016 0030887 59.8368 300.5842 13.74062876242156
AO-13
1 19216U 88051B 95337.76354442 .00000418 00000-0 10673-3 0 01178
2 19216 57.4263 149.2609 7354544 25.3447 357.2988 2.09723790025723
UO-14
1 20437U 90005B 95338.19202650 .00000021 00000-0 24862-4 0 01668
2 20437 98.5600 59.7583 0012083 58.5837 301.6528 14.29905390306043
```

```
RS-15
1 23439U 94085A 95338.08498671 -.00000039 00000-0 10000-3 0 01133
2 23439 64.8121 340.2166 0166496 233.1688 125.3861 11.27523586038670
AO-16
1 20439U 90005D 95338.15732916 .00000004 00000-0 18314-4 0 09595
2 20439 98.5722 61.6317 0012325 60.2580 299.9827 14.29959855306058
DO-17
1 20440U 90005E 95338.12902060 .00000017 00000-0 23256-4 0 09509
2 20440 98.5738 62.1431 0012438 58.5649 301.6734 14.30101807306079
WO-18
1 20441U 90005F 95338.11474924 -.00000037 00000-0 23991-5 0 09658
2 20441 98.5737 62.0864 0012987 59.1050 301.1384 14.30071440306075
LO-19
1 20442U 90005G 95338.19520604 .00000040 00000-0 32399-4 0 09591
2 20442 98.5753 62.5845 0013322 58.7100 301.5375 14.30177451206109
FO-20
1 20480U 90013C 95338.14201689 -.00000002 00000-0 70384-4 0 08680
2 20480 99.0599 35.0488 0540228 208.5780 148.4689 12.83232598272741
AO-21
1 21087U 91006A 95337.83649173 .00000094 00000-0 82657-4 0 06668
2 21087 82.9365 107.0288 0036506 34.5765 325.7754 13.74562359243039
UO-22
1 21575U 91050B 95338.11452237 .00000072 00000-0 38562-4 0 06600
2 21575 98.3785 45.0812 0007780 124.7641 235.4277 14.37003285229904
KO-23
1 22077U 92052B 95338.16513212 -.00000037 00000-0 10000-3 0 05468
2 22077 66.0785 239.8769 0003453 353.7791 6.3174 12.86293338155597
KO-25
1 22828U 93061F 95338.16224838 .00000042 00000-0 34240-4 0 04306
2 22828 98.6006 52.2351 0011091 68.2528 291.9828 14.28121882082134
IO-26
1 22826U 93061D 95338.13508251 .00000037 00000-0 32749-4 0 04446
2 22826 98.6045 52.1631 0010027 82.3069 277.9249 14.27788837114023
AO-27
1 22825U 93061C 95338.12392811 .00000028 00000-0 28891-4 0 04394
2 22825 98.6044 52.0250 0009487 81.9165 278.3103 14.27680728114010
PO-28
1 22829U 93061G 95338.10617851 .00000099 00000-0 57331-4 0 04423
2 22829 98.5998 52.2227 0010817 68.6261 291.6084 14.28103645114043

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
December 9, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2543. Re: KO-23 Dead now?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: kc5egg@eule.lanl.gov
Message-ID: <4a1un1$jef@newshost.lanl.gov>
Source record: 23555

The next pass all was as it should be could not find
a fault in the station. Oh well gald it was a false alarm.

2544. (none)

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: fred@moneyworld.COM
Message-ID: <Pine.SUN.3.91.951205072221.1477I-100000@ns1.moneyworld.com>
Source record: 23556

From: Fred Sterling
To: Fellow Net Traveler

RE: The Learning Machine Takes You Beyond Virtual Reality
http://Zygon.com

Amazing!! If you have a moment check out a new web site
http://Zygon.com. They have an incredible new multi-media
technology that uses a special digital headset that forces your
mind to learn. It blew my mind!!! Kinda felt like I was dreaming,
while learning foreign languages, and programming my subconscious
for success. And you can even read books with your eyes closed.
Pretty awesome. The company offers a free 30 day trial.
Check it out!!!

Fred Sterling

2545. Re: 2m FM and RS-15 ???

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: n7tcf@primenet.com
Message-ID: <4a1g1j$lhq@nntp3.news.primenet.com>
Source record: 23557

>Robert Miller wrote:
>>
>> Has anyone used a FM 2m rig to access the satellites ?
>>
>> I am curious if this is OK to do.

This is definitely NOT OK.

FM mode, compared to SSB, is not an efficient way to use limited battery power.
Secondly, SSB and CW cannot share the same transponder. There already is a small problem with inexperianced or rude operators using excessive power, sweeping carriers etc. A radio in FM mode cannot tell that a SSB or CW signal is present. How would someone keep from trashing other QSOs?
Third, the passband is only 40KHz wide, with the lower half for CW and the upper for SSB. A FM signal will hog far too much of the passband.

In conclusion, please don't try it. But your question was intelligent and should you obtain a SSB rig, you will be a welcome addition to the satellite community.

Jim N7TCF
n7tcf@primenet.com

2546. Re: SAT freq's

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: moritz@ipers1.e-technik.uni-stuttgart.de
Message-ID: <4a18qa$2fcu@info4.rus.uni-stuttgart.de>
Source record: 23558

>I search all freq's of weather satellites (like OKEAN, NOAA etc.) and
>information of the status !

In the Packet radio you can find information on the satellites,
usually in the borad "WXSAT" or something like that.

73, Moritz DL5UH

2547. Need Satellite on 440 and 2300 MHz

Newsgroup: rec.radio.amateur.space
Date: 1995-12-05 00:00:00 UTC
From: jataylor@ll.mit.edu
Message-ID: <jataylor.205.000FBBF7@ll.mit.edu>
Source record: 23559

I need to find a satellite which transmits simultaneously on 440 MHz (+/- 10 MHz) and 2300 MHz (+/- 100 MHz). I have two antennas whose pointing and antenna patterns I want to compare at the same time, but I live in an area of the world where mountain tops and antenna ranges are rare. The downlink transmission format isn't very important, as long as carriers at both bands are present most of the time. Right-hand circular or linear polarization is preferred over LHCP.

Any useful info would be appreciated.

-John Taylor, V73JT
Kwajalein Atoll
(9 Deg N, 167 Deg E)

2548. Re: 2m FM and RS-15 ???

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: Gary Watts <gwatts@qni.com>
Message-ID: <Pine.SOL.3.91.951206101455.13558D-100000@qni.com>
Source record: 23467

The ones I heard doing it sounded pretty bad..
They would chirp when first keyed up..
Sure it works but a pain to listen to

Gary Watts de N0OXV
Kansas City Mo
81 GL1100I

On 6 Dec 1995, sylvestre wrote:

> FM'ing on 2.meter uplink frequency for RS-10
> Will make you CW on downlink frequency.
> It work ok
>
> 73 VE2VB @amsat.org
>
>
>

2549. KO-23 Dead now? No!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: Aart.Wedemeijer@pa3cpl.idn.nl
Message-ID: <482_9512071734@idn.nl>
Source record: 23468

Hello All!

Replying to a message of Gerald Schmitt to All:

GS> This evening I got a great big nothing on the KO-23 downlink
GS> has anyone else been having any trouble with it. Just what we needed
GS> with KO-25 already kaput is another one down. Looking for info.

My last 3 passes (UTC)
So KO-23 is OK!

95/12/06 15:58:59 - 16:22:35 : Max=1987 Bps Gross=0471 Bps Total
Bytes=00525828
95/12/06 17:55:42 - 18:20:54 : Max=1511 Bps Gross=0723 Bps Total
Bytes=00876869
95/12/06 19:51:16 - 20:17:14 : Max=1554 Bps Gross=0594 Bps Total
Bytes=00747564

Logs made by satlink

Greetings, Aart!
aart.wedemeijer@pa3cpl.idn.nl
--
| Standard disclaimer: The views of this user are strictly his own.

2550. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: ve7zvz@dowco.com
Message-ID: <ve7zvz-0512952153260001@ppp34.dowco.com>
Source record: 23469
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

In article <49r5lu$oqn@homer.alpha.net>, andeagle@execpc.com(jim) wrote:

-> In article <49iva8$981@cdn_news.telecom.com.au>, Julian Bordas
<JBordas@VCAGMKT1.telecom.com.au> says:
-> >
-> >How do you use a kill file with Netscape?
->
-> I second the question. I'm not about ready to go out and spend money on
-> software I don't need to filter out posts way off subject of the newsgroup
-> I'm trying to read.
->
-> The volume on rec.amateur.space is three times what it used to be and most
-> of it is totally extraneous!
->
-> jim eagleson, WB6JNN/9, Wisconsin

Netscape does not offer the ability to kill subjects, authors or domains.
I am a Macintosh user and I use a program called Newswatcher which is
Shareware and supports killing subjects, authors and domains forever or
for limited time periods.

Let your fingers do the walking and FTP some newsviewer programs, you PC
guys are always telling me how much more software is available for the PC
so go use it! :)

And now a special recap for those wishing to learn how to use a kill file:

1) Get a news viewer program that supports the ability to kill threads, etc.

2) Read instructions on how to use it.

3) Use it

Hope this has been of use to you.

--
Scott Leaf VE7ZVZ CN89os
ve7zvz@dowco.com
Port Coquitlam, British Columbia, Canada
Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"
Coquitlam Radio Club VE7SCC - "The Satellite Seniors"

2551. Re: PACKARD BELL >>WILL<< SCREW YOU!!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: rawiley@blue.weeg.uiowa.edu
Message-ID: <rawiley.818221685@blue.weeg.uiowa.edu>
Source record: 23560
Cross-posted to: rec.radio.amateur.antennna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb

.

I heard on a stock market report last week that Intel's
stock had dropped because a major customer was way
behind on invoice payments. Rumor was the customer
was PB.

NE0R

2552. Re: 2m FM and RS-15 ???

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <4a2q2l$2u3@news.worldlinx.com>
Source record: 23561

FM'ing on 2.meter uplink frequency for RS-10
Will make you CW on downlink frequency.
It work ok

73 VE2VB @amsat.org

2553. Re: Two Line Elements

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: Rolf Mathison <rmathiso@popd.ix.netcom.com>
Message-ID: <30C5CBA2.F58@popd.ix.netcom.com>
Source record: 23562

Try Dallas Remote Imaging Group

ftp://ftp.drig.com
http://www.drig.com
telnet://bbs.drig.com

Regards,
Rolf

2554. VARIAN MICROWAVE AMPS and related items FOR SALE or trade

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <4a3bal$isv@ixnews8.ix.netcom.com>
Source record: 23563
Cross-posted to: sci.engr.chem,sci.chem,rec.radio.amateur.space,sci.med.radiology

FOR SALE- OR TRADE::
Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 770-726-5548-dig.pager
Ready to make Package deal !!! 770-992-0516-hm.#

2555. Re: Internet Via Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: dreynold@rad.net.id
Message-ID: <4a43l8$f6a@news1.rad.net.id>
Source record: 23564

dreynold@rad.net.id (DaveCom) wrote:

Also check out NSN's page... I don't know the URL but NSN can be found
via webcrawler or other inet search engines.

Regards,
Dave
Jakarta

>In addition to DirectPC from Hughes you can check-out PageSat Inc.
>Info@pagesat.net, http://www.pagesat.net Tel 415-854-5262, Fax
>415-854-5445.

>Please Email me on your findings and plans.... I'm also into
>sat-server investigation.

>Dave (dreynold@rad.net.id), Jakarta, Indonesia

>BDONALDSON@HNS.COM (Brian Donaldson) wrote:

>>Check out the DirecPC home page. Iknow that it is not amateur radio related
>>but may assist you in your search.

>>http://www.direcpc.com/doc.htm

>>73
>>Brian

>> ,,, Waddayamean, it's NOT workin'?!
>> (o o)
>> =================oOO==(_)==OOo=====================================
>> Brian Donaldson, KF6BL Project Engineer, Customer Svc
>> Hughes Network Systems, Inc. TES, Terrestrial, et al...
>> 10450 Pacific Center Ct. Email: bdonaldson@hns.com
>> San Diego, CA 92121 Phone: (619) 452-5175
>> Room 2077 Fax: (619) 452-4886
>> ===

2556. Re: Internet Via Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: dreynold@rad.net.id
Message-ID: <4a42gt$f6a@news1.rad.net.id>
Source record: 23565

In addition to DirectPC from Hughes you can check-out PageSat Inc. Info@pagesat.net, http://www.pagesat.net Tel 415-854-5262, Fax 415-854-5445.

Please Email me on your findings and plans.... I'm also into sat-server investigation.

Dave (dreynold@rad.net.id), Jakarta, Indonesia

BDONALDSON@HNS.COM (Brian Donaldson) wrote:

>Check out the DirecPC home page. Iknow that it is not amateur radio related
>but may assist you in your search.

>http://www.direcpc.com/doc.htm

>73
>Brian

> ,,, Waddayamean, it's NOT workin'?!
> (o o)
> ================oOO==(_)==OOo=================================
> Brian Donaldson, KF6BL Project Engineer, Customer Svc
> Hughes Network Systems, Inc. TES, Terrestrial, et al...
> 10450 Pacific Center Ct. Email: bdonaldson@hns.com
> San Diego, CA 92121 Phone: (619) 452-5175
> Room 2077 Fax: (619) 452-4886
> ==

2557. APRS/APRT with Mir??

Newsgroup: rec.radio.amateur.space
Date: 1995-12-06 00:00:00 UTC
From: XE2MXU/N5UHB <fjorozco@academ03.mty.itesm.mx>
Message-ID: <Pine.A32.3.91.951206161808.33303B-100000@academ03.mty.itesm.mx>
Source record: 23566
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.space

Hi, I wonder if there is anyone out there who uses Mir to relay his APRS position reports....

I want to participate on the SPRE experiment this January, and I think using Mir as a digipeater could help us learn more about APRtrak so we really know what we're doing when SPRE flies....

Any comments??

There is a Mir pass over my location today at about 0350Z, and I'll give it a try then....

73 de Luis XE2MXU/N5UHB in Monterrey, Mexico

Life's Improved Golden Rule: "Whoever's got the gold and the NUKES makes the rules!"

2558. 9600 pacsats

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: l42398@alfa.ist.utl.pt
Message-ID: <4a6amj$j0f@ci.ist.utl.pt>
Source record: 23470

I'm interested in operate 9600 bauds sateletites, I've read a lot about it
but still don't understand what kindTNC / modem i need, will it be AFSK
or FSK ?????
Does the radio can be an FM onlyor those "small" rigs can't do it because
they can't "follow" the requeny and avoid the doppler efect.

yours,

--

____
| Luis Jose Leal Martins | IST Lisbon - Portugal |
| e-mail l42398@alfa.ist.utl.pt |

| |
| |

2559. AMSAT mailing list ??

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: l42398@alfa.ist.utl.pt
Message-ID: <4a6b6r$h6g@ci.ist.utl.pt>
Source record: 23471

Can any one say where can I get it ??????
Thanks in advance.

yours,

--

____
| Luis Jose Leal Martins | IST Lisbon - Portugal |
| e-mail l42398@alfa.ist.utl.pt |

| |
| |

2560. Mass Purchase of Garmin GPS Boards

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: lver@ksu.ksu.edu
Message-ID: <4a6tr5$j4u@cbs.ksu.ksu.edu>
Source record: 23472

I've set up a listserv to administor a purchase of Garmin GPS
boards. We can buy the same boards they use in their handhelds
for as little as $120.

If you're interested, you can subscribe for more info.
Note, this doesn't commit you to anything.

send email to
maiser@humec.ksu.edu

in the body of the letter write
sub gps your@email.address

You'll be sent all the current info we have. If you have any
further questions (after you've read the info), let me know.
I'll send Garmin a fax with our other questions.

I hope to place the order within a week.

Lloyd Verhage
KD4STH

2561. Re: Chinese Satellite to re-enter earths atmosphere

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: wallnerw@crash.cts.com
Message-ID: <4a735c$jgk@news3.cts.com>
Source record: 23473

Watts (galen@lamar.ColoState.EDU) wrote:
: Stephen Walters (oddjob@cix.compulink.co.uk) wrote:
: : Does anyone know when this 1000Kg Satellite is going to re-enter the
: : Earths atmosphere. I Don't know the Satellite's name or function except
: : that it's BIG. Is there any telemetry? Is it nuclear powered? Is this
: : another COSMOS 954 or Skylab.

: I heard (on the news) that it's as big as a VW Bug and designed to
: survive re-entry! The same news story either didn't say when or started
: by saying when, before I was paying attention.

: Galen, KF0YJ

You can get the TLEs from Dr. Kelso's site. Listed as fsw-1. I am tracking it with STSPLUS and man is it eccentric. 500+ nm at highest decl. around 100 at south end. The NORAD number is 22870 I think.

Kelso's site is at <ftp://archive.afit.af.mil/pub/space/>

I don't think it is due to deorbit for a few weeks yet. I saw reference to it's expected demise but, can't remember when. The latest TLE Epoch is 95338 and changes every 3 days.

I do not know much about orbital mechanics but, assume the high risk areas for the 85 pound, shielded, core would be in the Southern latitudes where perihelion occurs.

Bill Wallner

2562. FM on the Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: Gary_Rogers@DGC.ceo.dg.COM
Message-ID: <9512071800.AK00035@rtp41.rtp.dg.com>
Source record: 23474

CEO document contents:

On 6 Dec 1995 at 01:02:13 GMT, sylvestre <sylvestre@pandore.qc.ca>
wrote:

>FM'ing on 2.meter uplink frequency for RS-10
>Will make you CW on downlink frequency.
>It work ok
>
>73 VE2VB @amsat.org

And on Wed, 6 Dec 1995, at 10:16:31 -0600 Gary Watts <gwatts@qni.com>
responded:

>The ones I heard doing it sounded pretty bad..
>They would chirp when first keyed up..
>Sure it works but a pain to listen to
>
>Gary Watts de N0OXV
>Kansas City Mo
>81 GL1100I

To which I must add: I agree with Gary whole-heartedly! Please do
not use an FM transmitter to access any satellites unless they are
for that mode. Even though the user may not intend it, there is
audio intelligence impressed on the carrier and a huge chunk of the
passband becomes unusable for the rest of us. Anyone who absolutely
must try working the satellites this way, please devise a way to key
the PTT without activating the microphone element. Also be aware that
many radios that use PLL's have a slow lock-up time, and these are
the reason we often get the "chirps" of which Gary spoke.

While we're on the subject of FM on the amateur satellites, I want
to hear from anyone who has monitored the Spanish speaking stations
that take out the upper half of RS-10's downlink with their FM trans-
missions. I notice it mostly on the passes around 2200 UTC, +/- a few
hours. I'd like to know if these are hams, or folks just using ham
rigs. Speculation has it that business or criminal types are using
the ham bands in Central/South America because they are more easily
obtained and cheaper than regular commercial radios. (By the way,
this is a good example of what havoc an FM radio can generate on a
SSB/CW oriented satellite.)

Thanks es 73 from Apex, NC,

Gary WA4YMZ AMSAT 16961

2563. keps ftp site?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: hawk@sps.mot.com
Message-ID: <4a76fa$bvr@newsgate.sps.mot.com>
Source record: 23475

can anyone tell me what happened to kep ftp:
anonymous@archive.afit.af.mil

any other sites???

Thanks in advance

regards

George Hawkins

GEORGE HAWKINS KKK KK IIIIIIII 5555555 XXX XXX
K K II 55 X X
K K II 55555 X X MOBILE DXCC-175
K K K II 55 X 160 <> 10
K K II 5 X X SEE YOU ON
K K II 55 X X BANDS FROM
KKK KK IIIIIIII 555555 XXX XXX MY TRUCK!

George Hawkins Internet: hawk@dsp.sps.mot.com
Principal Staff Engineer UUCP: cs.utexas.edu!oakhill!dsp!hawk
Motorola DSP Tactical Applications
6501 William Cannon Drive West Phone (512) 891-4543
Austin Texas 78735-8598 FAX (512) 891-2947

2564. (no subject)

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: Carl Gregory <cgregory@uiuc.edu>
Message-ID: <4a7unu$6ej@vixen.cso.uiuc.edu>
Source record: 23476

The latest version of WinOrbit (2.8) is now available on
ftp.seds.org, and ftp.amsat.org, and soon on oak.oakland.edu.
See below for detailed locations. A description of changes,
and an overview of the program, are also given below:

New Features in version 2.8
---
* Second satellite can now be displayed on each map.
* Mutual visibility prediction tables can now be printed for
pre-selected DX stations.
* Doppler and RF link calculations now displayed for uplink,
downlink, beacon, or transponder delta frequency.
* "AutoRun" feature added to schedule other programs for a
pass.
* Help displayed by F1 is now more "context-sensitive".

Some bugs were fixed, too.

Program Overview

WinOrbit is a program for computing artificial Earth-satellite
position and visibility, with the Amateur Radio satellite
operator in mind. It was written for the Microsoft Windows 3.1
operating system. WinOrbit is free (not shareware). The
latest version is 2.8.

The principal feature of the program is a series of tracking
windows, one per satellite, which display the current position of
the satellite and the observer on a simple world map, together
with information such as footprint, past ground track, bearing
(azimuth), distance, and elevation above the observer's horizon.
Sun position and terminator, user-selected DX locations and a
second satellite may also be displayed.

Additional features include:
* Simultaneous tracking of up to 20 satellites.
* Sun/Moon tracking built in.
* Real-time, pseudo-real-time, and manual calculation modes.
* "View from space" map presentation showing what a particular
satellite sees.
* Selectable tracking detail, including doppler shift, free-
space path loss, satellite and observer antenna pattern
effects, for a single satellite.
* Display sun position for eclipse determination, and other
observers for mutual visibility.
* "Show DX" for all stations within the satellite footprint, and

"what's up" for all satellites visible at observer QTH.
* 4 different orbital calculation algorithms (selectable).
* Tracking data (Keplerian element sets) read directly from
standard, off-the-air bulletins in two different formats (up
to 500 satellites). No pre-processing is needed, just
grab a bulletin file, headers and all. Reads AMSAT, NASA
or vector formats.
* Propagation of pre-launch keps and other element updates.
* Utility functions for modifying and comparing published element
sets, including post-launch updating of pre-launch elements,
and saving composite data files compiled from various
sources.
* Observer (QTH) data (latitude, longitude) may be imported from
a simple text database (up to 1000 locations). Entry by
grid-square or mouse-on-map is possible.
* Flexible entry of latitude, longitude, date and time.
* Printing of tables of tracking data (Ephemerides) in several
formats. Printing does not interrupt tracking. Output
may be directed to disk file or printer.
* Timeline and mutual visibility printouts.
* On-line help, including glossary and direct lookup of text
information about all Amateur satellites from the map
windows. All hamsats since Oscar I included.
* Standard Windows interface for all functions - no commands to
memorize. Both mouse and keyboard can be used for most
functions.
* DDE server interface to tracking-antenna hardware controllers.

This program is available via internet, by anonymous ftp from:
ftp.amsat.org /amsat/software/windows/tracking/winorb28.zip
oak.oakland.edu /pub3/hamradio/pc/satellite/winorb28.zip
ftp.seds.org /pub/software/pc/sat/winorb28.zip

The file VBRUN300.DLL is required (you may already have it - if not,
you can get it as described in the WinOrbit documentation).

2565. Re: How To Use a Kill file in 3 easy steps

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: mbv@ti.com
Message-ID: <4a7suv$6t5@superb.csc.ti.com>
Source record: 23477
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

```
In article <ve7zvz-0512952153260001@ppp34.dowco.com>, ve7zvz@dowco.com says...
>
>
>
>And now a special recap for those wishing to learn how to use a kill file:
>
>1) Get a news viewer program that supports the ability to kill threads, etc.
>
>2) Read instructions on how to use it.
>
>3) Use it
>
> Hope this has been of use to you.
>
>--
>Scott Leaf VE7ZVZ CN89os
>ve7zvz@dowco.com
>Port Coquitlam, British Columbia, Canada
>Mountain DX Club VA7SM - "To boldy VHF where no ham has VHFed before"
>Coquitlam Radio Club VE7SCC - "The Satellite Seniors"
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

NOT!
```

2566. Re: keps ftp site?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: hawk@sps.mot.com
Message-ID: <4a76ke$bvr@newsgate.sps.mot.com>
Source record: 23478

never mind! it's working again!

george KI5X

2567. Predictions for Chinese Satellite Jianbing Available Now

Newsgroup: rec.radio.amateur.space
Date: 1995-12-07 00:00:00 UTC
From: Manfred Bester <manfred@ssl.berkeley.edu>
Message-ID: <4a7f1a$kid@agate.berkeley.edu>
Source record: 23479
Cross-posted to: sci.space.shuttle,sci.space.tech,rec.radio.amateur.space

The SatPasses web page now also provides predictions for observing the Chinese Satellite Jianbing that will re-enter the Earth's atmosphere in early 1996.

The SatPasses web page can be found at the following URL:

http://ssl.berkeley.edu/isi_www/satpasses.html

Manfred Bester

--
Manfred Bester
Space Sciences Laboratory
University of California
Berkeley, CA 94720

2568. Re: AMSAT mailing list ??

Newsgroup: rec.radio.amateur.space
Date: 1995-12-08 00:00:00 UTC
From: vfiscus@mcn.net
Message-ID: <4a803q$as3@news.mcn.net>
Source record: 23480

In article <4a6b6r$h6g@ci.ist.utl.pt>,
l42398@alfa.ist.utl.pt (LUIS JOSE LEAL MARTINS) wrote:
>Can any one say where can I get it ??????
>Thanks in advance.
>
>yours,
>
>

Hi,
Send an E-Mail message to listserv@amsat.org, with the word
'help' in the text. 73

Vince Fiscus, KB7ADL
Billings, Montana
vfiscus@mcn.net

2569. WinOrbit 2.8 available

Newsgroup: rec.radio.amateur.space
Date: 1995-12-08 00:00:00 UTC
From: Carl Gregory <cgregory@uiuc.edu>
Message-ID: <4a7v9q$6ej@vixen.cso.uiuc.edu>
Source record: 23481

[Reposted due to my omission of a title the first time.]

The latest version of WinOrbit (2.8) is now available on
ftp.seds.org, and ftp.amsat.org, and soon on oak.oakland.edu.
See below for detailed locations. A description of changes,
and an overview of the program, are also given below:

New Features in version 2.8
---
* Second satellite can now be displayed on each map.
* Mutual visibility prediction tables can now be printed for
pre-selected DX stations.
* Doppler and RF link calculations now displayed for uplink,
downlink, beacon, or transponder delta frequency.
* "AutoRun" feature added to schedule other programs for a
pass.
* Help displayed by F1 is now more "context-sensitive".

Some bugs were fixed, too.

Program Overview

WinOrbit is a program for computing artificial Earth-satellite
position and visibility, with the Amateur Radio satellite
operator in mind. It was written for the Microsoft Windows 3.1
operating system. WinOrbit is free (not shareware). The
latest version is 2.8.

The principal feature of the program is a series of tracking
windows, one per satellite, which display the current position of
the satellite and the observer on a simple world map, together
with information such as footprint, past ground track, bearing
(azimuth), distance, and elevation above the observer's horizon.
Sun position and terminator, user-selected DX locations and a
second satellite may also be displayed.

Additional features include:
* Simultaneous tracking of up to 20 satellites.
* Sun/Moon tracking built in.
* Real-time, pseudo-real-time, and manual calculation modes.
* "View from space" map presentation showing what a particular
satellite sees.
* Selectable tracking detail, including doppler shift, free-
space path loss, satellite and observer antenna pattern
effects, for a single satellite.
* Display sun position for eclipse determination, and other

observers for mutual visibility.
* "Show DX" for all stations within the satellite footprint, and "what's up" for all satellites visible at observer QTH.
* 4 different orbital calculation algorithms (selectable).
* Tracking data (Keplerian element sets) read directly from standard, off-the-air bulletins in two different formats (up to 500 satellites). No pre-processing is needed, just grab a bulletin file, headers and all. Reads AMSAT, NASA or vector formats.
* Propagation of pre-launch keps and other element updates.
* Utility functions for modifying and comparing published element sets, including post-launch updating of pre-launch elements, and saving composite data files compiled from various sources.
* Observer (QTH) data (latitude, longitude) may be imported from a simple text database (up to 1000 locations). Entry by grid-square or mouse-on-map is possible.
* Flexible entry of latitude, longitude, date and time.
* Printing of tables of tracking data (Ephemerides) in several formats. Printing does not interrupt tracking. Output may be directed to disk file or printer.
* Timeline and mutual visibility printouts.
* On-line help, including glossary and direct lookup of text information about all Amateur satellites from the map windows. All hamsats since Oscar I included.
* Standard Windows interface for all functions - no commands to memorize. Both mouse and keyboard can be used for most functions.
* DDE server interface to tracking-antenna hardware controllers.

This program is available via internet, by anonymous ftp from:
ftp.amsat.org /amsat/software/windows/tracking/winorb28.zip
oak.oakland.edu /pub3/hamradio/pc/satellite/winorb28.zip
ftp.seds.org /pub/software/pc/sat/winorb28.zip

The file VBRUN300.DLL is required (you may already have it - if not, you can get it as described in the WinOrbit documentation).

2570. Re: Chinese Satellite to re-enter earths atmosphere

Newsgroup: rec.radio.amateur.space
Date: 1995-12-08 00:00:00 UTC
From: Chris Jones <clj@bbn.com>
Message-ID: <rpfpwdzaasl.fsf@unicorn.bbn.com>
Source record: 23482

In article <4a735c$jgk@news3.cts.com> wallnerw@crash.cts.com (Bill Wallner) writes:

You can get the TLEs from Dr. Kelso's site. Listed as fsw-1. I am
tracking it with STSPLUS and man is it eccentric. 500+ nm at highest decl.
around 100 at south end. The NORAD number is 22870 I think.

Kelso's site is at <ftp://archive.afit.af.mil/pub/space/>

I don't think it is due to deorbit for a few weeks yet. I saw reference
to it's expected demise but, can't remember when. The latest TLE Epoch
is 95338 and changes every 3 days.

"By April 1" is what I recall. Likely closer to that date than the present
time.

I do not know much about orbital mechanics but, assume the high risk
areas for the 85 pound, shielded, core would be in the Southern latitudes
where perihelion occurs.

Not really, because by the time reentry occurs, the orbit will have
circularized. What's happening now is that at perigee, it's apogee is being
lowered due to the slowing effect of the atmosphere at that altitude. At
apogee, there's much less of a slowing effect, so its perigee isn't noticeably
dipping.
--
Chris Jones clj@bbn.com

2571. Re: keps ftp site?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-08 00:00:00 UTC
From: wallnerw@crash.cts.com
Message-ID: <4a8mt5$9g9@news3.cts.com>
Source record: 23483

George Hawkins (hawk@sps.mot.com) wrote:
: can anyone tell me what happened to kep ftp:
: anonymous@archive.afit.af.mil

If you have WWW, <ftp://archive.afit.af.mil/pub/space/>.

It's all there.

Bill

2572. NORAD Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-12-08 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.818465379@dolphin>
Source record: 23484

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated daily) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2573. Mir QSL info!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-08 00:00:00 UTC
From: mcaron@riq.qc.ca
Message-ID: <NEWTNews.818473322.31330.Gothmog@riq2820.RIQ.QC.CA>
Source record: 23485

I'd like to know how to be able to get a QSL card from MIR.

I know the adress and everything, all I want to know is how once I'm on the packet, to get my CallSign in their log... Is it automatic or is there some command you have to do be added to the log and being able to get a QSL card after.

Thanks and best 73, from VA2MRX

Maxime Caron
mcaron@riq.qc.ca

2574. WXSAT Antenna info required.

Newsgroup: rec.radio.amateur.space
Date: 1995-12-08 00:00:00 UTC
From: davef@enterprise.net
Message-ID: <4aapvv$joh@news.enterprise.net>
Source record: 23486

Could someone please send me an accurate design for a home build 137Mhz antenna.

Many TNX in advance.

Dave

davef@enterprise.net

2575. NORAD Two-Line Orbital Element Sets (TLE719)

Newsgroup: rec.radio.amateur.space
Date: 1995-12-08 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <tkelso.818465460@dolphin>
Source record: 23487

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #719 -
Alouette 1
1 00424U 62049A 95339.87613624 .00000050 00000-0 48814-4 0 1577
2 00424 80.4538 115.4721 0021982 172.2624 187.8863 13.67857235655775
ATS 1
1 02608U 66110A 95331.64723805 .00000020 00000-0 10000-3 0 9475
2 02608 14.6386 354.9668 0007539 70.6286 289.4414 1.00393173 22834
ATS 3
1 03029U 67111A 95340.56313925 -.00000114 00000-0 10000-3 0 4261
2 03029 14.8979 1.8693 0010071 265.5466 264.7437 1.00272893102822
Cosmos 398
1 04966U 71016A 95342.31174141 .02175073 12192-4 13586-3 0 1649
2 04966 51.3605 90.3664 0085051 18.5150 341.9069 16.27007458852012
Starlette
1 07646U 75010A 95341.79410843 -.00000110 00000-0 25241-4 0 9333
2 07646 49.8299 187.9251 0205736 315.0035 43.4347 13.82190324 52352
LAGEOS
1 08820U 76039A 95341.46664957 .00000007 00000-0 10000-3 0 1557
2 08820 109.8541 319.9799 0044377 170.2484 189.8899 6.38664534201523
ETS-2
1 09852U 77014A 95338.32315732 .00000100 00000-0 10000-3 0 522
2 09852 12.9832 35.1836 0004163 119.0595 240.9319 1.00010789 15685
GOES 2
1 10061U 77048A 95340.42346951 .00000063 00000-0 00000+0 0 6118
2 10061 12.0793 39.3437 0013357 133.0743 239.7942 1.00281863 12504
IUE
1 10637U 78012A 95339.21725646 -.00000232 00000-0 10000-3 0 2004
2 10637 35.4718 86.2577 1342853 51.6459 341.0984 1.00283593 17983
GPS BI-01
1 10684U 78020A 95340.42287452 -.00000048 00000-0 10000-3 0 4072
2 10684 64.9036 29.6128 0056630 166.2273 193.9970 1.98069316115574
```

```
GPS BI-02
1 10893U 78047A 95331.95060582 -.00000028 00000-0 10000-3 0 1990
2 10893 63.2671 267.4680 0225573 14.2856 346.3641 2.01627411128733
GOES 3
1 10953U 78062A 95337.38885041 -.00000036 00000-0 10000-3 0 5760
2 10953 11.0569 42.1852 0007169 149.6083 260.9286 1.00381017 17088
SeaSat 1
1 10967U 78064A 95341.40388539 .00000022 00000-0 51860-4 0 4487
2 10967 107.9977 135.8720 0002022 242.2597 117.8377 14.38074286913738
GPS BI-03
1 11054U 78093A 95337.08108525 -.00000069 00000-0 10000-3 0 3673
2 11054 62.9571 265.9624 0045678 181.0110 178.9822 1.93505260124846
Nimbus 7
1 11080U 78098A 95338.68168238 -.00000050 00000-0 -77744-5 0 5483
2 11080 98.9724 205.1224 0009245 129.5506 230.6465 13.83700282864137
GPS BI-04
1 11141U 78112A 95332.14881047 -.00000068 00000-0 10000-3 0 161
2 11141 64.9112 31.9527 0049322 27.9657 332.3706 1.92894820 13984
GPS BI-05
1 11690U 80011A 95339.40366306 -.00000051 00000-0 10000-3 0 9603
2 11690 65.2372 31.1993 0151591 192.9314 166.7429 2.00569079130299
GPS BI-06
1 11783U 80032A 95336.76814230 -.00000062 00000-0 10000-3 0 1153
2 11783 62.3785 260.2900 0222675 29.4907 331.7420 2.03456547114818
GOES 5
1 12472U 81049A 95338.17583042 -.00000218 00000-0 10000-3 0 8979
2 12472 7.8357 52.2297 0005638 52.7401 307.1662 1.00217483 11133
Cosmos 1383
1 13301U 82066A 95342.19665278 .00000008 00000-0 -81469-5 0 4556
2 13301 82.9299 274.5530 0029161 50.2170 310.1545 13.68070123671126
LandSat 4
1 13367U 82072A 95340.80081964 .00000032 00000-0 17048-4 0 8084
2 13367 98.1038 32.2852 0007823 28.3545 331.8078 14.57166898712353
DMSP B5D2-1
1 13736U 82118A 95342.01116057 .00000007 00000-0 21373-4 0 9069
2 13736 98.6238 168.4668 0007767 228.9878 131.0632 14.25765351573682
IRAS
1 13777U 83004A 95341.50877290 -.00000036 00000-0 53341-5 0 1612
2 13777 98.9654 166.1062 0011714 263.6905 96.2946 13.99235569326420
Cosmos 1447
1 13916U 83021A 95340.48947467 .00000037 00000-0 23656-4 0 5514
2 13916 82.9434 334.3059 0037660 334.5954 25.3350 13.74331916637130
TDRS 1
1 13969U 83026B 95339.33799038 .00000090 00000-0 00000+0 0 5071
2 13969 8.6684 45.5868 0003758 199.9848 170.3264 1.00277043 19433
GOES 6
1 14050U 83041A 95336.19443939 -.00000223 00000-0 10000-3 0 4676
2 14050 6.6559 55.5374 0002084 25.5040 334.3389 1.00313063104210
OSCAR 10
1 14129U 83058B 95334.82392991 -.00000421 00000-0 10000-3 0 3916
```

```
2 14129 26.4097 235.9909 5978339 330.6728 6.2527 2.05883476 65766
LandSat 5
1 14780U 84021A 95341.52472777 .00000050 00000-0 21483-4 0 4035
2 14780 98.3616 34.0388 0002894 142.5623 217.5784 14.57031369625878
UoSat 2
1 14781U 84021B 95338.02033074 .00000144 00000-0 32147-4 0 8453
2 14781 97.7875 332.6460 0012074 4.4494 355.6816 14.69405315628849
GPS BI-09
1 15039U 84059A 95334.04635408 -.00000077 00000-0 10000-3 0 3777
2 15039 64.5768 26.2579 0082037 18.9920 341.3693 1.92302271 83586
Cosmos 1574
1 15055U 84062A 95340.64147954 .00000005 00000-0 -10645-4 0 7520
2 15055 82.9561 28.6890 0028154 157.2235 203.0175 13.73629217574417
GPS BI-10
1 15271U 84097A 95341.54209115 -.00000020 00000-0 10000-3 0 845
2 15271 62.0654 260.5884 0158341 355.8085 4.1089 2.00607143 81408
Cosmos 1602
1 15331U 84105A 95338.87856622 .00000321 00000-0 35034-4 0 4364
2 15331 82.5313 295.9953 0018308 231.2153 128.7435 14.84699608603998
NOAA 9
1 15427U 84123A 95341.77885820 .00000066 00000-0 58649-4 0 5000
2 15427 98.9746 41.3521 0015333 134.5986 225.6438 14.13747295466448
GPS BI-11
1 16129U 85093A 95342.07374680 -.00000045 00000-0 10000-3 0 6926
2 16129 65.2518 29.4206 0156265 85.9675 275.8918 1.89368018 18289
Mir
1 16609U 86017A 95341.31242010 .00000093 00000-0 77856-5 0 3500
2 16609 51.6472 10.4386 0003805 29.1457 330.9757 15.58212010459945
SPOT 1
1 16613U 86019A 95341.22919587 .00000090 00000-0 62356-4 0 8776
2 16613 98.6334 48.5688 0001084 87.1476 272.9825 14.20080132192926
Cosmos 1766
1 16881U 86055A 95341.04242596 .00000200 00000-0 21360-4 0 3523
2 16881 82.5185 351.7657 0017270 253.8024 106.1292 14.83688196505207
EGP
1 16908U 86061A 95342.14308620 -.00000083 00000-0 10000-3 0 483
2 16908 50.0105 227.4277 0011173 244.6633 115.3045 12.44413376 92497
NOAA 10
1 16969U 86073A 95341.94710409 .00000037 00000-0 33978-4 0 4181
2 16969 98.5152 339.6289 0012431 192.7887 167.2979 14.24966717379227
MOS-1
1 17527U 87018A 95341.17834040 -.00000043 00000-0 00000+0 0 3569
2 17527 98.9693 42.1352 0018214 141.1305 219.1189 14.00398932447977
GOES 7
1 17561U 87022A 95340.39381131 .00000088 00000-0 10000-3 0 6659
2 17561 2.6752 70.9399 0000569 244.6064 125.6416 1.00274514 15361
Kvant-1
1 17845U 87030A 95341.82545960 .00016206 00000-0 21641-3 0 4597
2 17845 51.6446 7.8653 0003737 46.2845 313.6821 15.58223350494130
DMSP B5D2-3
```

```
1 18123U 87053A 95341.53715293 .00000012 00000-0 28276-4 0 2394
2 18123 98.7740 169.9551 0015187 83.3977 276.8926 14.15425897437096
RS-10/11
1 18129U 87054A 95341.35493558 .00000047 00000-0 34764-4 0 1473
2 18129 82.9228 291.0591 0011549 339.5387 20.5301 13.72359881423725
Meteor 2-16
1 18312U 87068A 95339.49553455 .00000039 00000-0 21326-4 0 4437
2 18312 82.5558 146.5074 0013926 49.3375 310.8998 13.84067136419246
Meteor 2-17
1 18820U 88005A 95342.13005796 .00000045 00000-0 26788-4 0 7952
2 18820 82.5430 199.8786 0017749 103.2168 257.0972 13.84748162396947
DMSP B5D2-4
1 18822U 88006A 95342.04148155 -.00000014 00000-0 12264-4 0 1339
2 18822 98.3914 178.1667 0005461 201.5148 158.5798 14.23173890407248
Glonass 34
1 19163U 88043A 95338.37562034 -.00000037 00000-0 10000-3 0 368
2 19163 65.1784 92.4362 0007490 156.0660 203.9476 2.13102446 58066
Glonass 36
1 19165U 88043C 95341.24785289 -.00000022 00000-0 10000-3 0 4446
2 19165 65.1727 92.3054 0001273 299.9501 60.0216 2.13102148 58744
METEOSAT 3
1 19215U 88051A 95337.32908560 -.00000160 00000-0 10000-3 0 2221
2 19215 2.8667 68.8263 0008641 103.8472 176.8628 0.96946443 15263
AO-13
1 19216U 88051B 95341.57796336 -.00000176 00000-0 95765-4 0 1194
2 19216 57.4229 148.5182 7356438 25.6218 357.2004 2.09729621 25803
OKEAN 1
1 19274U 88056A 95340.26870717 .00000265 00000-0 30013-4 0 523
2 19274 82.5129 93.1049 0021776 44.7046 315.5924 14.82419786400649
Meteor 3-2
1 19336U 88064A 95339.90406949 .00000051 00000-0 10000-3 0 4421
2 19336 82.5377 303.9041 0018167 6.1431 353.9907 13.16975276353907
Glonass 39
1 19503U 88085C 95341.27701363 -.00000053 00000-0 10000-3 0 3366
2 19503 65.6449 331.2265 0006509 157.7317 202.2978 2.13101761 56235
NOAA 11
1 19531U 88089A 95341.92341479 .00000056 00000-0 54979-4 0 3109
2 19531 99.1948 349.9587 0012641 61.7649 298.4799 14.13074551271293
TDRS 2
1 19548U 88091B 95341.72951977 -.00000180 00000-0 10000-3 0 1639
2 19548 2.1138 73.2118 0009818 160.1636 190.1623 1.00263893 13597
Glonass 40
1 19749U 89001A 95336.62240902 -.00000027 00000-0 10000-3 0 5517
2 19749 65.1381 92.0378 0004788 265.6086 94.3111 2.13101500 53645
Glonass 41
1 19750U 89001B 95338.55470565 -.00000037 00000-0 10000-3 0 4603
2 19750 65.1521 92.0331 0007759 230.8115 129.0950 2.13101751 53702
GPS BII-01
1 19802U 89013A 95339.70121350 -.00000002 00000-0 10000-3 0 1538
2 19802 55.2623 118.3818 0026463 170.0738 190.0909 2.00564886 49811
```

```
Akebono
1 19822U 89016A 95342.09335710 .00008057 00000-0 45526-3 0 6168
2 19822 75.1029 235.0172 3758648 250.8412 65.4805 7.89078711151510
Meteor 2-18
1 19851U 89018A 95342.24877109 .00000061 00000-0 40875-4 0 4429
2 19851 82.5194 74.1278 0014385 148.1219 212.0815 13.84401069342274
MOP-1
1 19876U 89020B 95334.73905468 -.00000085 00000-0 10000-3 0 1637
2 19876 1.5765 71.8312 0018767 275.6634 92.6305 0.97109242 4688
TDRS 3
1 19883U 89021B 95339.07004622 -.00000265 00000-0 10000-3 0 1427
2 19883 0.0795 68.2377 0004925 219.1297 130.0961 1.00264967197165
GPS BII-02
1 20061U 89044A 95341.03611745 -.00000075 00000-0 10000-3 0 1509
2 20061 54.3256 294.3666 0151260 217.2113 141.7191 2.00562836 47584
Nadezhda 1
1 20103U 89050A 95341.87147566 .00000003 00000-0 -13017-4 0 6047
2 20103 82.9595 250.4904 0036357 228.4089 131.3951 13.73860248222277
GPS BII-03
1 20185U 89064A 95339.37770496 .00000000 00000-0 10000-3 0 1711
2 20185 55.0846 118.9450 0015477 325.4485 34.4288 2.00560574 46120
GMS 4
1 20217U 89070A 95338.71975919 -.00000364 00000-0 10000-3 0 2746
2 20217 1.3882 75.5564 0001310 70.7228 306.0286 1.00279872 23465
INTERCOSMOS 24
1 20261U 89080A 95341.17705699 .00000112 00000-0 24566-4 0 4594
2 20261 82.5937 34.0017 1243060 120.5285 252.4433 12.47305326281840
GPS BII-04
1 20302U 89085A 95340.91264398 .00000010 00000-0 10000-3 0 1616
2 20302 53.3135 234.2936 0013230 162.5782 197.5260 2.00561193 44957
Meteor 3-3
1 20305U 89086A 95339.30506115 .00000044 00000-0 10000-3 0 4493
2 20305 82.5512 259.3113 0008508 67.4359 292.7660 13.04409085192798
COBE
1 20322U 89089A 95340.03616667 .00000352 00000-0 25287-3 0 1718
2 20322 98.9535 353.4567 0008255 217.9517 142.1063 14.03457129309695
Kvant-2
1 20335U 89093A 95341.82545960 .00016206 00000-0 21641-3 0 4529
2 20335 51.6446 7.8653 0003737 46.2845 313.6821 15.58223350343142
GPS BII-05
1 20361U 89097A 95341.42228481 -.00000059 00000-0 10000-3 0 9997
2 20361 55.8704 60.9043 0088424 131.1148 229.7120 2.00563268 34440
COSMOS 2054 (Altair-1)
1 20391U 89101A 95340.24359226 -.00000134 00000-0 10000-3 0 2545
2 20391 3.4691 64.7440 0002627 145.3742 295.6517 1.00264853 22051
SPOT 2
1 20436U 90005A 95342.20569745 .00000169 00000-0 10000-3 0 69
2 20436 98.7181 53.9270 0001241 57.0578 303.0717 14.20031949304592
UO-14
1 20437U 90005B 95338.75182328 .00000019 00000-0 24335-4 0 1447
```

```
2 20437 98.5599 60.3081 0012079 57.2782 302.9559 14.29905459306124
UO-15
1 20438U 90005C 95341.74200581 -.00000007 00000-0 14418-4 0 9417
2 20438 98.5549 61.5042 0011022 54.7447 305.4761 14.29220218306437
PACSAT
1 20439U 90005D 95340.18651493 .00000011 00000-0 21035-4 0 9436
2 20439 98.5723 63.6299 0012289 54.6922 305.5410 14.29960104306349
DO-17
1 20440U 90005E 95340.08804031 .00000023 00000-0 25650-4 0 9435
2 20440 98.5736 64.0722 0012456 53.0221 307.2098 14.30102130306353
WO-18
1 20441U 90005F 95338.18471617 -.00000033 00000-0 40301-5 0 9471
2 20441 98.5737 62.1554 0012979 58.8854 301.3605 14.30071483306087
LO-19
1 20442U 90005G 95339.73435492 .00000011 00000-0 20885-4 0 9429
2 20442 98.5752 64.1004 0013316 54.5959 305.6457 14.30177406206322
GPS BII-06
1 20452U 90008A 95339.82445735 .00000074 00000-0 10000-3 0 1039
2 20452 54.0253 174.6785 0060346 85.0725 275.6728 2.00556007 42916
MOS-1B
1 20478U 90013A 95339.20149535 .00000090 00000-0 10000-3 0 8680
2 20478 99.1310 45.9708 0000954 54.6141 305.5109 13.94862945217372
DEBUT
1 20479U 90013B 95341.70836717 -.00000053 00000-0 -44149-4 0 9431
2 20479 99.0585 38.1164 0540092 200.0439 157.8698 12.83337303273213
FO-20
1 20480U 90013C 95342.19647405 -.00000045 00000-0 -26940-4 0 8407
2 20480 99.0595 38.3434 0540300 199.4004 158.5798 12.83232066273263
MOS-1B R/B
1 20491U 90013D 95341.18012002 -.00000278 00000-0 -46094-3 0 1925
2 20491 99.0679 96.4638 0470706 26.3923 336.0380 13.02961163276722
LACE
1 20496U 90015A 95341.80497085 .00001586 00000-0 53752-4 0 6026
2 20496 43.1036 221.1571 0010564 252.3322 107.6392 15.35163115324259
Nadezhda 2
1 20508U 90017A 95341.66243293 .00000155 00000-0 14882-3 0 6038
2 20508 82.9548 25.2078 0044524 179.6396 180.4795 13.73502812189461
OKEAN 2
1 20510U 90018A 95342.18571676 .00000232 00000-0 28584-4 0 4612
2 20510 82.5243 44.2027 0016952 224.1809 135.8029 14.78554855311300
GPS BII-07
1 20533U 90025A 95341.22392147 -.00000073 00000-0 10000-3 0 1303
2 20533 54.6799 295.0395 0039763 132.3912 228.0712 2.00575463 41714
PegSat
1 20546U 90028A 95338.23548560 .00007242 00000-0 14001-3 0 8697
2 20546 94.1252 240.8336 0065261 43.3133 317.3223 15.45464378314720
HST
1 20580U 90037B 95339.26447442 .00000472 00000-0 31563-4 0 7438
2 20580 28.4701 31.4448 0005672 303.2182 56.7859 14.90983079109462
MACSAT 2
```

```
1 20608U 90043B 95341.03723792 .00000146 00000-0 22409-4 0 1441
2 20608 89.9284 175.0415 0107434 12.5107 347.8736 14.64883396298016
Glonass 44
1 20619U 90045A 95340.27556016 -.00000054 00000-0 10000-3 0 2491
2 20619 65.2451 330.5937 0025938 207.4445 152.4227 2.13102483 43178
Glonass 45
1 20620U 90045B 95339.92501187 -.00000054 00000-0 10000-3 0 2504
2 20620 65.2446 330.5909 0007092 43.6213 316.4459 2.13102532 43205
Glonass 46
1 20621U 90045C 95339.99206739 -.00000054 00000-0 10000-3 0 8413
2 20621 65.2696 330.6564 0011192 197.5701 162.3996 2.13101860 43205
Kristall
1 20635U 90048A 95341.82545960 .00016206 00000-0 21641-3 0 2443
2 20635 51.6446 7.8653 0003737 46.2845 313.6821 15.58223350313973
ROSAT
1 20638U 90049A 95338.77482257 .00000280 00000-0 37175-4 0 5141
2 20638 52.9903 99.0129 0010351 250.0945 109.8930 15.07311936302847
Meteor 2-19
1 20670U 90057A 95338.87267966 .00000026 00000-0 96783-5 0 9418
2 20670 82.5442 143.0004 0017379 83.3617 276.9523 13.84150623274728
CRRES
1 20712U 90065A 95341.07776509 .00000173 00000-0 24574-3 0 1915
2 20712 18.1196 329.2004 7188856 233.2440 37.6831 2.35647999 38565
GPS BII-08
1 20724U 90068A 95337.55981416 .00000010 00000-0 10000-3 0 9731
2 20724 54.8857 116.5603 0123788 177.0560 182.9894 2.00565031 37509
Feng Yun1-2
1 20788U 90081A 95342.03599880 .00000149 00000-0 12688-3 0 6739
2 20788 98.8090 349.1333 0014098 318.0360 41.9725 14.01354624269184
Meteor 2-20
1 20826U 90086A 95338.80798352 .00000066 00000-0 46177-4 0 9521
2 20826 82.5237 79.8030 0013821 353.8236 6.2749 13.83619565261823
GPS BII-09
1 20830U 90088A 95338.10884087 -.00000083 00000-0 10000-3 0 9820
2 20830 55.7954 58.9944 0064654 99.2326 261.5174 2.00558748 38157
GPS BIIA-10
1 20959U 90103A 95340.50513908 -.00000003 00000-0 10000-3 0 9460
2 20959 55.0950 118.4725 0103242 230.3126 128.7365 2.00567989 36791
DMSP B5D2-5
1 20978U 90105A 95341.82477908 .00000048 00000-0 32822-4 0 4378
2 20978 98.6237 49.3081 0080021 18.3775 342.0267 14.32604611162179
Glonass 47
1 21006U 90110A 95341.42449918 -.00000022 00000-0 10000-3 0 8159
2 21006 65.1174 91.2130 0058417 186.9365 172.9716 2.13102677 38906
Glonass 48
1 21007U 90110B 95335.51384314 -.00000016 00000-0 10000-3 0 9403
2 21007 65.1252 91.4956 0035548 179.0665 180.9240 2.13101105 38768
Glonass 49
1 21008U 90110C 95340.09898689 -.00000033 00000-0 00000+0 0 1617
2 21008 65.1043 91.2763 0009161 262.2273 97.6567 2.13099168 38854
```

```
AO-21
1 21087U 91006A 95339.87464602 .00000094 00000-0 82657-4 0 6565
2 21087 82.9363 105.5192 0036455 29.1678 331.1503 13.74562475243313
RS-12/13
1 21089U 91007A 95338.45253129 .00000019 00000-0 37461-5 0 8496
2 21089 82.9189 334.5016 0030887 59.8368 300.5842 13.74062876242156
MOP-2
1 21140U 91015B 95337.94073924 -.00000001 00000-0 10000-3 0 1234
2 21140 0.1476 49.9642 0002119 200.9173 160.5106 1.00281283 19641
Nadezhda 3
1 21152U 91019A 95341.92076665 -.00000000 00000-0 -16922-4 0 2948
2 21152 82.9224 288.1871 0042280 155.4658 204.8520 13.73526165137354
Glonass 50
1 21216U 91025A 95341.91267331 -.00000053 00000-0 10000-3 0 4621
2 21216 64.9973 330.1508 0006246 193.0763 166.9129 2.13102797 36420
Glonass 51
1 21217U 91025B 95341.04374102 -.00000055 00000-0 10000-3 0 8672
2 21217 64.9940 330.2018 0007726 239.3776 120.5063 2.13101986 36392
Glonass 52
1 21218U 91025C 95341.15499630 -.00000055 00000-0 10000-3 0 3438
2 21218 64.9831 330.1461 0013137 313.9125 45.9920 2.13102677 36405
GRO
1 21225U 91027B 95340.05411389 .00002755 00000-0 53976-4 0 3181
2 21225 28.4591 98.0673 0003080 170.0431 190.0225 15.43407722139909
Meteor 3-4
1 21232U 91030A 95339.88897942 .00000050 00000-0 10000-3 0 8524
2 21232 82.5417 150.1625 0012078 288.2652 71.7160 13.16470226221975
NOAA 12
1 21263U 91032A 95341.63590238 .00000076 00000-0 53172-4 0 7383
2 21263 98.5700 1.1350 0013731 111.6006 248.6634 14.22580688137081
OKEAN 3
1 21397U 91039A 95340.42307901 .00000298 00000-0 39553-4 0 1519
2 21397 82.5223 319.4589 0021575 312.5618 47.3772 14.76435514242773
GPS BIIA-11
1 21552U 91047A 95341.27784617 -.00000061 00000-0 10000-6 0 9186
2 21552 56.1138 56.6489 0068833 244.2856 115.0343 2.00554381 32402
ERS-1
1 21574U 91050A 95338.78956163 -.00000031 00000-0 47406-5 0 2250
2 21574 98.5489 50.6570 0001274 86.2283 273.9046 14.32243966229475
UO-22
1 21575U 91050B 95339.22859580 .00000038 00000-0 27279-4 0 6497
2 21575 98.3785 46.1655 0007876 121.3999 238.7953 14.37003161230065
ORBCOMM-X
1 21576U 91050C 95339.17763417 .00000018 00000-0 20601-4 0 7441
2 21576 98.3752 44.3194 0004125 125.5759 234.5816 14.36413521229954
TUBSAT-A
1 21577U 91050D 95339.71976663 .00000015 00000-0 19499-4 0 6439
2 21577 98.3756 45.4073 0006777 123.1327 237.0509 14.36502630230068
SARA
1 21578U 91050E 95340.75120473 .00000287 00000-0 10655-3 0 8444
```

```
2 21578 98.4005 52.9854 0005436 114.8314 245.3439 14.39109070230519
TDRS 4
1 21639U 91054B 95340.51212718 .00000088 00000-0 00000+0 0 9713
2 21639 0.0157 299.7760 0002484 305.9395 199.1412 1.00274430109950
Meteor 3-5
1 21655U 91056A 95339.39707289 .00000051 00000-0 10000-3 0 8500
2 21655 82.5539 98.0466 0012713 302.8087 57.1802 13.16842551207039
UARS
1 21701U 91063B 95341.56067987 .00000033 00000-0 23989-4 0 7236
2 21701 56.9842 161.9109 0005347 102.5389 257.6234 14.96463872231523
DMSP B5D2-6
1 21798U 91082A 95341.91111643 .00000071 00000-0 60830-4 0 883
2 21798 98.9563 354.0119 0013801 54.4019 305.8424 14.13933196107754
Glonass 53
1 21853U 92005A 95338.55124774 -.00000039 00000-0 10000-3 0 547
2 21853 65.0554 90.9906 0007382 185.8008 174.1674 2.13102279 29951
Glonass 54
1 21854U 92005B 95340.71679029 -.00000029 00000-0 10000-3 0 2201
2 21854 65.0644 90.9131 0014977 18.5739 341.4656 2.13103888 29982
Glonass 55
1 21855U 92005C 95341.25145549 -.00000024 00000-0 00000+0 0 2151
2 21855 65.0687 90.8968 0008553 198.8480 161.1094 2.13101972 29980
JERS-1
1 21867U 92007A 95341.24070522 .00001662 00000-0 14323-3 0 7232
2 21867 97.7070 56.1050 0002514 90.4261 269.7253 14.98673847108962
GPS BIIA-12
1 21890U 92009A 95341.23685584 .00000011 00000-0 10000-3 0 7313
2 21890 53.8544 234.6136 0058875 180.9227 179.1616 2.00559483 27778
GPS BIIA-13
1 21930U 92019A 95339.94958357 -.00000075 00000-0 10000-3 0 7158
2 21930 55.7140 356.3797 0034594 181.2276 178.8187 2.00561512 26674
EUVE
1 21987U 92031A 95341.21196754 .00001124 00000-0 42017-4 0 5047
2 21987 28.4314 40.2614 0009898 103.9271 256.2423 15.19569351194299
SAMPEX
1 22012U 92038A 95341.47394060 .00000489 00000-0 40030-4 0 6791
2 22012 81.6690 322.7590 0120047 81.4049 280.0742 14.91523766186504
GPS BIIA-14
1 22014U 92039A 95341.48439018 .00000064 00000-0 00000+0 0 6188
2 22014 54.8278 176.2501 0096952 329.6605 29.8331 2.00562469 18547
Glonass 56
1 22056U 92047A 95341.15048550 -.00000055 00000-0 00000+0 0 1236
2 22056 64.8229 330.2572 0007258 270.8822 89.0411 2.13103286 26075
Glonass 57
1 22057U 92047B 95340.50772191 -.00000056 00000-0 00000+0 0 1107
2 22057 64.8397 330.2952 0008693 304.8871 55.0399 2.13102491 26031
Glonass 58
1 22058U 92047C 95341.38601989 -.00000055 00000-0 10000-3 0 665
2 22058 64.8301 330.2749 0011856 270.0735 89.8116 2.13103127 26106
TOPEX
```

```
1 22076U 92052A 95338.17181778 -.00000038 00000-0 10000-3 0 9258
2 22076 66.0428 259.8021 0007529 267.7546 92.2605 12.80931270155011
KO-23
1 22077U 92052B 95341.19740468 -.00000037 00000-0 10000-3 0 5404
2 22077 66.0785 233.5291 0003048 351.6763 8.4204 12.86293211155984
S80/T
1 22078U 92052C 95339.76540790 -.00000037 00000-0 10000-3 0 5377
2 22078 66.0797 235.2381 0004586 6.7061 353.4014 12.86577925155882
GPS BIIA-15
1 22108U 92058A 95341.94630679 .00000012 00000-0 10000-3 0 6650
2 22108 54.1021 235.3640 0114003 156.2257 204.3915 2.00555561 23736
FREJA
1 22161U 92064A 95340.50424867 -.00000314 00000-0 -73878-4 0 5678
2 22161 62.9910 12.1369 0824807 1.5960 358.7402 13.21859044152827
LAGEOS II
1 22195U 92070B 95339.73064705 -.00000009 00000-0 10000-3 0 4515
2 22195 52.6416 114.5493 0137549 351.7643 8.0669 6.47294068 73689
GPS BIIA-16
1 22231U 92079A 95341.68779914 .00000063 00000-0 10000-3 0 6316
2 22231 54.5559 177.3288 0023792 98.6869 302.4311 2.00556183 22301
GPS BIIA-17
1 22275U 92089A 95340.78104375 .00000068 00000-0 10000-3 0 6649
2 22275 54.6292 174.9716 0031489 251.6038 108.1784 2.00571482 21699
TDRS 5
1 22314U 93003B 95334.62972426 -.00000286 00000-0 10000-3 0 5895
2 22314 2.2274 70.9233 0002576 215.7869 323.0663 1.00278117 10587
GPS BIIA-18
1 22446U 93007A 95338.85490770 -.00000087 00000-0 10000-3 0 6408
2 22446 54.3381 295.3114 0085811 356.1590 3.7562 2.00568371 20648
Glonass 59
1 22512U 93010A 95337.61434080 -.00000037 00000-0 10000-3 0 7531
2 22512 65.0637 90.8782 0009352 190.1860 169.7709 2.13102005 21500
Glonass 60
1 22513U 93010B 95341.30729086 -.00000023 00000-0 00000+0 0 8425
2 22513 65.0752 90.7602 0007890 191.3878 168.5698 2.13101701 21771
Glonass 61
1 22514U 93010C 95341.13152446 -.00000025 00000-0 00000+0 0 8362
2 22514 65.0979 90.7544 0011735 185.6586 174.3157 2.13102690 21776
ASTRO-D
1 22521U 93011A 95339.39742867 .00001424 00000-0 94577-4 0 4555
2 22521 31.1053 226.8393 0056279 35.5554 324.8730 15.02622329153149
UFO F1
1 22563U 93015A 95336.95101119 -.00000136 00000-0 00000+0 0 4758
2 22563 25.6834 291.7485 0009593 286.6828 296.9467 0.99249126 14134
GPS BIIA-19
1 22581U 93017A 95339.99501867 -.00000076 00000-0 10000-3 0 4850
2 22581 55.2336 355.8675 0058421 34.3930 326.0272 2.00567381 19728
ARSENE
1 22654U 93031B 95329.41880734 -.00000100 00000-0 10000-3 0 3415
2 22654 2.9717 78.2469 2885825 225.4824 107.7921 1.42201851 8681
```

```
GPS BIIA-20
1 22657U 93032A 95342.12753309 -.00000076 00000-0 10000-3 0 5659
2 22657 55.1799 355.5777 0071957 210.3970 149.2162 2.00558096 15095
RADCAL
1 22698U 93041A 95341.48314541 .00000074 00000-0 27100-4 0 4503
2 22698 89.5375 281.4549 0088895 233.5890 125.7099 14.21360088127058
GPS BIIA-21
1 22700U 93042A 95337.10329322 -.00000025 00000-0 10000-3 0 4760
2 22700 54.2601 236.3797 0044051 350.1723 9.7994 2.00569479 17797
NOAA 13
1 22739U 93050A 95341.38892945 .00000007 00000-0 29027-4 0 9474
2 22739 99.0168 290.6103 0010712 49.7515 310.4579 14.10950337 19867
GPS BIIA-22
1 22779U 93054A 95339.68869082 -.00000084 00000-0 10000-3 0 5470
2 22779 54.4594 295.3041 0019694 255.4572 104.3149 2.00556671 16600
Meteor 2-21
1 22782U 93055A 95339.95704804 .00000035 00000-0 18714-4 0 4469
2 22782 82.5462 141.0706 0022561 158.6764 201.5339 13.83043225114282
UFO F2
1 22787U 93056A 95341.81449235 -.00000059 00000-0 00000+0 0 5863
2 22787 4.3487 325.8458 0004231 268.8553 206.4483 1.00269870 6901
SPOT 3
1 22823U 93061A 95342.24648432 -.00000044 00000-0 00000+0 0 4928
2 22823 98.7223 54.0275 0000624 65.5605 294.5645 14.20035086113999
STELLA
1 22824U 93061B 95341.15989405 -.00000042 00000-0 49141-6 0 4346
2 22824 98.6047 54.5752 0007181 72.4434 287.7532 14.27103072114404
AO-27
1 22825U 93061C 95341.69818925 .00000001 00000-0 18005-4 0 4374
2 22825 98.6041 55.5429 0009568 72.6611 287.5612 14.27680890114529
IO-26
1 22826U 93061D 95340.23743068 .00000004 00000-0 19364-4 0 4360
2 22826 98.6045 54.2333 0010090 77.1533 283.0771 14.27788755114323
HEATHSAT
1 22827U 93061E 95340.17309060 .00000049 00000-0 37223-4 0 4974
2 22827 98.6017 54.0909 0010259 64.9782 295.2463 14.27917927114325
ITAMSAT
1 22828U 93061F 95339.21317742 .00000011 00000-0 21837-4 0 4146
2 22828 98.6005 53.2693 0011115 65.8459 294.3870 14.28121747 82286
PO-28
1 22829U 93061G 95340.20806499 -.00000017 00000-0 10511-4 0 4289
2 22829 98.5998 54.2922 0010841 63.6908 296.5385 14.28102855114340
KO-25
1 22830U 93061H 95341.17922372 -.00000037 00000-0 23870-5 0 4473
2 22830 98.4975 46.4529 0012424 40.2884 319.9218 14.28102179114484
JIANBING-93 P/L(1)
1 22870U 93063H 95342.26218177 .00259353 83221-5 16535-3 0 3352
2 22870 56.4555 67.9112 0588318 243.5889 110.3592 14.98577484 3505
GPS BIIA-23
1 22877U 93068A 95341.23118004 -.00000062 00000-0 10000-3 0 3585
```

```
2 22877 55.5362 56.8565 0030462 298.7499 61.0049 2.00565681 15528
METEOSAT 6
1 22912U 93073B 95341.08718299 -.00000077 00000-0 10000-3 0 3852
2 22912 0.4733 281.2255 0003001 343.4870 192.1712 1.00274279 5924
HST Array
1 22920U 90037C 95340.25927352 .00006558 00000-0 46446-3 0 4053
2 22920 28.4667 326.5399 0003668 196.6937 163.3532 15.02905436110203
Meteor 3-6
1 22969U 94003A 95338.25444455 .00000051 00000-0 10000-3 0 2156
2 22969 82.5604 38.7454 0016275 12.2147 347.9358 13.16733269 89269
TUBSAT-B
1 22970U 94003B 95340.17975055 .00000051 00000-0 10000-3 0 2078
2 22970 82.5581 37.3041 0016749 5.9096 354.2202 13.16826759 89525
GPS BIIA-24
1 23027U 94016A 95341.31382609 -.00000076 00000-0 10000-3 0 2898
2 23027 55.0836 357.6733 0067363 201.3591 158.4090 2.00567046 12834
Glonass 62
1 23043U 94021A 95341.20962542 -.00000055 00000-0 00000+0 0 2892
2 23043 64.7125 330.6363 0006526 211.2023 148.7650 2.13102533 12894
Glonass 63
1 23044U 94021B 95342.03071185 -.00000054 00000-0 00000+0 0 2573
2 23044 64.7034 330.6024 0030872 206.9586 152.8847 2.13102979 12915
Glonass 64
1 23045U 94021C 95340.33028891 -.00000056 00000-0 00000+0 0 2663
2 23045 64.6971 330.6776 0010151 27.1659 332.8992 2.13102515 12873
GOES 8
1 23051U 94022A 95338.48241473 -.00000249 00000-0 00000+0 0 4326
2 23051 0.3559 82.0537 0002749 165.1152 283.5518 1.00281938 13405
MSTI 2
1 23101U 94028A 95341.51377732 .00005331 00000-0 89285-4 0 2639
2 23101 97.0877 172.3591 0011404 322.0465 37.9950 15.52215006 89396
STRV-1A
1 23125U 94034B 95335.46751672 .00003371 00000-0 83485-3 0 2321
2 23125 7.6720 322.2386 7258529 257.2115 19.9555 2.31567334 11510
STRV-1B
1 23126U 94034C 95340.19163975 .00005222 00000-0 10040-2 0 2009
2 23126 7.5767 320.7419 7262213 260.4936 18.4325 2.31444005 11667
Nadezhda 4
1 23179U 94041A 95339.19039471 .00000025 00000-0 10169-4 0 1500
2 23179 82.9465 21.1278 0035916 311.0808 48.7243 13.75674609 69982
Glonass 65
1 23203U 94050A 95339.99885848 .00000066 00000-0 00000+0 0 2237
2 23203 64.7713 210.6450 0007490 139.7290 220.4224 2.13101981 10260
Glonass 66
1 23204U 94050B 95340.70203864 .00000066 00000-0 00000+0 0 2332
2 23204 64.7711 210.6408 0015002 351.0723 8.9956 2.13102414 10274
Glonass 67
1 23205U 94050C 95341.05409482 .00000065 00000-0 00000+0 0 2199
2 23205 64.7682 210.6255 0001405 2.0141 358.0816 2.13102370 10287
DMSP B5D2-7
```

```
1 23233U 94057A 95341.71549311 .00000096 00000-0 75506-4 0 5876
2 23233 98.8547 38.0356 0013027 10.6850 349.4588 14.12661298 65657
OKEAN 1-7
1 23317U 94066A 95341.17664068 .00000263 00000-0 36423-4 0 1143
2 23317 82.5439 236.5692 0026951 352.0948 7.9841 14.73983145 62109
ELEKTRO
1 23327U 94069A 95338.69588485 -.00000097 00000-0 00000+0 0 1051
2 23327 0.4176 257.2860 0002040 126.7454 15.5115 1.00271033 4045
RESURS 1-3
1 23342U 94074A 95341.76294391 -.00000047 00000-0 19000-6 0 4129
2 23342 97.9950 38.1180 0001177 86.8295 273.3044 14.69796511 58544
Glonass 68
1 23396U 94076A 95340.42805735 -.00000031 00000-0 00000+0 0 1776
2 23396 65.0082 90.8509 0030891 189.8498 170.0733 2.13102549 8113
Glonass 69
1 23397U 94076B 95340.60370754 -.00000030 00000-0 00000+0 0 1842
2 23397 64.9913 90.8639 0011298 317.4026 42.5041 2.13102461 8113
Glonass 70
1 23398U 94076C 95340.95654283 -.00000027 00000-0 00000+0 0 1995
2 23398 64.9907 90.8273 0002735 257.4712 102.4775 2.13102141 8139
LUCH (Altair-2)
1 23426U 94082A 95342.01077556 -.00000267 00000-0 00000+0 0 2149
2 23426 1.8428 271.2156 0002212 336.1832 287.9603 1.00277937 3575
RS-15
1 23439U 94085A 95339.06062084 -.00000039 00000-0 10000-3 0 967
2 23439 64.8126 338.6400 0166517 233.0068 125.5516 11.27523592 38780
NOAA 14
1 23455U 94089A 95341.83914241 .00000044 00000-0 48721-4 0 4194
2 23455 98.9219 283.1365 0010551 65.3610 294.8659 14.11553238 48312
ODERACS II A
1 23471U 95004C 95342.00041938 .00058533 12701-4 13731-3 0 2566
2 23471 51.6471 303.7751 0011029 66.1019 294.1152 15.97148149 48808
Glonass 71
1 23511U 95009A 95339.97809223 -.00000055 00000-0 00000+0 0 1255
2 23511 64.7255 330.9438 0007827 227.3427 132.6017 2.13102787 5831
Glonass 72
1 23512U 95009B 95340.09587352 -.00000055 00000-0 00000+0 0 1358
2 23512 64.7191 330.9514 0007346 303.7554 56.1816 2.13101906 5831
Glonass 73
1 23513U 95009C 95340.85822778 -.00000056 00000-0 00000+0 0 1471
2 23513 64.7258 330.9379 0013994 209.9924 149.9378 2.13102894 5852
SFU
1 23521U 95011A 95341.39349892 .00003506 00000-0 11160-3 0 1277
2 23521 28.4570 332.2331 0007959 83.6072 327.8155 15.29408662 40484
GMS 5
1 23522U 95011B 95332.72575514 -.00000292 00000-0 10000-3 0 773
2 23522 0.6432 308.2454 0001342 129.6160 30.5793 1.00276956 2434
DMSP B5D2-8
1 23533U 95015A 95342.21865464 .00000012 00000-0 30129-4 0 3171
2 23533 98.8359 342.2177 0006264 239.7780 120.2772 14.12715021 36521
```

```
Microlab 1
1 23547U 95017C 95341.85639107 .00000206 00000-0 75393-4 0 691
2 23547 69.9794 256.3704 0010165 97.5643 262.6640 14.45456057 35871
OFEQ 3
1 23549U 95018A 95341.79538825 .00015628 00000-0 41727-3 0 1601
2 23549 143.3662 138.9420 0240077 322.8716 35.5613 15.11473217 37203
GFZ-1
1 23558U 86017JE 95342.24562724 .00002941 00000-0 40329-4 0 810
2 23558 51.6531 0.9281 0006047 213.7887 146.2719 15.61093747560014
ERS-2
1 23560U 95021A 95341.53609655 .00000063 00000-0 39591-4 0 1435
2 23560 98.5523 53.3799 0000971 74.1838 285.9457 14.32247224 32998
Spektr
1 23579U 95024A 95341.82545960 .00016206 00000-0 21641-3 0 2037
2 23579 51.6446 7.8653 0003737 46.2845 313.6821 15.58223350 31453
GOES 9
1 23581U 95025A 95338.60166800 -.00000180 00000-0 00000+0 0 1008
2 23581 0.2018 269.4499 0004213 354.5215 295.5236 1.00266086 1967
Helios 1A
1 23605U 95033A 95339.26663804 .00000176 00000-0 42734-4 0 1226
2 23605 98.1044 272.9519 0001346 74.8216 285.3135 14.63856559 22037
UPM SAT 1
1 23606U 95033B 95341.89253280 .00000112 00000-0 28562-4 0 954
2 23606 98.0847 275.9522 0008078 70.9503 289.2582 14.66912995 22523
CERISE
1 23607U 95033C 95338.25133934 .00000237 00000-0 50740-4 0 450
2 23607 98.0869 272.4217 0010010 83.3363 276.8980 14.67184123 21890
TDRS 6
1 23613U 95035B 95339.37225016 .00000132 00000-0 00000+0 0 976
2 23613 0.2736 84.7682 0003426 168.8518 164.2204 1.00262569 1430
Glonass 74
1 23620U 95037A 95342.05050148 .00000061 00000-0 00000+0 0 743
2 23620 64.8328 210.4141 0018386 163.6505 196.5055 2.13102971 2910
Glonass 75
1 23621U 95037B 95341.28858406 .00000064 00000-0 00000+0 0 823
2 23621 64.8359 210.4454 0017438 173.1942 186.9074 2.13101942 2898
Glonass 76
1 23622U 95037C 95339.93933186 .00000066 00000-0 00000+0 0 778
2 23622 64.8356 210.4873 0036925 163.1013 197.1158 2.13102492 2866
Prognoz-M2
1 23632U 95039A 95344.15089960 -.00001137 00000-0 00000+0 0 213
2 23632 68.3200 253.1460 8957180 318.2860 2.0640 0.26327600 349
SICH-1
1 23657U 95046A 95338.55302754 .00000095 00000-0 11209-4 0 370
2 23657 82.5338 20.6297 0027572 328.4141 31.5421 14.73436056 14028
Soyuz TM-22
1 23665U 95047A 95341.82545960 .00016206 00000-0 21641-3 0 957
2 23665 51.6446 7.8653 0003737 46.2845 313.6821 15.58223350 14898
Progress M-29
1 23678U 95053A 95341.82545960 .00016206 00000-0 21641-3 0 598
```

```
2 23678 51.6446 7.8653 0003737 46.2845 313.6821 15.58223350 9379
ISO
1 23715U 95062A 95340.09106202 -.00000354 00000-0 10000-3 0 90
2 23715 5.0309 308.2223 8219954 117.5165 344.4748 1.00193908 196
Gals-2
1 23717U 95063A 95341.80767282 -.00000048 00000-0 00000+0 0 134
2 23717 0.1803 346.4622 0004093 357.7424 94.1484 1.00259363 200
1995063B
1 23718U 95063B 95325.02726286 .22072120 12879-4 98252-4 0 191
2 23718 51.6145 262.6890 0001889 15.4163 70.3187 16.56114990 563
1995063C
1 23719U 95063C 95322.26697917 .13379302 12353-4 11943-2 0 46
2 23719 51.6095 278.2213 0005927 87.8436 272.7159 16.38218014 89
1995063D
1 23720U 95063D 95337.56727542 -.00000150 00000-0 00000+0 0 45
2 23720 0.2050 294.6206 0036959 54.9428 10.3601 1.00155502 163
1995063E
1 23721U 95063E 95341.91132533 .00002770 00000-0 90062-3 0 174
2 23721 47.3758 276.0840 7288758 5.3612 359.3302 2.27127783 420
1995063F
1 23722U 95063F 95338.85990654 .00000562 00000-0 59534-3 0 97
2 23722 47.4406 277.0111 7269436 4.4584 359.3575 2.26669912 408
Asiasat 2
1 23723U 95064A 95340.45165786 -.00000388 00000-0 00000+0 0 152
2 23723 0.4442 271.3416 0234766 270.7666 147.9701 1.01180979 116
1995064B
1 23724U 95064B 95339.11007546 .10941083 -86892-5 31967-3 0 316
2 23724 28.0014 192.0730 0015911 229.6647 130.4466 16.44059292 1085
1995064C
1 23725U 95064C 95341.74080432 .00008068 00000-0 10401-2 0 118
2 23725 25.5635 239.9982 7252492 185.5421 156.3127 2.33498545 206
1995067A
1 23730U 95067A 95341.21493660 -.00000165 00000-0 00000+0 0 11
2 23730 6.9876 240.9785 7288216 178.2317 187.9836 2.28530723 05
1995067B
1 23731U 95067B 95341.21440415 -.00000165 00000-0 00000+0 0 12
2 23731 6.9850 241.0952 7288616 178.1123 188.5049 2.28486390 07
1995067C
1 23732U 95067C 95341.22477632 -.00000180 00000-0 00000+0 0 12
2 23732 6.8178 241.8948 7350325 177.7042 190.4199 2.18286303 04
1995067D
1 23733U 95067D 95341.21235778 -.00000166 00000-0 00000+0 0 19
2 23733 6.9828 240.7636 7291015 178.4873 186.8753 2.27987166 00
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology
```

2576. Hamfest, Radiofest, Computer Expo

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: kb0lcj@mwci.net
Message-ID: <4ab355$ce5@hihat.mwci.net>
Source record: 23488
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.policy,rec.radio.amateur.space

There will be a Hamfest, Radiofest, Computer Expo in Dubuque, Iowa on
Sept. 8, 1996!

Check out http://galaxy.mwci.net/grarc/top.htm for more info, or E-Mail
me!

73
Sean

--
---> <---
Sean Heber Ham Callsign: KB0LCJ

E-Mail: Sysop@Galaxy.Mwci.Net
OR kb0lcj@mwci.net
WWW Page: http://galaxy.mwci.net
Leave mail for Sysop on the Galaxy BBS:
(319) 557-2430 telnet: galaxy.mwci.net
---> <---

2577. STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: sts48@ix.netcom.com
Message-ID: <4abnn7$6v1@cloner2.ix.netcom.com>
Source record: 23489
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

>Oberg Wrote:
>Arguing by elimination usually leads to the same quality output that
>any animal elimination process creates. Why are imaginations so
>limited?
>
>How about
>
>e) she was joking with a crewmate about the jar lid she frisbeed over
>in zero-G?

Under careful examination of the tape, prior to the UFO statement by Cady Coleman, the verbal exchange between Huntsville and Cady is business and professional. Huntsville then informs the shuttle that the switch to TVC-2 has been made. About 10 seconds later at 0604:40 (GMT), Cady Coleman replies: "We have an Unidentified Flying Object". It is in a more serious tone than her words prior. There is no detectable kidding around as Captain Oberg suggest.
The more reasonable scenario of what happened is this: After Cady says the words, "We have an Unidentified Flying Object", about 10 seconds later, a status screen pops up and on it is a listing of statuses among which is a TVC block. It is obvious that the UFO words should never have gotten out. The TVC-2 block should have occurred before the UFO words and then nobody would have been the wiser. Perhaps in Cady's excitement of seeing the UFO, she blurted out the UFO words in the clear forgetting to press the TVC block button.

2578. Re: OSCAR 21 ... ?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Message-ID: <Pine.SOL.3.91.951209173808.25881C-100000@spacelink>
Source record: 23490

On 9 Dec 1995, sylvestre wrote:

> Is anyone knows what happened with Oscar 21
> I operated it last year, it was working great.
> I am a satellite operator, I am also a member of Amsat but
> I just don't know what really hapened to that satellite.
>
> Thank you for your help !
>
> Benoit
> ve2vb@amsat.org
>
>
The satellite it was piggybacked on was also it's source of power. When the screwed up Russian Army and the group which commissioned the satellite disagreed on the operational costs, the Army simply shut the sucker off. Boom. No technical satellite, no ham satellite!
> >

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

2579. OSCAR 21 ... ?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <4acjr1$678@news.worldlinx.com>
Source record: 23491

Is anyone knows what happened with Oscar 21
I operated it last year, it was working great.
I am a satellite operator, I am also a member of Amsat but
I just don't know what really hapened to that satellite.

Thank you for your help !

Benoit
ve2vb@amsat.org

2580. NOAA-9

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <4acjvj$678@news.worldlinx.com>
Source record: 23492

I've been listening to NOAA-9 on 137.700 FM
since the past 2 days and it seem's to me like the bird
is pitching 9600 Bauds signal instead of the regular
standard APT wefax.

Anyone know more about it ?

Benoit

ve2vb@amsat.org

2581. Re: 9600 pacsats

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <4ackap$678@news.worldlinx.com>
Source record: 23493

Hello, name hr is Benoit VE2VB
I just started to play with the microsats KO-23 / KO-25 / UO-22
for the moment I am using the 9600 bauds sats.

I've been able to download files and messages on all of the above
satellites and it works great. I've also put some message on KO-23

I am using a DSP-2232 from AEA and my radio is a TS-790A from
Kenwood .. Antennas KLM 40-CX on UHF and KLM 22-C on VHF the
only thing I am missing now is the tracking interface.

A lot of people recommand the Kansas City Tracker / Tuner
I am still not sure because, I got some feedback about the
Track box too ! So I am just looking for the best interface
And want that Interface to track the frequency and do the doppler
correction.

Can you help ?

Thank you

VE2VB@AMSAT.ORG Benoit ve2vb

2582. Re: FM on the Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: Clifford Buttschardt <cbuttsch@biggulp.callamer.com>
Message-ID: <Pine.OSF.3.91.951209180933.27359G-100000@biggulp.callamer.com>
Source record: 23494

Yes Rob these stations are a great pain in the ass! I have heard them
and they appear to come from central America. It is just about as much
as a pain in the ass as the American stations that INSIST on broadcasting
ATV on the uplink which has been going on for years! We can thank our
"friend" W6ORG for putting out this garbage equipment as PC
electronics and is a ARRL tech advisor yet!!! Cliff W6HDO

2583. NASA ATS Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: rhyolite95@aol.com
Message-ID: <4abcls$dgi@newsbf02.news.aol.com>
Source record: 23495

A few years ago I spent a lot of time monitoring this satellite on 135.575, 135.600, 135.625 MHz. I am now getting my antenna's back up and listened again for a short while and heard a lot of European land mobile noise and IM coming up through the 149 MHz uplink.

Can any one tell me if this satellite is still in use and by whom? Is the interference a new phenomenon? What are the sources being heard on the uplink?

Rhyolite95

2584. ARLK069 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk069.1995@ampr.org>
Source record: 23496
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK069
ARLK069 Keplerian data

ZCZC SK94
QST de W1AW
Keplerian Bulletin 69 ARLK069
From ARRL Headquarters
Newington, CT December 9, 1995
To all radio amateurs

SB KEP ARL ARLK069
ARLK069 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95342.55510253 .00010024 00000-0 13643-3 0 3512
2 16609 51.6454 4.2056 0003283 49.3886 86.3132 15.58232470460134
AO-10
1 14129U 83058B 95334.82392991 -.00000421 00000-0 10000-3 0 3916
2 14129 26.4097 235.9909 5978339 330.6728 6.2527 2.05883476 65766
RS-10/11
1 18129U 87054A 95342.37564871 .00000035 00000-0 22310-4 0 1485
2 18129 82.9228 290.3045 0011467 336.7141 23.3491 13.72359820423866
UO-11
1 14781U 84021B 95342.51465294 .00000136 00000-0 30795-4 0 8464
2 14781 97.7872 336.9310 0011730 350.2122 9.8852 14.69407018629509
RS-12/13
1 21089U 91007A 95342.45750400 .00000043 00000-0 29121-4 0 8507
2 21089 82.9182 331.5289 0030834 48.9342 311.4471 13.74063239242705
AO-13
1 19216U 88051B 95341.57796336 -.00000176 00000-0 95765-4 0 1194
2 19216 57.4229 148.5182 7356438 25.6218 357.2004 2.09729621 25803
UO-14
1 20437U 90005B 95340.08134107 .00000031 00000-0 28694-4 0 01512
2 20437 98.5598 61.6150 0012119 52.8117 307.4186 14.29905739306310
RS-15
1 23439U 94085A 95340.12494837 -.00000039 00000-0 10000-3 0 01018
2 23439 64.8126 336.9189 0166611 232.8197 125.7412 11.27523584038902
```

```
AO-16
1 20439U 90005D 95340.18651504 .00000009 00000-0 20340-4 0 09726
2 20439 98.5723 63.6299 0012289 54.7177 305.5159 14.29960087306342
DO-17
1 20440U 90005E 95340.08804031 .00000023 00000-0 25650-4 0 9435
2 20440 98.5736 64.0722 0012456 53.0221 307.2098 14.30102130306353
WO-18
1 20441U 90005F 95342.24276875 .00000017 00000-0 23430-4 0 9487
2 20441 98.5735 66.1518 0013005 47.5708 312.6565 14.30072324306662
LO-19
1 20442U 90005G 95340.15412281 .00000022 00000-0 25234-4 0 09434
2 20442 98.5752 64.5140 0013321 53.1983 307.0431 14.30177564206384
FO-20
1 20480U 90013C 95342.19647405 -.00000045 00000-0 -26940-4 0 8407
2 20480 99.0595 38.3434 0540300 199.4004 158.5798 12.83232066273263
AO-21
1 21087U 91006A 95339.87464602 .00000094 00000-0 82657-4 0 6565
2 21087 82.9363 105.5192 0036455 29.1678 331.1503 13.74562475243313
UO-22
1 21575U 91050B 95340.13378027 .00000020 00000-0 21068-4 0 06548
2 21575 98.3784 47.0465 0008004 119.2297 240.9690 14.37003106230190
KO-23
1 22077U 92052B 95341.19740468 -.00000037 00000-0 10000-3 0 5404
2 22077 66.0785 233.5291 0003048 351.6763 8.4204 12.86293211155984
KO-25
1 22828U 93061F 95340.12398260 .00000167 00000-0 84800-4 0 04198
2 22828 98.5966 54.1640 0011117 63.6230 296.6114 14.28122542082413
IO-26
1 22826U 93061D 95340.23743068 .00000004 00000-0 19364-4 0 4360
2 22826 98.6045 54.2333 0010090 77.1533 283.0771 14.27788755114323
AO-27
1 22825U 93061C 95341.69818925 .00000001 00000-0 18005-4 0 4374
2 22825 98.6041 55.5429 0009568 72.6611 287.5612 14.27680890114529
PO-28
1 22829U 93061G 95340.20806510 -.00000015 00000-0 11269-4 0 04552
2 22829 98.5997 54.2920 0010843 63.6315 296.5984 14.28102882114346

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
December 12, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2585. Funkamateu und internet

Newsgroup: rec.radio.amateur.space
Date: 1995-12-09 00:00:00 UTC
From: nobody@fh-offenburg.de
Message-ID: <4ac74q$1uk@news.belwue.de>
Source record: 23497

Gibt es eine mï¿½glichkeit via 2 meter ins internet zu kommen??

2586. Re: FM on the Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: wave@mindspring.com
Message-ID: <4adege$1nm0@stealth.mindspring.com>
Source record: 23498

In article <DJ9quz.oDE@pe1chl.ampr.org>, rob@pe1chl.ampr.org says...

>I think the explanation at that time was they were taxi drivers
>in Spanish cities, and the authorities were not doing anything about it.
>
The stations you are hearing are probably unlicensed commercial users using the frequencies around 145.8. On a recent trip to the northern coast of Colombia I was trying to make a contact on a0-21 and listening to the downlink frequency. I then got into an argument with an unidentified station that uses this channel for his business. I told him that this was a satellite downlink and that he was causing interference. He then said that he has heard foreign language on this frequency, but never agreed to qsy. This is a very big problem. I scanned the 2 meter band while in Colombia and Venezuela and every single channel is in use during the day ,99% from unlicenced operators. The sad story is that nothing can be done. These countries have so many problems that enforcing the ham bands is not in their high priority list. Sending letters to the ministry of comunications of Colombia for example is a bad idea. A few years ago it was discovered that the driver of one of the commisioners would use some of the correspondence to clean the windshield of his car after a trip to the post office.

73's

AC4OP
HK1ZAB

2587. Re: 2m FM and RS-15 ???

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: wave@mindspring.com
Message-ID: <4adeq7$1nm0@stealth.mindspring.com>
Source record: 23499

In article <Pine.SOL.3.91.951206101455.13558D-100000@qni.com>,
gwatts@qni.com says...
>
>
>The ones I heard doing it sounded pretty bad..
>They would chirp when first keyed up..
>Sure it works but a pain to listen to
>
>Gary Watts de N0OXV
>Kansas City Mo
>81 GL1100I

vvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvvv
FM'ing on 2.meter uplink frequency for RS-10
Will make you CW on downlink frequency.
It work ok

73 VE2VB @amsat.org
^^

it works ok if the microphone is disconnected so that the VCO is at a
stable frequency. If the radios mic gain is high enough, any sound it
picks up during transmission will fm the uplink, so it will sound like on
off keyeed FM, OOKFM and will probably interfere with other users.

73's

AC4OPieter Ibelings

2588. NAVSPASUR and PAVE PAWS DEEP SPACE RADARS

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: cliff@televar.com
Message-ID: <4ado6a$eth@golden.ncw.net>
Source record: 23500

I can not find a listing other than a reference to PAVE PAWS Deep Space Radar in "Spectrum Guide" OF PAVE PAWS being located somewhere between 420 and 450 MHZ. Does anyone know what frequency it is located on? Also I'm assuming it is a pulsed radar, is that correct?
Second question is NAVSPASUR Space Fence Radar. I understand from the listings that it is at 216.983MHZ. Does it operate 24hrs. a day? If so what am I looking for, pulsed radar again. If so how fast in comparison to the old russian woodpecker radar? Any help would be appreciated as specific's other than, "its there", are somewhat hard to come by from the Navy.

2589. FOR SALE: Kenpro KR-5400 Az-El Rotor

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: paulm@ultranet.com
Message-ID: <4af2oi$35p@caesar.ultra.net>
Source record: 23501

FOR SALE: Kenpro KR-5400 Azimuth-Elevation rotor system $150

The control box and rotors are very similar to the Yaesu G-5400 system. Why am I selling this for such a miniscule price? The controller is not working. If you are good at troubleshooting electronics and want to get onto the amateur satellites, this could be your winter project. Elevation rotor is only 18 months old. Azimuth rotor is older. You'll also need to add some fresh hardware to the rotor brackets (nuts and bolts).

UPS ground shipping included in price.

Email only to paulm@ultranet.com

2590. Re: NAVSPASUR and PAVE PAWS DEEP SPACE RADARS

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: mdf@vigard.mef.org
Message-ID: <mdf.818592490@vigard.mef.org>
Source record: 23502

cliff@televar.com writes:

>Second question is NAVSPASUR Space Fence Radar.

the NAVSPASUR fence is a CW radar. an antenna array projects a thin
fan of RF (216.983MHz is correct) straight up, the "fence"
oriented east-west. multiple receiving sites listen for the echos as
satellites pass through the fence. interferometers for 3D DF (az/el), doppler
gives range rate. while an orbit can probably be completely determined
from on one fence crossing (since both position and velocity can be measured),
it's most likely going to be a poor one -- but thats that differential
correction is for.

the nice thing about this system is that if you are close enough to the
transmitters, you too can join in the fun. a SSB/CW receiver/transverter,
gain antenna are the minimum. use a satellite tracking program to get
estimates for a crossing time, aim antenna and listen. measurements of
actual crossing time vs. predicted can be used to correct element sets.

here is a list of transmitting sites that is at least 3 years old:

Longtitude	Latitude
Jordan Lake, AL	-86.264 32.659
Kickapoo Lake, TX	-98.7637 33.558
Gila River, AZ	-112.03 33.11

[notice how they are spread in longitude; a typical LEO object will
cross the combined fence over 2-3 successive orbits, assuming its inclination
exceeds 33 degrees or so].

other references:

"Observing Earth Satellites", Desmond King-Hele, chapter 8.
"Radar Handbook", Merrill Skolnik, chapter 32.
--
Matthew Francey | VE3RQX | NAD27: N43o34.210' W079o34.572' +0093m

2591. Re: Mir QSL info!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: randyk@emf.net
Message-ID: <4ae8f7$ct7@emf.emf.net>
Source record: 23503

mcaron@riq.qc.ca wrote:

: I'd like to know how to be able to get a QSL card from MIR.

Just send a QSL to Dave and a 'business' sized SASE envelope and
everything else will be just fine. You don't need a number for a QSL.

_Randy N6WDV

p.s. All email to your account has been bouncing, might want to check into
it....73's

2592. Radio Meteor Obs Bull Nov 1995 Leonids, alpha Monoc

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: Chris Steyaert <72650.3513@CompuServe.COM>
Message-ID: <4aee7k$q9t$1@mhadf.production.compuserve.com>
Source record: 23504

Radio Meteor Observation Bulletin No. 28 Dec 1995

1. FORWARD SCATTER METEOR OBSERVATIONS

Observer: Maurice De Meyere
Location: Deurle, Belgium (3 37' E, 51 00' N)
Frequency: 66.51 MHz
Transmitter locations (all stations of more than 10 kW):
66.35 MHz, Klaipeda, Lithuania 12 kW, 05h00-22h00
66.41 Siedlce Poland 39 04h57(Sun05h57)-02h00(Sat03h00)
66.47 Viesintos Lithuania 12 05h00-22h00
66.50 Sofia Bulgaria 10 24hrs
66.56 Poznan Poland 56 04h57(Sun05h57)-02h00(Sat03h00)
66.62 Budapest Hungary 100 24hrs
66.68 Valmiera Latvia 20 06h00-22h00
(The transmitters mentioned in RMOB9510 and RMOB9509 are wrong, error by the undersigned. Thanks to Ton Schoenmaker for bringing this to our attention).
Antenna: crossed Yagi, 4 elements, astronomical azimuth 270 o (= East), elevation 27 o
Antenna amplifier: 25 dB max level 90 dBmuV
Receiver: commercial, Progresson 447A, TESLA, Bratislava
The receiver was calibrated with a Marconi TF2008 signal generator. Sensitivity: 5 muV (modulation frequency 1000 Hz, frequency sweep 38 kHz) at (S+N)/N = 20 dB

Observing method: automated setup, 150 samples/second, 8 bit resolution. [Time and details of all individual meteor reflections are stored on file in the University of Ghent format (Prometeos), and are available for further analysis. Reduction software for DOS and Windows available].

November 1995

Raw counts of reflections with a duration of at least 0.027 s during one hour interval starting at UT:

Nov	UT											
1995	20h	21	22	23	00	01	02	03	04	05	06	07	08	09
1- 2	48	48	72	63	65	81	84	79	81	69	110	104		
2- 3	38	56	59	62	68	73	85	90	94	96	93	82		
3- 4	37	40	81	65	75	81	75	83	94	83	88	71		
4- 5	18	33	59	54	54	59	75	49	77	77	87	76		
5- 6	37	43	53	50	56	57	72	53	79	80	99	51		
6- 7	32	62	60	63	47	51	74	73	73	72	69	64		

7- 8 | 41 45 57 76 94 85 76 76 59 75 84 60
8- 9 | 49 56 58 49 61 88 57 79 51 61 102 60
9-10 | 40 44 51 46 64 77 72 67 89 102 69 69
10-11 | 36 47 48 54 68 74 57 72 59 59 104 51
11-12 | 43 47 61 79 71 58 70 68 76 58 78 60
12-13 | 42 56 77 78 76 65 94 69 64 80 78 85
13-14 | 41 62 73 68 65 80 78 87 57 64 72 72
14-15 | 41 45 65 68 85 71 83 90 83 101 71 92 52
15-16 | 55 52 69 92 76 93 95 97 97 89 109 212 114 172
16-17 | 42 59 83 73 96 93 116 140 154 156 132 177 179 154
17-18 | 34 40 69 70 161 100 198* 169* 283* 305* 247* 188
18-19 | 28 53 61 59 71 81 68 115 102 69 85 124 50 49
19-20 | 48 53 62 68 73 77 79 94 67 88 97 86
20-21 | 30 58 65 67 74 76 80 78 97 75 105 72
21-22 | 47 41 44 79 53 232& 75 86 67 61 61 64
22-23 | 31 69 62 51 67 67 72 105 61 82 79 72
23-24 | 47 74 60 82 68 69 78 66 62 73 61 42
24-25 | 31 42 67 58 62 70 63 80 49 61 51 64
25-26 | 37 53 49 57 64 75 60 56 65 60 85 51
26-27 | 44 48 68 64 74 73 83 84 76 79 94 46
27-28 | 36 51 69 70 79 89 83 93 76 84 104 95
28-29 | 37 60 65 72 77 70 82 113 96 68 95 85
29-30 | 68 65 61 73 76 67 72 73 65 82 67 81
30-01 | - - - - - - - - - - - -

1995 | 20h 21 22 23 00 01 02 03 04 05 06 07 08 09
Nov | UT

Notes:

. * good Leonid activity during early Nov 18.
The Leonid radiant rises at 22h30m, and sets at 14h UT.
Best forward scatter conditions for this setup between 7h and 8h UT.
Compare with last years's results in RMOB9411.
Radio-amateur results:
Pista (YU7EW, Hungary) reports "very-very strong and long reflections but
no adequate activity" on the morning of Nov 18.
John (PE1OGF@PI8ZAA.#NBO.NLD.EU, Netherlands) writes: "This year LEONIDS
was a GOOD shower much better than activity I heard on RANDOM
frequencies. So NEXT year don't think LEONIDS is a POOR shower it's
really a good one with long and strong reflections over long distances.
... this shower had a sharp maximum which was somewhere between 01-07 UTC
on 18/11/95".

. & alpha Monocerotids

Meteor reflections during 5 minute interval starting at UT:

1995 | Number Number
Nov 22 | >= 0.027 s >= 1.00 s

0h40 | 4 1

0h45 | 7 0
0h50 | 5 1
0h55 | 6 0
1h00 | 8 1
1h05 | 13 2
1h10 | 17 4
1h15 | 28 7
1h20 | 39 13
1h25 | 34 9
1h30 | 26 11
1h35 | 30 8
1h40 | 11 4
1h45 | 7 0
1h50 | 10 1
1h55 | 10 1
2h00 | 7 1
2h05 | 4 1

Maurice De Meyere / Chris Steyaert

Observer: Werfried Kuneth
Location: Villach, Austria (46 37' N, 13 53' E)
Frequency: 59.250 MHz, SSB mode
Transmitter location: 150 kW TV video carrier from Bucaresti, distance
950 km, east. Sometimes other TV video carriers are selected.
Antenna: dipole with reflector, direction east.
Frequency 1: 59.250 MHz, SSB mode, 150 kW TV video carrier
in Bucaresti, distance 950 km, east.
Beginning on Nov. 26:
Frequency 2: 48.246 Mhz, SSB mode, 100 kW TV video carrier
Location Germany, distance 550 km, northwest.
Dipole used alternating with frequency 1.
Receivers: Several, incl. homemade converter. AGC is enabled. No preamplifiers.
Observing method: the audio signal is fed into a real time FFT display
(FFTDSP program from AF9Y) on the PC where 640 channels of 2Hz width
are recorded and stored continuously. Every meteor reflection produces
a distinct whistle, which is recorded easily by the real time FFT
program.
From the saved .GIF files, reflections of at least 15 seconds are taken
to get the one hour intervals count starting at UT:

November 1995

1995 | Time (UT)
Nov | 21h 22h 23h|04h 05h 06h 07h 08h 09h 10h 11h 12h 13h 14h 15h 16h 17h
------+------------+---
1 | - - - | 7 4 8 7 3 9 7 2 2 5 >3 - - -
1- 2 | >1 3 3 | 4 8 4 6 3 4 5 6 2 3 >1 1 - -
2- 3 | - 1d 4 | 8 9 10! 11 3 4 4 5 3 2 1 4 5 -
3- 4 | - - 2 | 4 7 7 5 4 - - - - 2 2 - - -

```
4- 5 | - - - | - 3 8 8 6 - - - - - - - - - -
5- 6 | 2 2 4 | - 6 11 8 4 5 5 4 4 1 6 >1 - -
6- 7 | >1 7 7 | - 9 6 6 9 7 7 3 - - - - - -
7- 8 | >3 2 2 | 3 8 9 11 4 9 6 5 3 3 4 1 3 -
8- 9 | >4 4 4 | 8 7 11 6 9 13! 17! 6 4 6 3 4 - -
9-10 | - 3 >3 | 7 4 6 4 3 4 2 3 1 2 3 1 3 1
10-11 | - 3 2 | - 5 6 7 1 3 3 4 5 2 2 1 4 1
11-12 | - 4 5 | - 6 6 2 6 4 3 5 5! 4! 5! 4 5 -
12-13 | 1 3 2 | 4 7 4 7 8 4 5 5 1 0 0 1 - -
13-14 | 2d 3d 3 | 3d 7d 7d 9 4 7 4 6 3 2 2 1 1 -
14-15 | - - - | - - - - - - - - - - - - - -
15-16 | - - - - - - - - - - - - - - - - -
16-17 | - - - | - - - - - - - - - - - - - -
17-18 | 3! 9! 6 |16! 17! 27! 21! 13! 12 7 4 3 5
18-19 | 4 2 2 |>3 6 7 2d 3d 4d 4 6 4 - - - - -
19-20 | 2 2 >3 | - 6 4 8 2 2 4 - - - - - - -
20-21 | 4 3 3 | 7 2 4 7 4 9d 2d 2d 3 3 3d 4d - -
21-22 | >2 4d 2d| 5d 5 4 6 6 7! 2d 3d 2 5 3 2 2 -
22-23 | >1 2 3 | 3d 4 6 4 4 7 5y 4 4 3 1 - - -
23-24 | - 3 4 | 3d 2 7 12! 7! 3 11 4 0 3 3 1 1 1
24-25 | - 1 1d| - 3 4! 4! - - - - - - 2 1 3 4
25-26 | 4 0 5 | 1d 3 3 5 7 - >3 5 1 3 - - - -
26-27 | 0 2 4 | 0 5 3 1 2y 5 2 2 1 3 1 0 0 -
27-28 | 1 1 1 | 4 2 2 5 2d 5 4 5 3 3 0 1 0 1
28-29 | 2 1 1 | 1 4 4 0 5y 3 - - - - - - - 1
29-30 | 0 2 2 | 2 3y 3y 4 3 2 4 2 2 3 1 3 1
------+------------+------------------------------------------------------
Nov | 21h 22h 23h|04h 05h 06h 07h 08h 09h 10h 11h 12h 13h 14h 15h 16h 17h
1995 |
```

Codes used:

- no data available
| Transitters closed. So I didn't get the Alpha Monocerodits peak on Nov. 21.
d outstanding number of very short reflections, which would otherwise
not be included in the report.
! means that most of the reflections indicated here are in the range of
one minute or longer!!! (This is not usual and happens only at a showers
peak).
y means: strange appearance of the ionized trail. E.g. split trail
> available data don't cover the whole hour.

. for reference: a 15+ s duration count of 18 is about 40% of the 1995
radio Perseids peak.

. Local time conversion: one hour ahead of UT (06h00 UT is 07h00 local).

Anybody who wants to take a look at the Perseids, Orionids, or Leonids peak
is invited to take a look at the radio meteor spectrum .GIF files which are
available via anonymous ftp at:

karanet.uni-klu.ac.at/pub/forum/star-trek/meteor

Observer: James W. Riggs, Gr.
Location: West Point, CA (38o22'36" N, 120o33'03" W)
Frequency: 55.240 MHz , probably Salt Lake City and others
Receiver: Japan Radio NRD 525 with optional converter 34 to 60 MHz.
Antenna: 5 element Yagi
Observing method: Automated system with Apple Computer recording to disk pulse and tone of beat frequency with reflection.
Data of individual reflections and hourly counts are available.

Aug Sep Oct

1 4339 6603
2 4656 3402 6247
3 7000 3599 6400
4 5875 4551 6467
5 5172 5332 6805
6 4469 6117 6552
7 7300 6512 6484
8 6755 7706 6366
9 6721 7042 6298
10 6264 6424 6318
11 7077 6163 6416
12 7466 6535 6620
13 7314 5232 6684
14 7077 5265 6569
15 6027 6416 6061
16 6163 6907 6789
17 8550 7348 6721
18 8297 5942 6704
19 7246 6653 5282
20 5909 4571 5525
21 5587 5722 5708
22 6695 5705 6010
23 6763 5688 6044
24 6848 5878 5909
25 7227 6061 5130
26 7424 6061 5773
27 5000 6264 5790
28 4119 6366 5536
29 3746 7076 5628
30 3000 6891 5333
31 4019 5665

Jim Riggs / via J. Van Wassenhove

Observer: Ton Schoenmaker
Location: Roden, Netherlands (6 degr 26' E, 53 degr 08' N)
Frequency: 66.89 MHz
Transmitter location: Krakow, Poland, 120 kW, distance 980 km
Antenna: Horizontal Yagi, 5 elements, geographical azimuth 110

degrees (ESE), elevation 15 degrees
Receiver: Homemade convertor 65-67 MHz to 28-30 MHz + Barlow-Wadley
0-30 MHz receiver; total sensitivity 0.3 uV for 20 dB S/N
with a bandwidth of 3 kHz
Observing method: Brown strip chart recorder, 18 inch/hour + occasional
listening.

Leonids and Alpha-Monocerotids 1995

Dead time corrected counts of reflections during one hour intervals
starting at:

| UT
Nov 1995 | 20h 21 22 23 00 01 02 03 04 05 06 07 08 09
---------+---
16/17 | 249 276 422 434 420 330 345 381 320 354 349 435
17/18 | 327 360 316 349 329 436 421 402 361 347 323 305
|
21/22 | 274 256 673 249 258
---------+---
Nov 1995 | 20h 21 22 23 00 01 02 03 04 05 06 07 08 09

More details of Alpha-Monocerotids with the number of dead time
corrected counts during five minute intervals starting at:

00h 01h 02h
Nov 1995 | 45 50 55 00 05 10 15 20 25 30 35 40 45 50 55 00 05 10 15
---------+---
21/22 | 32 21 20 30 39 54 75 87 78 108 72 47 30 28 25 26 22 19 17

Because of the large number of reflections, the recorder paper is difficult
to read during 1h15m - 1h40m. If I had been awake, I should have increased
the speed of the paper! Although corrected for dead time caused by long
echoes, the counts during that period are probably underestimated.
Graphically the maximum was determined as 1995 November 22.060, with an
uncertainty of 0.002 days. This corresponds with a solar longitude of
239.32 degrees (2000).

Paul Vauterin announces the availability of the summarized forward scatter
observations of the Astronomical Observatory, University of Ghent, at URL:

http://allserv.rug.ac.be/~pdegroot/meteor/mto_obs.html

It covers all of their observations from August 1994 up to now.
The results are presented in an original graphical way.

Observer: Ilkka Yrjola
Location: Finland (26 35' E, 60 54' N)
Frequency: 87.360 MHz
Receiver: narrow band FM, detected signal level >-122dBm.
Antenna: 2 element Yagi with 4dBd gain to SW.

Antenna Azimuth: 45 o
Computer: T-1000SE
Data sampling system: threshold crossing detection is fed in binary
form (1 bit) from the receiver to the computer.
Computer logs total hourly elapsed reflection time, number of
threshold crossings for the hour, the longest time the signal was
continuously above detection level for the hour.

Data stored in the Compact MS-Soft format. Software for viewing available
from FTP.FUNET.FI pub/ham/vhf-work/mssoft42.zip

Leonids 1995

Counts in one hour intervals starting at:

UT	16 Nov	17 Nov	18 Nov	19 Nov	20 Nov 1995
0h	229	378	554*	301	304
1	239	363	779*	314	
2	271	386	1021*	510	
3	329	471	703*	393	
4	274	455	684*	345	
5	257	641*	710*	389	
6	324	654*	907*	407	
7	258	348	1177*	340	
8	228	622*	561*	314	
9	231	297	630*	299	
10	236	274	471	217	
11	173	301	522	218	
12	134	234	263	280	
13	127	212	237	190	
14	149	171	207	185	
15	131	196	177	195	
16	153	169	179	170	
17	164	202	250	231	
18	194	243	248	280	
19	208	264	250	277	
20	225	333	259	296	
21	265	296	276	336	
22	315	475*	415	328	
23	336	568*	318	368	
UT	16 Nov	17 Nov	18 Nov	19 Nov	20 Nov 1995

* strong Leonid activity during the morning hours of Nov 18 (and to
a less extent on Nov 17). The Leonid radiant rises at 19h30m, and sets
at 13h30. Compare with last year's results in RMOB9411.

Ilkka Yrlola / via M. De Meyere

Observer: W.T. Zanstra

Location: Appingedam, Netherlands (6 degr 51' E, 53 degr 19' N)
Frequency: 72.11 MHz
Transmitter location: Wroclaw, Poland, 135 kW, distance 735 km
(16 degr 43' E, 50 degr 52' N)
Antenna: Yagi, 5 elements, geographical azimuth 110 degr (ESE),
elevation 25 degrees
Receiver: Bearcat UBC 177 XLT Scanning Radio, sensitivity 0.3 uV
Observing method: listening

Dead time corrected counts of reflections during one hour intervals
starting at:

| November 1995
UT | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
---+---
00 | 99 73 44 113 86
01 | 86 66 60 203* 78
02 | 56 95 61 59 71
03 | 81 92 85 86 87
04 | 85 100 107 88 67 73
05 | 81 97 108 105 62 88
06 | 79 74 97 91 98 76
07 | 84 59 66 77 86 102
08 | 81 85 74 62 71 54
09 | 65 61 73 57 69 77
|
22 | 82 84 85 86
23 | 94 75 60 95
---+---
UT | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
| November 1995

* the alpha Monocerotids activity !

W. Zanstra / via Ton Schoenmaker

2. ABOUT THE RMOB

The RMOB is an independent initiative of some workers in the field of radio meteor scatter observations and data reduction. It started in August 1993 in order to spread rapidly the Perseid results via E-mail. Since then, it has appeared monthly, and has gradually been expanded.

Typically it contains: summaries of recent observations, first results of stream activity by radio methods, relations between radio and optical meteors, references to other publications in the field of meteor astronomy and radio scatter techniques, announcements of meetings, short questions and answers, non-commercial (second hand) sale of radio equipment, available software.

Contributors are mentioned, and interested persons are asked to contact them directly.

RMOB can be copied freely in unabridged and unmodified form. Extracts should indicate the source (Radio Meteor Obs Bulletin, month and year).

If you want to subscribe (or unsubscribe) to the E-mail distribution list, please send a message to C. Steyaert.
Those not having access to E-mail can obtain a printed copy free of charge from J. Van Wassenhove (current or back-issues).

3. CONTRIBUTORS / USEFUL ADDRESSES

Thomas Ashcraft
Radio Fireball Observatory
Santa Fe, New Mexico
E-mail: 72632.1427@compuserve.com

Maurice De Meyere
Hullekensstraat 24, B 9831 Deurle, Belgium
tel: +32 (9) 282 35 26
Call: ON4NU, packet: ON4NU@ON4OB
E-mail: via Chris Steyaert

Werfried Kuneth
Villach, Austria
Call: OE8FNK
E-mail: 100021.514@compuserve.com

James W. Riggs, Gr.
759 Sourdough Rd., West Point, CA 95255, USA
tel: +1 209-293-4252

Ton Schoenmaker
Meester Homanstraat 8, 9301 HP Roden, Netherlands
tel: +31 (0)50 5013382
Call: PA0EFA
E-mail: tonsch@ksw.rug.nl

Chris Steyaert, VVS
Kruisven 66, B 2400 Mol, Belgium
tel: +32 (14) 31 51 04
E-mail: steyaert@vvs.innet.be
Compuserve: 72650,3513

Jeroen Van Wassenhove, VVS
's Gravenstraat 66, B 9810 Nazareth, Belgium
tel: +32 (9) 385 61 09
E-mail: 100101.734@compuserve.com

Paul Vauterin, University of Ghent, Astronomical Observatory
E-mail: paul@izar.rug.ac.be

Ilkka Yrjola
Jukolantie 16
SF 45700 Kuusankoski, Finland
tel: +358 (951)402 2797
Call: OH51Y

E-mail: ILKKA.YRJOLA@915000.KY.KYMMENE.MEMONET.mailnet.fi

W.T. Zanstra
Spijkerlaan 13
9903 BB Appingedam
Netherlands
tel: +31-(0)596-625617

--
Christian Steyaert (RMOB9511) 9 Dec 1995
--

2593. Re: FM on the Satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: dreynold@rad.net.id
Message-ID: <4aeidd$p5g@news1.rad.net.id>
Source record: 23505

I have seen identical downlink problems in my overseas travel.
Dowlink interference by unlicensed commercial and non-ham
non-commercial operators in the ham 2M FM band. It's worse in S.
America due to equipment availability from Miami (in particular). Read
on...

I feel the problem is due to two factors:

1. Regulatory and enforcement in foreign countries... this is obvious.

2. Pricing policy of radio manufacturers... In S. America in
particular (elsewhere i'm sure it's the same). A person can buy and
hand-carry/ship a HAM transceiver at lower cost than a commercial
version. Almost always, the HAM version has more features (channels).
Until radio Marketing policy brings HAM prices in-line with commercial
prices; this situation will exist. However, radio manufacturers claim
the radios for commercial use are more expensive due to REGULATORY
(FCC) compliance. A potent argument...

Dave, WB4ONA
Jakarta

wave@mindspring.com (Pieter Ibelings) wrote:

>In article <DJ9quz.oDE@pe1chl.ampr.org>, rob@pe1chl.ampr.org says...

>>I think the explanation at that time was they were taxi drivers
>>in Spanish cities, and the authorities were not doing anything about it.
>>
>The stations you are hearing are probably unlicensed commercial users
>using the frequencies around 145.8. On a recent trip to the northern coast
>of Colombia I was trying to make a contact on a0-21 and listening to the
>downlink frequency. I then got into an argument with an unidentified
>station that uses this channel for his business. I told him that this was
>a satellite downlink and that he was causing interference. He then said
>that he has heard foreign language on this frequency, but never agreed to
>qsy. This is a very big problem. I scanned the 2 meter band while in
>Colombia and Venezuela and every single channel is in use during the
>day ,99% from unlicenced operators. The sad story is that nothing can be
>done. These countries have so many problems that enforcing the ham bands
>is not in their high priority list. Sending letters to the ministry of
>comunications of Colombia for example is a bad idea. A few years ago it
>was discovered that the driver of one of the commisioners would use some
>of the correspondence to clean the windshield of his car after a trip to
>the post office.

>73's

>AC4OP
>HK1ZAB

2594. Re: NAVSPASUR and PAVE PAWS DEEP SPACE RADARS

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: thomsona@netcom.com
Message-ID: <thomsonaDJDz6M.Do2@netcom.com>
Source record: 23506

In article <mdf.818592490@vigard.mef.org> mdf@lglobal.com writes:
>cliff@televar.com writes:
>
>>Second question is NAVSPASUR Space Fence Radar.
>
>the NAVSPASUR fence is a CW radar. an antenna array projects a thin
>fan of RF (216.983MHz is correct) straight up, the "fence"
>oriented east-west. multiple receiving sites listen for the echos as
>satellites pass through the fence. interferometers for 3D DF (az/el), doppler
>gives range rate. while an orbit can probably be completely determined
>from on one fence crossing (since both position and velocity can be measured),
>it's most likely going to be a poor one -- but thats that differential
>correction is for.
> Longtitude Latitude
> ---------- --------
> Jordan Lake, AL -86.264 32.659
> Kickapoo Lake, TX -98.7637 33.558
> Gila River, AZ -112.03 33.11

Kickapoo is the big one, and is most often used by people with amateur
equipment.

One thing that has always puzzled me is why no other country has
built a system like NAVSPASUR; it's 1950s technology, cheap to build
and operate, and gives good results.

2595. Which Rig for 2m and 70 cm?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-10 00:00:00 UTC
From: jrybak@mesa5.Mesa.Colorado.EDU
Message-ID: <4ag5mh$lgs@mesa5.mesa.colorado.edu>
Source record: 23507

I want to get a rig for working mode A on RS-10 and RS-15 but I also want to
I wan
be able to work mode B on the AMSAT Phase 3-D when it goes up. What 2m/70cm
rigs are recommended? My inclination is to get an ICOM 820-H. Can I do
better?

Thanks.

Jim Rybak W0KSD

2596. radio h/w for sale

Newsgroup: rec.radio.amateur.space
Date: 1995-12-11 00:00:00 UTC
From: oddjob@cix.compulink.co.uk
Message-ID: <DJEBCM.84C@cix.compulink.co.uk>
Source record: 23508

Drake R8e hf all mode receiver, 700ukp

Datong active antenna, ad370, outdoor model (only used indoors!) 50ukp.

Microwave modules 2m transverter (use your hf multimode on 2m) 90ukp

Yaesu Ft101 100watt (Adjustable to qrp levels) base station 300ukp ono

TS120v 100watt HF mobile (Adjustable to qrp levels) mobile 300ukp ono

Telereader 685 Rtty/ascii/Morse Tx/Rx terminal with integral screen and keyboard 150ukp.

Looking to buy VHF/UHF base station...so need money and space...

Tel 0956-544202.

oddjob@cix.compulink.co.uk/ G7VFY

2597. Re: keps ftp site?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-11 00:00:00 UTC
From: mouse@ag.net
Message-ID: <4ag8vi$s8c@agis.ag.net>
Source record: 23509

hawk@sps.mot.com (George Hawkins) wrote:

>can anyone tell me what happened to kep ftp:
>anonymous@archive.afit.af.mil

>any other sites???

>Thanks in advance

>regards

>George Hawkins
>---
>GEORGE HAWKINS KKK KK IIIIIIII 5555555 XXX XXX
> K K II 55 X X
> K K II 55555 X X MOBILE DXCC-175
> K K K II 55 X 160 <> 10
> K K II 5 X X SEE YOU ON
> K K II 55 X X BANDS FROM
> KKK KK IIIIIIII 555555 XXX XXX MY TRUCK!
>---
>George Hawkins Internet: hawk@dsp.sps.mot.com
>Principal Staff Engineer UUCP: cs.utexas.edu!oakhill!dsp!hawk
>Motorola DSP Tactical Applications
>6501 William Cannon Drive West Phone (512) 891-4543
>Austin Texas 78735-8598 FAX (512) 891-2947
>---

Another site is SEDS.LPL.ARIZONA.EDU

Jim

2598. FM Voice Sat?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-11 00:00:00 UTC
From: Cyberpunk@zephyrbbs.win.net
Message-ID: <1316@zephyrbbs.win.net>
Source record: 23510

A friend of mine told me that he used his Dual band mobile to make use of a new Sat that's in orbit, and actually had a QSO. Can someone please send me information, such as uplink/downlink, PL encode/decode, and address for information and contributions? Email to this account would be appreciated. Tnx es 73!

Scott Baldwin
N6UUH

* JDS Internet Everywhere! v0.90.r35.s

2599. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-11 00:00:00 UTC
From: parise@gelato.gsfc.nasa.gov
Message-ID: <4ahfue$95h@post.gsfc.nasa.gov>
Source record: 23511
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <4abnn7$6v1@cloner2.ix.netcom.com>, sts48@ix.netcom.com(Donald Ratsch) says:
> Under careful examination of the tape, prior to the UFO statement by
>Cady Coleman, the verbal exchange between Huntsville and Cady is
>business and professional. Huntsville then informs the shuttle that the
>switch to TVC-2 has been made. About 10 seconds later at 0604:40 (GMT),
>Cady Coleman replies: "We have an Unidentified Flying Object". It is in
>a more serious tone than her words prior. There is no detectable
>kidding around as Captain Oberg suggest.

I have several comments regarding this thread.

1. I can't believe I am responding to this nonsense but I can't stand
it anymore!

> The more reasonable scenario of what happened is this: After Cady says
>the words, "We have an Unidentified Flying Object", about 10 seconds

2. a. Cady was in the spacelab module (reference to TVC-2 confirms that).
b. There are **NO WINDOWS** in the spacelab module.
c. Therefore, the UFO she saw (standard crew banter) was in the module.
d. Anybody should be able to follow that line of logic!

>later, a status screen pops up and on it is a listing of statuses among
>which is a TVC block. It is obvious that the UFO words should never

3. TVC-1 and TVC-2 are the two TeleVision Cameras in the module. The
switch from TVC-1 to TVC-2 was an informational message to Cady so
she would know which way to look so that the downlink video would
not be of her back.

>have gotten out. The TVC-2 block should have occurred before the UFO
>words and then nobody would have been the wiser. Perhaps in Cady's

4. The TVC's are video only! They have no effect on voice communications!

>excitement of seeing the UFO, she blurted out the UFO words in the
>clear forgetting to press the TVC block button.

5. What the heck is a TVC block button!!! Where did that come from!

I apologize for falling into the trap of these UFO posters but I just
couldn't stand it anymore!!!!!!!

Ron Parise
STS-35,67

2600. Re: Sts-73 sees ufo

Newsgroup: rec.radio.amateur.space
Date: 1995-12-11 00:00:00 UTC
From: Jeff.Root@f2006.n282.z1.fidonet.org
Message-ID: <027_9512111400@mmbbs.com>
Source record: 23512

Thanks, Ron!

You answered the questions I was going to (probably rhetorically)
ask the guy who posted that message -- particularly "Was Cady
anywhere near a window at the time?"

-- Jeff, in Minneapolis

2601. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-11 00:00:00 UTC
From: Max White <max@maxw.demon.co.uk>
Message-ID: <818715295snz@maxw.demon.co.uk>
Source record: 23513
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <4ahfue$95h@post.gsfc.nasa.gov>
parise@gelato.gsfc.nasa.gov "Ron Parise" writes:

snip
>
> I apologize for falling into the trap of these UFO posters but I just
> couldn't stand it anymore!!!!!!!
>
> Ron Parise
> STS-35,67
>

Good on yer Ron. Trouble is, you'll probably be targeted by those Zeta
Rectangular thingies next time you are up.

--
Favourite breakfast - A roll in bed with honey.

2602. Matching Funds Available

Newsgroup: rec.radio.amateur.space
Date: 1995-12-12 00:00:00 UTC
From: vfiscus@mcn.net
Message-ID: <4aiov9$m2q@news.mcn.net>
Source record: 23417

Hi,
Matching funds are available for donations to the Amsat Phase 3D
project made from now to the end of 1995. Donations are tax deductable.
Send donations or requests for info to:

Amsat-na
850 Sligo Ave.
Silver Spring, MD 20910

Thanks & 73 from KB7ADL

2603. Re: FM Voice Sat?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-12 00:00:00 UTC
From: Jim Devenport <jdevenport@lanl.gov>
Message-ID: <4akqk5$i7n@newshost.lanl.gov>
Source record: 23418

Nope, there were at least these 2 sats that for a time provided
FM transponding: Oscar-21 and Oscar-27.
I have read of some "hitting" the old AO-21 system using a dual
band HT but I was NEVER able to hear myself or get a response
through it even when running 25 watts on UHF.
I was able to hear myself and complete a QSO via the Oscar-27
bird however by going through a 2 meter high power remote base
for the 2 meter uplink and listening with a scanner (IC-R7000)
to the UHF downlink.... the first and only time I tried!!
(about a year ago).
--
********** Jim Devenport WB5AOX **********
* PO Box 445, McIntosh NM 87032 *
* http://nis-www.lanl.gov/~jdport/ *
****

2604. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-12-12 00:00:00 UTC
From: rhyolite95@aol.com
Message-ID: <4aljgr$qan@newsbf02.news.aol.com>
Source record: 23419
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Its the Northern lights Dudes and Dudettes! White Wiggly Wobbly and Wacky.
No drugs required to see 'em. Look like a flourescent lamp burning out.

2605. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-12 00:00:00 UTC
From: rich kolker <rkolker@hous.inmet.com>
Message-ID: <DJH78K.Hpn.0.-s@inmet.camb.inmet.com>
Source record: 23514
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

parise@gelato.gsfc.nasa.gov (Ron Parise) wrote:
>
>I have several comments regarding this thread.
>
>1. I can't believe I am responding to this nonsense but I can't stand
> it anymore!
>

>
>I apologize for falling into the trap of these UFO posters but I just
>couldn't stand it anymore!!!!!!!
>

Ron,

Good try, but if you've been following this stuff at all, you know logic
won't help.

They'll just say you're part of the conspiracy.

++rich

2606. Re: FM Voice Sat?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-12 00:00:00 UTC
From: Rusty Haddock <rusty@ti.com>
Message-ID: <4aka8p$629@dsk92.itg.ti.com>
Source record: 23515

rob@pe1chl.ampr.org (Rob Janssen) wrote:
>In <1316@zephyrbbs.win.net> Cyberpunk@zephyrbbs.win.net (Scott Baldwin) writes:
>
>> A friend of mine told me that he used his Dual band mobile to make
>>use of a new Sat that's in orbit, and actually had a QSO. Can someone
>>please send me information, such as uplink/downlink, PL encode/decode,
>>and address for information and contributions? Email to this account
>>would be appreciated. Tnx es 73!
>
>The satellite that had this transponder (OSCAR 21) is no longer functional.
>
>Rob

Hmmmm.... could we possibly mean Oscar 27 on the commerical bird, Eyesat ??? That was 2-m up/440 down on weekends when it was in the sun over N.America and AO-27 was operating as a crossband repeater (145.850/436.800/no PL). AO-27, which went up around the beginning of 1993(?), was put together by the folks at AMRAD (in Mclean, VA) and was to be used for modulation experiments among, I've sure, for other things. Programs could and have been uploaded to its CPU on the fly. The 2m/440 repeater mode was one of the applications. Does anyone know its status these days?

-Rusty-
--
Rusty Haddock, KD4WLZ Internet: rusty@ti.com ___
Texas Instruments MSG ID: MWH2 |\/ o\ O
POB 869305 MS 8515 Phone: (214) 575-6838 | (-< o O
Plano, Texas 75086 Fax: (214) 575-4351 |/_V_/

2607. ARLS026 OSCAR 17 link fails

Newsgroup: rec.radio.amateur.space
Date: 1995-12-12 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls026.1995@arrl.org>
Source record: 23516
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS026
ARLS026 OSCAR 17 link fails

ZCZC AS06
QST de W1AW
Space Bulletin 026 ARLS026
From ARRL Headquarters
Newington, CT December 12, 1995
To all radio amateurs

SB SPACE ARL ARLS026
ARLS026 OSCAR 17 link fails

The DOVE-OSCAR 17 satellite 2-meter downlink failed December 3, and the AMSAT control team is not sure why. While it's not clear if the problem resulted from a computer crash aboard the spacecraft, the control team plans to try reloading the software to see if that fixes it. The satellite's S-band transmitter is on, and the permanent onboard backup software is working.

Jim White, WD0E, of AMSAT says reloading DOVE is a complex process that could take from two weeks to a month if all goes well and there are no hardware problems. White says reloading requires a lot of operational skill and some unique equipment configurations, plus more than one command station.

DOVE-OSCAR 17 is used for educational and research purposes.
NNNN
/EX

2608. Pictures of spacecraft carrying Packet Radio Experiment now Online

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: tedwards@Glue.umd.edu
Message-ID: <4an6ib$3ln@volt.isr.umd.edu>
Source record: 23420
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.space,sci.space.shuttle

Pictures of the Spartan 206 OAST-FLYER spacecraft which will carry the
Spartan Packet Radio Experiment (SPRE) in early Jan. 1996 are now online at:

http://sspp.gsfc.nasa.gov/sp206.html

SPRE is a 2m packet "easysat" which will be a test of the usefulness of
real-time downlinks of space-based GPS positions as well as using APRS (tm)
systems to digipeat terrestrial locations through LEO spacecraft.

The Spartan 206 spacecraft is a free-flier which is deployed from the
Space Shuttle payload bay during mission STS-72, and left on its own for about
46 hours. After that time, the Shuttle picks up the Spartan and returns
it to earth.

For more information on SPRE, go to WWW URL:

http://w3eax.umd.edu/spre.html

-Thomas
N3HAU

2609. INFO WANTED: Ten Tec 2510

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: kharker@cs.utexas.edu
Message-ID: <kharker-1312950033470001@slip-43-12.ots.utexas.edu>
Source record: 23421
Cross-posted to: rec.radio.swap,rec.radio.amateur.space,rec.radio.amateur.equipment

I'm looking for any information anyone might have about price or availability anywhere concerning a rather old model of Ten Tec radio. I read a 1985 magazine review about the Ten Tec 2510, which was a combination 440MHz SSB/CW transmitter and 2m->10m SSB/CW transverter intended for OSCAR communications.
I called Ten Tec today, and the gentleman I spoke with did not recognize the model. If anyone knows where I might find more information on this radio or if anyone has one they may be interested in selling, I would appreciate an e-mail.

Thanks in advance.

Kenneth E. Harker kharker@cs.utexas.edu
University of Texas at Austin
Department of the Computer Sciences Amateur call: N1PVB
Taylor Hall TAY 2.124
Austin, TX 78712-1188 USA http://www.cs.utexas.edu/users/kharker/

2610. Satellit-Tracking STSPLUS

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: sglinde1@isys.net
Message-ID: <30cefa10.1134146@news.isys.net>
Source record: 23422

Hallo Satellite-Tracking-Fan's,

I bought the Satellite-Tracking-Programm STSORBITPLUS version Sept.95
Now the programm needs for the purpose of "feeding" the
2-Line-element or Kepler Dates for example : TLEnnn.TXT or
N2L-nnn.TXT .
Where can I get these dates from INTERNET ??
Can somebody give me the http or ftp adresses ??

Thanks for response.

Greetings Freddi

Wo kann man sich diese Daten aus dem INTERNET holen.
Erbitte http oder ftp Adresse.
Besten Dank f&#65533;r die Hilfe.

m.f.g. Freddi

+---+
Friedhelm Warnke Postfach 1344 21505 GLINDE
Tel.:+49 40 710 63 83 Mobil: 0161/8307508
E-Mail:sglinde1@isys.net
+---+

2611. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: kcowing@reston.com
Message-ID: <kcowing-1312951820390001@jobrien-ppp.clark.net>
Source record: 23423
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <4alpja$kel@cloner2.ix.netcom.com>, sts48@ix.netcom.com(Donald Ratsch) wrote:

> In <4ahfue$95h@post.gsfc.nasa.gov> parise@gelato.gsfc.nasa.gov (Ron
> Parise) writes:

> >2. a. Cady was in the spacelab module (reference to TVC-2 confirms
> that).
> > b. There are **NO WINDOWS** in the spacelab module.
> > c. Therefore, the UFO she saw (standard crew banter) was in the
> module.
> > d. Anybody should be able to follow that line of logic!

> During spacelab missions (of which Cady was working diligently) A/G-2 is
> reserved for the Spacelab and that is where the windows are.

What does it take to convince you UFO types that what you "hear" or "think" isn't the truth!!!!.... Ignore those Zeta Reticulan chips in your heads!

An astronaut, who has ACTUALLY FLOWN several Space Shuttle missions including a Spacelab mission, has just told you that there are no windows in the Spacelab module. And YOU know better.

I have personally been in several Spacelab ground trainers (STS-40/SLS-1 and STS-58/SLS-2) at JSC and can confirm to you that there weren't any in there either. Nada, zip, zilch.... When STS-1 had a problem with one of the payload bay doors closing, the crew had to use cameras looking out of the aft flight deck to see out.

Anyone else out there care to chime in ... (not that this is really worth anyone's time to debunk).

2612. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDJJ2DG.IvJ@netcom.com>
Source record: 23424
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Donald Ratsch <sts48@ix.netcom.com> wrote:
>In <4ahfue$95h@post.gsfc.nasa.gov> parise@gelato.gsfc.nasa.gov (Ron
>Parise) writes:
>>I have several comments regarding this thread.

Thanks Ron!

>>1. I can't believe I am responding to this nonsense but I can't stand
>> it anymore!

Yea, tell me about it... :)

>>2. a. Cady was in the spacelab module (reference to TVC-2 confirms that).
>> b. There are **NO WINDOWS** in the spacelab module.
>> c. Therefore, the UFO she saw (standard crew banter) was in the module.
>> d. Anybody should be able to follow that line of logic!
>>
>>3. TVC-1 and TVC-2 are the two TeleVision Cameras in the module. The
>> switch from TVC-1 to TVC-2 was an informational message to Cady so
>> she would know which way to look so that the downlink video would
>> not be of her back.

Its also common courtesy to inform astronauts where and when the
video cameras are on, since after all their images are being beamed
live to all of North America.

>>>have gotten out. The TVC-2 block should have occurred before the UFO
>>>words and then nobody would have been the wiser. Perhaps in Cady's
>>
>>4. The TVC's are video only! They have no effect on voice
>communications!

There is also no "TVC-2 block", that was strictly a product of
the imagination and ignorance of the UFO storymaker involved.

>>>excitement of seeing the UFO, she blurted out the UFO words in the
>>>clear forgetting to press the TVC block button.
>>
>>5. What the heck is a TVC block button!!! Where did that come from!

See above. :)

>>I apologize for falling into the trap of these UFO posters but I just
>>couldn't stand it anymore!!!!!!!
>>
>>Ron Parise

>>STS-35,67

I think the feeling is pretty mutual around here.

> Well Ronald, since Cady was in the space lab working, during the
>space lab missions as you know, the A/G-2 (Air-to-ground 2 channel) is
>utilized, her conversation was carried on the A/G-2 channel.

What does that have to do with anything?

>During spacelab missions (of which Cady was working diligently) A/G-2
> is reserved for the Spacelab and that is where the windows are.

No, the windows are on the Flight Deck. You seem to be remarkably
uninformed about the Space Shuttle, but I suppose that explains how
you can be perpetuating these ridiculous stories.

> This is what I have been told.

Obviously you were told wrong, and apparently you have not seen
fit to do even the most superficial of research into this matter.

> According to the audio people there at NASA, during the STS-73
> mission, most of the time they carried A/G-2 on NASA TV.

Again, what does that have to do with anything Ron said,
or any of the "nonsense" in your previous post??

2613. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: dlopez@sailsun
Message-ID: <4amnui$lko@pendragon.jsc.nasa.gov>
Source record: 23425
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Donald Ratsch (sts48@ix.netcom.com) wrote:
> >2. a. Cady was in the spacelab module (reference to TVC-2 confirms
> that).
> > b. There are **NO WINDOWS** in the spacelab module.
> > c. Therefore, the UFO she saw (standard crew banter) was in the
> module.
> > d. Anybody should be able to follow that line of logic!

> Well Ronald, since Cady was in the space lab working, during the
> space lab missions as you know, the A/G-2 (Air-to-ground 2 channel) is
> utilized, her conversation was carried on the A/G-2 channel. During
> spacelab missions (of which Cady was working diligently) A/G-2 is
> reserved for the Spacelab and that is where the windows are. This is
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^ ^^^^^^^
> what I have been told. According to the audio people there at NASA,
^^^^^^^^^^^^^^^^^^^^
> during the STS-73 mission, most of the time they carried A/G-2 on NASA
> TV.

You were told by who? Name your source so we can all get a good laugh.
You've just been told by someone who knows that there are NO windows in
the SpaceLab module, so give it a rest already.
--
+-------------------------------------+-----------------------------+
Dean Lopez	
SAIL DPS Engineer	dlopez@sailsun.jsc.nasa.gov
Rockwell Space Operations Co.	
JSC Shuttle Avionics Integration Lab	
+-------------------------------------+-----------------------------+

2614. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: fisher@skylab.enet.dec.com
Message-ID: <4amkoa$7t6@nntpd.lkg.dec.com>
Source record: 23426
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <4ahfue$95h@post.gsfc.nasa.gov>, parise@gelato.gsfc.nasa.gov (Ron Parise) writes:
|>
|>I have several comments regarding this thread.
|>
|>1. I can't believe I am responding to this nonsense but I can't stand
|> it anymore!
|>
|>

<lots of helpful comments snipped out>

|>
|>Ron Parise
|>STS-35,67
|>

Thanks for bringing some reason to newsgroup, Ron. I'm glad I saw your response before this thread too hit my bulging kill file.

Burns

2615. Re: Satellit-Tracking STSPLUS

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: BKille@gnn.com
Message-ID: <4anu3p$e0s@news-e1a.megaweb.com>
Source record: 23427

In article <30cefa10.1134146@news.isys.net> Freddi Warnke wrote:
>ng-Fan's,
>
>I bought the Satellite-Tracking-Programm STSORBITPLUS version
Sept.95
>Now the programm needs for the purpose of "feeding" the
>2-Line-element or Kepler Dates for example : TLEnnn.TXT or
>N2L-nnn.TXT .
>Where can I get these dates from INTERNET ??
>Can somebody give me the http or ftp adresses ??
>
>Thanks for response.
>
>Greetings Freddi
>
>
>Wo kann man sich diese Daten aus dem INTERNET holen.
>Erbitte http oder ftp Adresse.
>Besten Dank f&#65533;r die Hilfe.
>
>m.f.g. Freddi
>
>+---+
> Friedhelm Warnke Postfach 1344 21505 GLINDE
> Tel.:+49 40 710 63 83 Mobil: 0161/8307508
> E-Mail:sglinde1@isys.net
>+---+

One of my favorite sites is the NASA Spacelink. It can be reached
via WWW, gopher, FTP, or Telnet using the following address:
spacelink.msfc.nasa.gov
You need to download the Kep files and edit out everyting except
the object name and its two lines of element numbers and save it
as a file with and extention of ".txt" and save it in the same
directory as the STS program. Then start it and hit F2 to read
the new TLE data and select whatever object you want to view.
Spacelink is a good site especially during space shuttle missions
to get current Kep's. I hope this information is useful to you.

Bruce.

2616. Where to get .wav sample files.....

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: info@mopa.global.it
Message-ID: <4akr5o$927@maggiore.dsnet.it>
Source record: 23428

Hello all,
I'm looking for any sample audio file concerning satellite amateur
radio contacts.
Those might convince myself on setting up a satellite amateur radio
station.

Thank you very much anyway

Roberto Manderioli (IK4JQW)
info@mopa.global.it

2617. Re: FM Voice Sat?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: durham@lobby.ti.com
Message-ID: <4alll1$b3e@superb.csc.ti.com>
Source record: 23429

>Does anyone know its status these days?
>
> -Rusty-
>--
>~~~~~~

Rusty, AO-27 is alive and well. It is on during daylight hours 7 days a week now. Look for it after 11 AM and around 12:30 PM. Better yet use a tracking program with recent KEPS for the pass prediction.

I have worked several HTs who were using their rubber ducky antennas. There is too much competition for the frequency now for this to work very often. The high power stations tend to hog it.

Ken Durham K5MBV mbv@ti.com

2618. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: sts48@ix.netcom.com
Message-ID: <4alpja$kel@cloner2.ix.netcom.com>
Source record: 23430
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <4ahfue$95h@post.gsfc.nasa.gov> parise@gelato.gsfc.nasa.gov (Ron Parise) writes:
>
>In article <4abnn7$6v1@cloner2.ix.netcom.com>, sts48@ix.netcom.com(Donald Ratsch) says:
>> Under careful examination of the tape, prior to the UFO statement by
>>Cady Coleman, the verbal exchange between Huntsville and Cady is
>>business and professional. Huntsville then informs the shuttle that the
>>switch to TVC-2 has been made. About 10 seconds later at 0604:40 (GMT),
>>Cady Coleman replies: "We have an Unidentified Flying Object". It is in
>>a more serious tone than her words prior. There is no detectable
>>kidding around as Captain Oberg suggest.
>
>I have several comments regarding this thread.
>
>1. I can't believe I am responding to this nonsense but I can't stand
> it anymore!
>
>> The more reasonable scenario of what happened is this: After Cady says
>>the words, "We have an Unidentified Flying Object", about 10 seconds
>
>2. a. Cady was in the spacelab module (reference to TVC-2 confirms that).
> b. There are **NO WINDOWS** in the spacelab module.
> c. Therefore, the UFO she saw (standard crew banter) was in the module.
> d. Anybody should be able to follow that line of logic!
>
>>later, a status screen pops up and on it is a listing of statuses among
>>which is a TVC block. It is obvious that the UFO words should never
>
>3. TVC-1 and TVC-2 are the two TeleVision Cameras in the module. The
> switch from TVC-1 to TVC-2 was an informational message to Cady so
> she would know which way to look so that the downlink video would
> not be of her back.
>
>>have gotten out. The TVC-2 block should have occurred before the UFO
>>words and then nobody would have been the wiser. Perhaps in Cady's

>
>4. The TVC's are video only! They have no effect on voice
communications!
>
>>excitement of seeing the UFO, she blurted out the UFO words in the
>>clear forgetting to press the TVC block button.
>
>5. What the heck is a TVC block button!!! Where did that come from!
>
>
>I apologize for falling into the trap of these UFO posters but I just
>couldn't stand it anymore!!!!!!!
>
>Ron Parise
>STS-35,67

Well Ronald, since Cady was in the space lab working, during the space lab missions as you know, the A/G-2 (Air-to-ground 2 channel) is utilized, her conversation was carried on the A/G-2 channel. During spacelab missions (of which Cady was working diligently) A/G-2 is reserved for the Spacelab and that is where the windows are. This is what I have been told. According to the audio people there at NASA, during the STS-73 mission, most of the time they carried A/G-2 on NASA TV.
Donald

2619. Re: FM Voice Sat?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: Gary Watts <gwatts@qni.com>
Message-ID: <Pine.SOL.3.91.951213100438.1286B-100000@qni.com>
Source record: 23431

Jim,
Yep operation on AO-21 got to be a big joke.
One channel.. MANY HAM's trying to access the bird at the same time.
A lot of the oscar class stations would get on that bird and
make it UNUSABLE for the other lower power stations
Talk about a pile up..
I never did hear any usefull exchange of information
just calls and locations.
I dont miss that bird at all

RS-10 <- This one is a lot more fun

Gary Watts de N0OXV
Kansas City Mo
81 GL1100I

On 12 Dec 1995, Jim Devenport wrote:

> Nope, there were at least these 2 sats that for a time provided
> FM transponding: Oscar-21 and Oscar-27.
> I have read of some "hitting" the old AO-21 system using a dual
> band HT but I was NEVER able to hear myself or get a response
> through it even when running 25 watts on UHF.
> I was able to hear myself and complete a QSO via the Oscar-27
> bird however by going through a 2 meter high power remote base
> for the 2 meter uplink and listening with a scanner (IC-R7000)
> to the UHF downlink.... the first and only time I tried!!
> (about a year ago).
> --
> ********** Jim Devenport WB5AOX **********
> * PO Box 445, McIntosh NM 87032 *
> * http://nis-www.lanl.gov/~jdport/ *
> **
>
>
>
>

2620. long delayed echo

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: bholmes265@aol.com
Message-ID: <4aoa3s$n6@newsbf02.news.aol.com>
Source record: 23432

I am looking for information and experiences with long delayed echos in radio communications. Appreciate any pointers or personal experiences. Mine occurred in 1970. tks

2621. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-13 00:00:00 UTC
From: kcowing@reston.com
Message-ID: <kcowing-1312952324030001@jobrien-ppp.clark.net>
Source record: 23433
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

In article <4ao1ck$b86@gryphon.phoenix.net>, mjensen@phoenix.net (Mike Jensen) wrote:

> Donald Ratsch (sts48@ix.netcom.com) wrote:
>

> Spacelab can (optional carry one (as in 1) single window, a small
> one in the aft end looking out towards the tail. I do not know if
> 73 had this window installed or not. The windows (multiple) are
> in the orbiter itself. Six forward, two up, two back. Most of the
> photos taken on Shuttle missions are from these 10 windows since they
> are relatively large. (The Spacelab window seems much smaller to me.)

Don:

Yes, you are right, I forgot. Mea culpa. Also, early Spacelab missions had an optical window - in fact (correct me space hardware trivia buffs) I do believe that NASA "borrowed" an optically-pure window that had been sitting in the Skylab flight spare at the National Air and Space Museum for use in - was it SL-1? There is a small air lock in the "roof" of Spacelab which can take one of these windows - I think.

These windows are only installed when there is a need for them i.e. to look out. Each flight risks scarring, etc so they don't just leave them installed. I do not recall seeing any of the windows in the aft cone of SLS-1 or SLS-2. There was gear stowed there as I recall.

To you UFO I-wanna-be-abductees:

When an astronaut tells you something like this, try and accept it as fact. There were no Spacelab windows installed on the mission in question. Period. Find another dead horse to beat (or cow to mutillate).

Hey - its winter up here - dry air and all that - try running around the house with your ET slippers on and scuff your feet on the carpet. Maybe a static discharge will fry that Zeta Reticulan behavior mod chip in your brainstem. Hey I watch X-files too and know all the tricks!

2622. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: mjensen@phoenix.net
Message-ID: <4ao1ck$b86@gryphon.phoenix.net>
Source record: 23434
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

Donald Ratsch (sts48@ix.netcom.com) wrote:

: Well Ronald, since Cady was in the space lab working, during the
: space lab missions as you know, the A/G-2 (Air-to-ground 2 channel) is
: utilized, her conversation was carried on the A/G-2 channel. During
: spacelab missions (of which Cady was working diligently) A/G-2 is
: reserved for the Spacelab and that is where the windows are. This is
: what I have been told. According to the audio people there at NASA,
: during the STS-73 mission, most of the time they carried A/G-2 on NASA
: TV.

Spacelab can (optional carry one (as in 1) single window, a small
one in the aft end looking out towards the tail. I do not know if
73 had this window installed or not. The windows (multiple) are
in the orbiter itself. Six forward, two up, two back. Most of the
photos taken on Shuttle missions are from these 10 windows since they
are relatively large. (The Spacelab window seems much smaller to me.)

A/G-2 is indeed usually choosen as the "science" comm channel, while
A/G-1 is used for "orbiter" communications (eg communications between
Mission Control and shuttle crews regarding orbiter systems and functions).

I don't beleive though that Cady "saw a UFO" and somehow "slipped" this
out over the non-secret comm channels. There are no secret comm channels,
and knowing a fair amount about Shuttle flights, I know that most of
the time, the science types have their noses buried in their experiments.
She probably was making a joke, either about something floating
in the module, or maybe something cool happening in one of the
fluid chambers (unidentified floating object?).

: Donald

Mike
--

Logic is a systematic method of coming to the wrong conclusion with
confidence. -- Manly's Maxiam
Don't be so open minded your brains fall out.

2623. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: Neil Ferguson <N.G.Ferguson@ug.ee.ed.ac.uk>
Message-ID: <4antq0$a1h@scotsman.ed.ac.uk>
Source record: 23435
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

parise@gelato.gsfc.nasa.gov (Ron Parise) wrote:
>In article <4abnn7$6v1@cloner2.ix.netcom.com>, sts48@ix.netcom.com(Donald Ratsch) says:

<blah>

>I have several comments regarding this thread.
>
>1. I can't believe I am responding to this nonsense but I can't stand
> it anymore!

Nor can most of the rest of us...

>
>> The more reasonable scenario of what happened is this: After Cady says
>>the words, "We have an Unidentified Flying Object", about 10 seconds
>
>2. a. Cady was in the spacelab module (reference to TVC-2 confirms that).
> b. There are **NO WINDOWS** in the spacelab module.

I love it when these people get shot down in flames! I just love it!

> c. Therefore, the UFO she saw (standard crew banter) was in the module.
> d. Anybody should be able to follow that line of logic!

You hope. I suspect some of them won't quite see it that way... :-)

< UFO blah and stuff not relevant to my comments cut out>

>
>I apologize for falling into the trap of these UFO posters but I just
>couldn't stand it anymore!!!!!!!
>
>Ron Parise
>STS-35,67

A real, live astronaut! I'm honestly impressed! However, what's the
bet that a certain person's mailbox is going to be _stuffed_ with a load
of direct-sent email from all those indignant UFO nuts? You know, the
"...you're just a part of the conspiracy of lies...", etc., etc. rubbish.

Ah, well. We can always hope they'll be sensible for once. And not
bother.

I suspect that when we encounter UFOs (notice that I _don't_ reject
the possibility - it's just that I'm waiting for the real ones) we'll
know all about it...

--
Neil Ferguson N.G.Ferguson@sms.ed.ac.uk
Electronic Engineering 2 at Edinburgh University in Scotland

It wasn't me!

2624. Re: long delayed echo

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: btaylor@mailserv.nbnet.nb.ca
Message-ID: <4apeb6$nsm@darwin.nbnet.nb.ca>
Source record: 23436

bholmes265@aol.com (BHolmes265) wrote:

>I am looking for information and experiences with long delayed echos in
>radio communications. Appreciate any pointers or personal experiences.
>Mine occurred in 1970. tks

I have two experiences, one observed only and one in which I
transmitted. The first was in March of 1985 (I'm not sure of the
exact day but I could probably dig out an old log book and find out).

It happened on 80 meters, in the DX window, around 3795. It was about
0700 GMT and a W6, a ZL and an EI were all working one another at the
same time! I could hear a delayed echo both on the W6 and the EI. I
could not on the ZL (this is perfectly normal, being practically the
same distances to me in VE1 on both paths anyway). If I'm not
mitsaken the W6 heard his own LDE, but I'm not sure about the others.

I was using a G5RV dipole and a Yeasu FRG-7700 receiver.

The other experience was on 40, where early one evening I could hear
my own CW signal. It must have been since 1989 because that's when I
got my new radio with full QSK. (the relays in the old FT-101E were
just not fast enough!). I may have logged that one too. I recall
that I tried it after overhearing hearing others talking about it
earlier that evening. (I usually don't operate full QSK so I must
have been prompted by something external, else I would never have
heard it independantly).

For that reception I would have been using a Sultronix Sloper (coiled
for 80, 40 and 20 - full length for 160 - vertically polaried - top
fed against the tower ground ballast) and a Kenwood TS-680s (a 140
modified for 6).

The first reception (1985) was definitely within a few days of Spring
Equinox. I'm quite sure the 1989 one was also around an equinox,
likely Spring too because of lower noise levels.

I hope this helps!

73,

Brent S.D. Taylor - VE1JH | Central Park 1965-1971
Doaktown on the Miramichi | Meadowbrook 1971-1973
New Brunswick, Canada | Lachine High 1973-1975
Grid Square FN66WN | Looking for exiles...
r.a.s.n./ NASCAR / MWDX / 6M VUCC #5481

2625. Maplin diy GPS kit....

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: oddjob@cix.compulink.co.uk
Message-ID: <DJL5Iq.JJr@cix.compulink.co.uk>
Source record: 23437

Maplin DIY GPS kit....

Besides positional info, what else to these Navstar sats send, that a mere mortal can decode...

and....what else can I do with it, that I can't do with a hand held GPS with a RS232 i/f. After all, 400+ukp is alot of money, handheld GPS's are available from 179ukp inc vat.

regards

Steve

oddjob@cix.compulink.co.uk/ G7VFY

2626. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDJKo4I.F4p@netcom.com>
Source record: 23438
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Donald Ratsch <sts48@ix.netcom.com> wrote:
>In <kcowing-1312951820390001@jobrien-ppp.clark.net> kcowing@reston.com
>(Keith Cowing) writes:
>>What does it take to convince you UFO types that what you "hear" or
>>"think" isn't the truth!!!!.... Ignore those Zeta Reticulan chips in
>>your heads!
>>
> WOW! I feel like I was running for the touchdown and six 300 lb. NASA
>guys pummeled me into the ground. Ok for now you guys have me convinced
>that there were no windows where Cady was at in the lab when the UFO
>words were said. But as Columbo would say "there are a few loose ends
>yet".

Not for us Earth residents at least...

>I noticed that when the UFO words were said simultaneously to the
>status screen. There then lapsed 21 seconds and then the scene showed
>Cady in the lab doing her work. The question arises, where were the
>other six astronauts? Were some of them on the flight deck where there
>ARE windows. Did they see the UFO and relayed this information to Cady
>who broadcast it over the air? Or maybe that voice wasn't Cady at all.

Oh brother. I guess there is just NO end to your wild imagination
and inability to settle for reality. You are just wasting people's
time, since you're obviously not going to listen to reason.

2627. Re: VARIAN MICROWAVE AMPS and related items FOR SALE or trade

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: pieter.ibelings@sciatl.com
Message-ID: <4aq3re$l2g@firehose.mindspring.com>
Source record: 23439
Cross-posted to: sci.engr.chem,sci.chem,rec.radio.amateur.space,sci.med.radiology

In article <4a3bal$isv@ixnews8.ix.netcom.com>, ando1@ix.netcom.com says...

=FOR SALE- OR TRADE::
=Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
=$16,000.
=Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
=(new)$13,000.
=Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007

At those prices you might be better of advertising on
rec.radio.commercial.space. We are used to paying $100 or less for
used TWTA's.

73's
AC4OP

2628. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: jamesoberg@aol.com
Message-ID: <4aphih$erf@newsbf02.news.aol.com>
Source record: 23440
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Ratsch: <<During
spacelab missions (of which Cady was working diligently) A/G-2 is
reserved for the Spacelab and that is where the windows are. This is
what I have been told. >>

Oh, no! Secret radio channels, and now SECRET windows!! What won't the
ufonuts think of next!

2629. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: "Roger W. Mitchell" <rmitchell@ghgcorp.com>
Message-ID: <4aock8$jg7@pan.ghgcorp.com>
Source record: 23441
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

I may be the source of Don's post. Here is the e-mail I sent to
him. You be the judge of how this was meant to be taken.

>> begin insertion (oh baby) <<

Donald,

I noted on the sci.space.shuttle group tonight that you
didn't wait for a response but posted instead. Mr. Parise
responded to that post. In all probability, his analysis is
correct.

I have not been able to get in touch with Cady yet, however I
confirmed that she was in the Spacelab module at the time. As
Ron pointed out, there are no windows in Spacelab.

Also, her conversation was carried on the Air-to-ground 2 (we
call it A/G-2) channel. Folks who were up on the flight deck of
the orbiter would have been talking on A/G-1 (the orbiter systems
channel - during spacelab missions A/G-2 is reserved for the
Spacelab). That is where the windows are. The audio folks tell
me that during the 73 mission, most of the time we carried A/G-2
on Nasa TV. Also, it is not uncommom (just watch and listen to
NASA TV or the loops like I've done for a few years) for silence
to last for a long time. On orbit, as here on earth - too much
talking means the work isn't getting done.

TVC-2 is a reference to Television Camera 2 (located in the
aft end of the Spacelab unless moved - which is usually isn't).
The TVC block display you saw references the display block - that
is, the block of systems which are displayed on a computer screen
at a given time - not a block of the signal.

In all likelyhood, Cady was referring to errant floating
material in SL, or to a crewmember who had joined her in the
Spacelab. It is not uncommon for crewmembers to "raze" fellow
crewmates with comments such as "UFO". After all, they are
flying, so to speak.

It'd been nice if you had waited for an answer offline first
- in order to avoid blowing a minor A/G conversation into a "UFO"
debate on the newsgroups. It really doesn't look good for honest
people such as yourself who are probably working hard to find
evidence of an exteraterrestrial presence to quote such trivial
incidents. In fact, it hurts credibility.

But, hey, you got Ron to respond . . . .

Roger

Ad Astra

Roger W. Mitchell
(home) rmitchell@ghgcorp.com
(work) roger.w.mitchell1@jsc.nasa.gov

>> end insertion (oh, baby - MORE) <<

Hope this factoid helps you understand where Don got his data.

Roger
(sig above)

2630. Re: Which Rig for 2m and 70 cm?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: "Bernard A. Poskus and Cheryl A. Blehm-Poskus" <hamdan@ix.netcom.com>
Message-ID: <4aod1a$jqf@cloner2.ix.netcom.com>
Source record: 23442

Jim: There is a product review of the 820 in the March '95 QST. The reviewer said that its satellite functions appeared to have been added as an "afterthought". The rig did poorly when used with a TNC to compensate for doppler shift when accessing the 1200 baud birds. It doesn't appear to have any capability to add any extra bands to it.
I have used a Yaesu FT-736R for the analog satellites (RS-10, RS-15 and FO-20 - I can only get the low earth orbit satellites cuz of my limited antenna system), and for the 1200 baud digital satellites (AO-16 and LO-19). I have been quite pleased with its performance, and have heard the same from many other satellite ops. QST gave it a very good review (May 1990). Finally, it is at least competitively priced with the 820, and may even be cheaper.
By the way, I used to live in Grand Junction (lived about a block from the college for about 6 months). I miss the area sometimes!
73's de Bernie, KF0QS. Denver, Colorado

2631. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: sts48@ix.netcom.com
Message-ID: <4aoj71$l3v@cloner3.netcom.com>
Source record: 23443
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <kcowing-1312951820390001@jobrien-ppp.clark.net> kcowing@reston.com
(Keith Cowing) writes:
>
>In article <4alpja$kel@cloner2.ix.netcom.com>,
sts48@ix.netcom.com(Donald
>Ratsch) wrote:
>
>> In <4ahfue$95h@post.gsfc.nasa.gov> parise@gelato.gsfc.nasa.gov (Ron
>> Parise) writes:
>
>> >2. a. Cady was in the spacelab module (reference to TVC-2 confirms
>> that).
>> > b. There are **NO WINDOWS** in the spacelab module.
>> > c. Therefore, the UFO she saw (standard crew banter) was in the
>> module.
>> > d. Anybody should be able to follow that line of logic!
>
>> During spacelab missions (of which Cady was working diligently)
A/G-2 is
>> reserved for the Spacelab and that is where the windows are.
>
>What does it take to convince you UFO types that what you "hear" or
>"think" isn't the truth!!!!.... Ignore those Zeta Reticulan chips in
your
>heads!
>
>An astronaut, who has ACTUALLY FLOWN several Space Shuttle missions
>including a Spacelab mission, has just told you that there are no
windows
>in the Spacelab module. And YOU know better.
>
>I have personally been in several Spacelab ground trainers
(STS-40/SLS-1
>and STS-58/SLS-2) at JSC and can confirm to you that there weren't any
in
>there either. Nada, zip, zilch.... When STS-1 had a problem with one
of
>the payload bay doors closing, the crew had to use cameras looking out
of
>the aft flight deck to see out.
>
>Anyone else out there care to chime in ... (not that this is really
worth

>anyone's time to debunk).

WOW! I feel like I was running for the touchdown and six 300 lb. NASA guys pummeled me into the ground. Ok for now you guys have me convinced that there were no windows where Cady was at in the lab when the UFO words were said. But as Columbo would say "there are a few loose ends yet". I noticed that when the UFO words were said simultaneously to the status screen. There then lapsed 21 seconds and then the scene showed Cady in the lab doing her work. The question arises, where were the other six astronauts? Were some of them on the flight deck where there ARE windows. Did they see the UFO and relayed this information to Cady who broadcast it over the air? Or maybe that voice wasn't Cady at all. Maybe the Payload Commander, Kathryn Thornton broadcast those words? Was she on the flight deck seeing the UFO through the window? A good voice print analysis would settle that question. I remember in 1989 I recorded on a GSFC Ham radio band the words of what we thought was an astronaut saying the words, "We still have the alien spacecraft under observance" The tape of that voice was taken to a lab and compared to the voices of the astronauts on that mission and it did not match leading us to conclude that a ham broadcast a hoax on that frequency (147.450mh). So an analysis could tell us if the voice was Cady's or Kathy's.

2632. Re: Oberg - answerman! (was Re: STS-73 Sees UFO)

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: rredx1@aol.com
Message-ID: <4aojjl$2dt@newsbf02.news.aol.com>
Source record: 23444
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

probably right about the sts-73 thing.

Do you know anything about the Whitman AFB happening on Dec 11 9:15PM?

2633. Uplink/Downlinks of Sats Pse

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: electrophi@aol.com
Message-ID: <4ap2k5$5t9@newsbf02.news.aol.com>
Source record: 23445

Anyone out there give me info on the uplink/downlink freqs of the various
birds flying, I am familiar with trakin programs and have figured that
much out.
I saw a message on here about a person trying to use his ht and a scanner
to work the satellites and it worked, just wondered if it would be
possible for me
to do the same thing here at the apt.
any replys welcome Thanks in advance
Phillip

Ka8pog@Wb8zpn.#semi.mi.usa.noam
electrophi@aol.net or ka8pog@44.102.1.95 or
ka8pog@44.102.50.254
address's address's

2634. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: kcowing@reston.com
Message-ID: <kcowing-1412951828060001@jobrien-ppp.clark.net>
Source record: 23446
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <4aphih$erf@newsbf02.news.aol.com>, jamesoberg@aol.com (JamesOberg) wrote:

> Oh, no! Secret radio channels, and now SECRET windows!! What won't the
> ufonuts think of next!

SECRET STS missions (STS-shh!) which flew and NO ONE knew about ....

2635. !! Hit High Tech WWW Site !!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-14 00:00:00 UTC
From: amsoft@epix.net
Message-ID: <NEWTNews.819001755.12097.amsoft@486dx4_120>
Source record: 23447
Cross-posted to: rec.radio.amateur.space,rec.radio.amateur.policy,rec.radio.amateur.misc

Covering Amateur Radio, Electronics, Engineering, Space, Scanners
Shortwave, and many more interesting Technical Areas. Includes
0ver 400 WWW links, and a link to our September 95 CD-ROM archive
with over 23,000 files online. Very HOT High Tech WWW Site

http://hamster.business.uwo.ca/~amsoft/

Surf The High Tech World from here today!

2636. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: sts48@ix.netcom.com
Message-ID: <4ar30k$k3c@ixnews5.ix.netcom.com>
Source record: 23448
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <4aphih$erf@newsbf02.news.aol.com> jamesoberg@aol.com (JamesOberg) writes:
>
>Ratsch: <<During
>spacelab missions (of which Cady was working diligently) A/G-2 is
>reserved for the Spacelab and that is where the windows are. This is
>what I have been told. >>
>
>Oh, no! Secret radio channels, and now SECRET windows!! What won't the
>ufonuts think of next!

Ok Big Jim, lets talk windows. I suggested on the last thread that since no one else could be seen in the lab except Cady after the UFO statement, that there was the possibility that Kathy Thornton could have been on the flight deck looking at the UFO through the windows at the flight deck and transmitted those words. Are you now saying that there are no windows on the flight deck? Everybody else says there are and if they are, then Kathy could have been the one who made the UFO statement. Even Cady in the lab wouldn't need a window to see the UFO, she could have utilized the cameras much like the STS-1 utilized the cameras to see out when they had the problem with one of the payload bay doors closing.

2637. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDJMLKr.5to@netcom.com>
Source record: 23449
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Mark Hines <mjhines@ix.netcom.com> wrote:
>Is the big, retarded goof seriously trying to say that astronauts do
>not have secure radio channels they go to for classified
>communications?

Except for in the past during the handful of DoD
missions, they have no "classified communications".

It seems that you're seriously trying to say that you
are totally ignorant about Shuttle communications.

2638. help with KPC9612 and PB/PG

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: stockmand@aol.com
Message-ID: <4arrlc$ibo@newsbf02.news.aol.com>
Source record: 23450

Greetings! I am having some difficulty getting my KPC9612 TNC/modem to work
correctly with PB/PG. The main problem is the TNC transmits on 1200 baud when
in KISS mode from PB. I talked to Kantronics and they suggested a fix. The one
problem is I live in Ghana, West Africa, but am currently visiting the U.S. for a few
weeks so I cannot check their suggestion out. Because I am so isolated in Ghana,
it may take months for me to get further information if the Kantronics suggestion
does not work. Therefore, I want to get the settings that others use when working
with the KPC9612 and PB/PG. This may save me months of headaches.

On a related note, I just ordered WISP from AMSAT. If possible can someone who
uses WISP and the KPC9612 send me their configuration files. It sounds like
WISP is much nicer to use than PB/PG so I hope to upgrade, but do not want to
run into the same problem I did with PB/PG once I return to the bush.

Thanks in advance for any help.

Station
Yaesu FT736R, G5400B
KPC9612 TNC/Modem
Ambra 486/25 subnotebook computer running OS/2-WARP, DOS 6, WINDOZE3.1
SATTRAK IV TRAKBOX
KLM 2m and 70 cm circ polarized antennas

Douglas Stockman, 9G5DS, N2ZYE
respond to cutronej@alice.union.edu

2639. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: sts48@ix.netcom.com
Message-ID: <4as4m0$eki@cloner2.ix.netcom.com>
Source record: 23451
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <4arsie$ihi@newsbf02.news.aol.com> gksmiley@aol.com (GK Smiley)
writes:
>
>Hines-End says: <<Is the big, retarded goof seriously trying to say
that
>astronauts do not have secure radio channels they go to for classified
>communications?>>
>
>He doesn't have to say that. Anyone who knows anything about space
>technology on te shuttle knows that (i.e., there are no secret
channels on
>the shuttle -- classified communications take place over existing
channels
>with a voice scrambler). It's only reality-deprived ufonuts like Hines
who
>have to fantasize non-existent systems to provide apparent support for
>non-existent events.
>
>Would Mr. Hines plase provide us with ANY evidence that even hints at
the
>existence of these "secret channels", please?
>
>And by the way, how about ANY evidence that George Leonard was ever a
NASA
>scientist, which Hines indicated he thought was true a few posts ago
but
>now is afraid to acknowledge his stupid error...???

Sure there is a secret channel Smiley. What about after the STS-48 footage was bagged by me and all the controversy that followed it and after that in 1992 the Transponder 5 on Satellite F2R was encrypted for downlinking secure and private communications. The SUPPOSED reason for the encryption was to carry private medical information from the astronauts. But they could transmit UFO information as well and nobody would be the wiser. Any comments?

2640. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: gksmiley@aol.com
Message-ID: <4arsie$ihi@newsbf02.news.aol.com>
Source record: 23452
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Hines-End says: <<Is the big, retarded goof seriously trying to say that astronauts do not have secure radio channels they go to for classified communications?>>

He doesn't have to say that. Anyone who knows anything about space technology on te shuttle knows that (i.e., there are no secret channels on the shuttle -- classified communications take place over existing channels with a voice scrambler). It's only reality-deprived ufonuts like Hines who have to fantasize non-existent systems to provide apparent support for non-existent events.

Would Mr. Hines plase provide us with ANY evidence that even hints at the existence of these "secret channels", please?

And by the way, how about ANY evidence that George Leonard was ever a NASA scientist, which Hines indicated he thought was true a few posts ago but now is afraid to acknowledge his stupid error...???

2641. Re: Funkamateu und internet

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: nobody@fh-offenburg.de
Message-ID: <4as0ee$san@news.belwue.de>
Source record: 23453

In article <4ac74q$1uk@news.belwue.de>, nobody@fh-offenburg.de says...
>
>Gibt es eine mï¿½glichkeit via 2 meter oder 70 cm ins internet zu kommen??

meinen Dank fï¿½r jede Antwort
H.Wielage
>

2642. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: Iver@ksu.ksu.edu
Message-ID: <4asdpk$7k5@cbs.ksu.ksu.edu>
Source record: 23454
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

>Ratsch: <<During
>spacelab missions (of which Cady was working diligently) A/G-2 is
>reserved for the Spacelab and that is where the windows are. This is
>what I have been told. >>

No windows in the Spacelab.
Thank you for playing and try again sometime.

2643. Help with PB/PG and OS/2 WARP

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: stockmand@aol.com
Message-ID: <4arrpu$icd@newsbf02.news.aol.com>
Source record: 23455

Greetings! I am having difficulty getting PB/PG to work with OS/2 WARP when inside
a DOS screen. Whenever PB starts receiving satellite data from the 9600 birds, the
system crashes. Does anyone have a fix?

Thanks in advance.

Douglas Stockman, 9G5DS, N2ZYE
respond to cutronej@alice.union.edu

2644. Suggestions for preamp and AO-10/AO-13

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: stockmand@aol.com
Message-ID: <4arrn1$ibs@newsbf02.news.aol.com>
Source record: 23456

Greetings! I need some suggestions regarding a preamp and working AO-10 and
AO-13. Does anyone know of an affordable preamp I can use that will allow
automatic passthrough during transmit? I am mainly interested in my station being
able to work the 9600 birds, but SSB on AO-10 and AO-13 is fun, so if it is not too
difficult to get a preamp into my current setup and it does not upset my digital work,
I will add a preamp. I have one 2m antenna and one 70cm antenna. Is it possible to
just add a preamp without adding another antenna and another coax cable? Can
someone suggest a specific model of preamp? Thanks in advance.

Douglas Stockman, 9G5DS, N2ZYE
respond to cutronej@alice.union.edu

2645. Help! Need SATGATE to internet gateway!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: stockmand@aol.com
Message-ID: <4arroh$ic7@newsbf02.news.aol.com>
Source record: 23457

Greetings! I live in a rural village in Ghana, West Africa. The nearest mail box or
telephone are a good two hours journey away when it is not raining. I am setting
up a station to work the 9600 birds with the main intent being to pass personal
messages to family and friends in the U.S. None of the people I want to contact
are hams. Most of them have access to the internet though. Therefore, I am
looking for a gateway between a SATGATE and the internet. If no SATGATE
currently serves as a gateway to the internet, does anyone know of a terrestrial
packet station that is near a SATGATE that is an internet gateway? Any and all
help is greatly appreciated. Thanks in advance.

Douglas Stockman, 9G5DS, N2ZYE
respond to cutronej@alice.union.edu

2646. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: kcowing@reston.com
Message-ID: <kcowing-1512952120450001@jobrien-ppp.clark.net>
Source record: 23458
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <4as4m0$eki@cloner2.ix.netcom.com>, sts48@ix.netcom.com(Donald Ratsch) wrote:

> Sure there is a secret channel Smiley. What about after the STS-48
> footage was bagged by me and all the controversy that followed it and
> after that in 1992 the Transponder 5 on Satellite F2R was encrypted for
> downlinking secure and private communications. The SUPPOSED reason for
> the encryption was to carry private medical information from the
> astronauts.

You're right: I give up. NASA was doing a joint medical mission with the Zeta Reticulans. They were so embarassed that they didn't want anyone to know. So they encrypted everything and disguised it as commercial TV signal and beemed it back viaTransponder 5 on Satellite F2R to YOUR CABLE SYSTEM. Your ZR chip decoded it as being as an Oprah show on abductee amputees who are absentee fathers. Sorry. Guess you weren't watching that day.

>But they could transmit UFO information as well and nobody
> would be the wiser.

I don't think we'd be "wiser"

2647. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: mjhines@ix.netcom.com
Message-ID: <4ar4l7$p94@ixnews2.ix.netcom.com>
Source record: 23459
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <4aphih$erf@newsbf02.news.aol.com> jamesoberg@aol.com (JamesOberg)
writes:
>
>Oh, no! Secret radio channels, and now SECRET windows!! What won't the
>ufonuts think of next!

Is the big, retarded goof seriously trying to say that astronauts do
not have secure radio channels they go to for classified
communications?

According to medical doctors, mental retardation is concomitant with
the giant syndrome in Caucasians. Isn't Oberg 6' 8"?

Mark Hines

2648. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: kcowing@reston.com
Message-ID: <kcowing-1512951916240001@jobrien-ppp.clark.net>
Source record: 23460
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <dadamsDJMLKr.5to@netcom.com>, dadams@netcom.com (Dean Adams) wrote:

> Mark Hines <mjhines@ix.netcom.com> wrote:
> >Is the big, retarded goof seriously trying to say that astronauts do
> >not have secure radio channels they go to for classified
> >communications?
>
> Except for in the past during the handful of DoD
> missions, they have no "classified communications".
>
> It seems that you're seriously trying to say that you
> are totally ignorant about Shuttle communications.

Hmm... you learn something everyday. I thought for certain that the
University of Las Vegas would require Mark Hines to take several semesters
of encrypted communications, security procedure, and radio operations in
order to qualify for a Master's Degree in English Literature ....

2649. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-15 00:00:00 UTC
From: kcowing@reston.com
Message-ID: <kcowing-1512951245280001@jobrien-ppp.clark.net>
Source record: 23461
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <4arsie$ihi@newsbf02.news.aol.com>, gksmiley@aol.com (GK Smiley) wrote:

> Hines-End says: <<Is the big, retarded goof seriously trying to say that
> astronauts do not have secure radio channels they go to for classified
> communications?>>

> He doesn't have to say that. Anyone who knows anything about space
> technology on te shuttle knows that (i.e., there are no secret channels on
> the shuttle -- classified communications take place over existing channels
> with a voice scrambler). It's only reality-deprived ufonuts like Hines who
> have to fantasize non-existent systems to provide apparent support for
> non-existent events.
>
> Would Mr. Hines plase provide us with ANY evidence that even hints at the
> existence of these "secret channels", please?

Actually, you need a special Zeta Reticulan decoder chip implanted in your brain to receive these signals. OF COURSE we (non-implantees) aren't aware of them!

Owing to the less-than-desirable receving characteristics of the human skull, these chips do have a bit of a problem distinguishing signal from noise - hence these bizzare postings of late from Nevada.

Upgrades are due soon. Be on the lookout for ZR/ hybrid longhorn's with extra long horns to get better reception.

2650. Re: Super Space Site

Newsgroup: rec.radio.amateur.space
Date: 1995-12-16 00:00:00 UTC
From: charlie@smart.net
Message-ID: <4ausql$3ai@news.smart.net>
Source record: 23367

charlie@smart.net (Charles M. Clark) wrote:

> If you are interested in either space information and or weather
>information, you have to look into Mike Robinson page on the Web.
> It contains everything you ever wanted to know about either subject.

> Mike has had years of experience developing these subject and now
>devotes much of his time to developing and maintaining this page

Try http://www.airtime.co.uk/users/homebase/homebase.htm

I think you will need this. SORRY. OOPS.

2651. ARLK071 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-12-16 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk071.1995@arrl.org>
Source record: 23368
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK071
ARLK071 Keplerian data

ZCZC SK96
QST de W1AW
Keplerian Bulletin 71 ARLK071
From ARRL Headquarters
Newington, CT December 16, 1995
To all radio amateurs

SB KEP ARL ARLK071
ARLK071 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95346.38021889 .00002843 00000-0 44646-4 0 3629
2 16609 51.6449 345.0327 0006414 94.0820 266.0907 15.57468257560736
HST
1 20580U 90037B 95346.22617108 .00000331 00000-0 17567-4 0 7454
2 20580 28.4706 346.7031 0006687 14.0377 346.0385 14.90986424110500
AO-10
1 14129U 83058B 95345.99476340 .00000071 00000-0 10000-3 0 3939
2 14129 26.4153 234.2339 5978432 333.6570 5.6309 2.05880346 65999
RS-10/11
1 18129U 87054A 95346.16686850 .00000028 00000-0 14045-4 0 01723
2 18129 82.9230 287.5016 0011363 326.1344 33.9079 13.72359861424380
UO-11
1 14781U 84021B 95346.53230230 .00000084 00000-0 22040-4 0 8477
2 14781 97.7872 340.7622 0011406 337.0905 22.9790 14.69407822630096
RS-12/13
1 21089U 91007A 95346.46247481 .00000029 00000-0 14751-4 0 8510
2 21089 82.9187 328.5575 0030788 38.1089 322.2236 13.74063304243254
AO-13
1 19216U 88051B 95345.86913431 .00000037 00000-0 55888-4 0 01239
2 19216 57.4271 147.7076 7356788 26.0633 357.1210 2.09726666025890
UO-14
1 20437U 90005B 95346.09915498 .00000020 00000-0 24640-4 0 01604
2 20437 98.5597 67.5307 0012035 37.1251 323.0761 14.29906187307176
```

```
AO-16
1 20439U 90005D 95346.13412565 -.00000004 00000-0 15495-4 0 09540
2 20439 98.5722 69.4856 0012309 37.8256 322.3789 14.29960683307199
DO-17
1 20440U 90005E 95346.10502638 .00000020 00000-0 24637-4 0 09534
2 20440 98.5734 69.9979 0012404 36.9232 323.2814 14.30102739307219
WO-18
1 20441U 90005F 95346.09092089 .00000032 00000-0 29172-4 0 09629
2 20441 98.5732 69.9411 0013068 36.5642 323.6440 14.30072977307216
LO-19
1 20442U 90005G 95346.17079059 .00000024 00000-0 25948-4 0 09551
2 20442 98.5749 70.4413 0013297 36.6503 323.5585 14.30178252207249
FO-20
1 20480U 90013C 95346.09500166 -.00000039 00000-0 -14672-4 0 08594
2 20480 99.0588 41.5105 0540606 190.5687 168.3668 12.83232132273768
AO-21
1 21087U 91006A 95345.84352544 .00000094 00000-0 82657-4 0 06694
2 21087 82.9357 101.0982 0036315 12.8957 347.3118 13.74562654244139
UO-22
1 21575U 91050B 95346.12191942 .00000016 00000-0 19774-4 0 06627
2 21575 98.3776 52.8738 0008325 102.3004 257.9116 14.37003825231058
KO-23
1 22077U 92052B 95346.09568973 -.00000037 00000-0 10000-3 0 05430
2 22077 66.0790 223.2753 0003353 350.6916 9.4038 12.86293446156614
KO-25
1 22828U 93061F 95346.14930388 .00000019 00000-0 24999-4 0 04288
2 22828 98.5954 60.0948 0011209 46.8783 313.3331 14.28122668083277
IO-26
1 22826U 93061D 95346.12400161 .00000013 00000-0 22860-4 0 04420
2 22826 98.6037 60.0278 0010229 61.4334 298.7860 14.27789481115168
AO-27
1 22825U 93061C 95346.18353378 .00000030 00000-0 30002-4 0 4383
2 22825 98.6038 59.9585 0009633 59.6074 300.6050 14.27681636115160
PO-28
1 22829U 93061G 95346.09333850 .00000022 00000-0 26425-4 0 04385
2 22829 98.6000 60.0882 0011068 47.5108 312.7004 14.28104040115180

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
December 19, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2652. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.space
Date: 1995-12-16 00:00:00 UTC
From: jmaynard@admin5.hsc.uth.tmc.edu
Message-ID: <radio/personal-intro_819120423@rtfm.mit.edu>
Source record: 23462
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

Posted-By: auto-faq 3.1.1.2
Archive-name: radio/personal-intro
Revision: 2.1 1994/11/01 03:50:23
Posting-Frequency: posted on the 15th of each month

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info, and rec.radio.swap newsgroups, as well as their Internet mailing list counterparts and complements. It is intended to serve as a guide for the new reader on what to find where. Questions and comments may be directed to the author, Jay Maynard, K5ZC, by Internet electronic mail at jmaynard@admin5.hsc.uth.tmc.edu. This message was last changed on 31 October 1994 to add the discussion of non-Usenet mailing lists and streamline most of the history discussion, and to change the moderator information for rec.radio.info.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions were held on the mailing list, and sent to the mailboxes of those who had signed up for it. When the Usenet software was created, and net news as we now know it was developed, a newsgroup was created for hams: net.ham-radio. The mailing list and the newsgroup were gatewayed together, eventually.

Over the years, as the net grew, the volume of discussion became progressively higher. First one by one, and then as part of two reorganizations, what was once one group became many. In the process, developments elsewhere on the net were reflected in the groups as they were created, most notably the change to place all of the ham radio groups in one hierarchy.

The collection of newsgroups continues to grow as more people join the net, and as more topics of discussion gain volume, I expect to see more groups be created as well. This follows what is happening on the rest of the net.

Nearly all of the radio newsgroups have corresponding mailing lists, the notable exception being rec.radio.swap. There are also a few mailing lists that don't have newsgroups.

The Current Groups
==================

It's important to post messages to the group that's appropriate for them, and not to the groups that aren't. The whole idea of having different

newsgroups is so that folks who aren't interested in, say, homebrewing, don't have to wade through messages about homebrewing on the way to read about Field Day. Posting appropriately is just good etiquette.

The rec.radio.amateur.misc group is the catchall. It is what rec.ham-radio was renamed to during the first major reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, was removed on September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there. To answer a frequently asked question: No, there is no mailing list that goes along with this group. If you can't read Usenet news directly, you're out of luck.

The group rec.radio.amateur.policy was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate - it's now legal to order a pizza on the autopatch, if you're not in the pizza business - as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The group rec.radio.cb is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently David Dodell, WB7TPY. The email address for submissions to the group is rec-radio-info@stat.com. Inquires and other administrivia should be directed to rec-radio-info-request@stat.com. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

Mailing Lists

In addition to the mailing lists that mirror the Usenet newsgroups, there also are a few that stand alone. These cover specific areas of ham radio, and discussion is focused on just those areas.

The cq-contest mailing list is for discussions of contesting in ham radio. To join, send email with the word "subscribe" on a line by itself to cq-contest-request@tgv.com.

The DX mailing list covers the finer points of DXing. This one is also joined by mailing "subscribe" on a line by itself, this time to

dx-request@unbc.edu.

There's also a VHF mailing list, for VHF operators of the weak signal persuasion. You can join this one be sending "subscribe vhf" on a line by itself to vhf-request@w6yx.stanford.edu.

All of the following mailing lists are sponsored to the Boston Amateur Radio Club, as well as some others of local interest. Thanks to N1IST for the information.

qrp-l: This is the qrp mailing list, previously maintained by Bruce Walker at Think.com. It is for discussions about the design, construction, and use of qrp (low power) radios and related equipment.
arrl-ve-list: This is a one-way list, run by Bart Jahnke of the ARRL VEC, for announcements to VEs and VE teams.
w1aw-list: ARRL bulletins, news, and information
newsline-list: Redistribution of Amateur Radio Newsline
letter-list: Redistribution of the ARRL Letter
fox-list: Fox hunting and Radio Direction Finding
fieldorg-l: ARRL field organization discussions
ham-tech: Technical discussions and questions about Amateur Radio
arrl-exam-list: amateur radio license examinations scheduled in the US and in some foreign areas.

To sign up or inquire about these lists, send mail to listserv@netcom.com with the following in the body (subject is ignored) of the message.
<listname> is the name of the list to subscribe to.
To subscribe: subscribe <listname>
To unsubscribe: unsubscribe <listname>
For more information: help
To post (to the two-way lists), send your message to <listname>@netcom.com

Please do NOT send subscription requests to the mailing lists themselves; that doesn't work very often, and is very annoying to those on the list. Also, please keep your electronic mail address current with any mailing lists you subscribe to, as dealing with returned email is a nuisance for the person maintaining the mailing list.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while

still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
"All is strange and vague." "Are we dead?" "Or is this Ohio?"
-- Yakko and Dot Warner

2653. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-16 00:00:00 UTC
From: Philip Chien <kc4yer@amsat.org>
Message-ID: <4atmpk$oor@paperboy.ids.net>
Source record: 23463
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

> Donald Ratsch (sts48@ix.netcom.com) wrote:
>
> Spacelab can (optional carry one (as in 1) single window, a small
> one in the aft end looking out towards the tail. I do not know if
> 73 had this window installed or not. The windows (multiple) are
> in the orbiter itself. Six forward, two up, two back. Most of the
> photos taken on Shuttle missions are from these 10 windows since they
> are relatively large. (The Spacelab window seems much smaller to me.)

In article <kcowing-1312952324030001@jobrien-ppp.clark.net> Keith Cowing,
kcowing@reston.com writes:

>Don:
>
>Yes, you are right, I forgot. Mea culpa. Also, early Spacelab missions
>had an optical window - in fact (correct me space hardware trivia buffs)
I
>do believe that NASA "borrowed" an optically-pure window that had been
>sitting in the Skylab flight spare at the National Air and Space Museum
>for use in - was it SL-1? There is a small air lock in the "roof" of
>Spacelab which can take one of these windows - I think.
>
>These windows are only installed when there is a need for them i.e. to
>look out. Each flight risks scarring, etc so they don't just leave them
>installed. I do not recall seeing any of the windows in the aft cone of
>SLS-1 or SLS-2. There was gear stowed there as I recall.

Why am I foolish enough to keep this thread running?

For the STS-9 Spacelab 1 and STS-51-B Spacelab 3 missions the optical
window was carried in the Spacelab long modle in the overhead window for
the scientific airlock. In both cases it was carried to support the Very
Wide Field Camera experiment. And yes, it was a backup from the Skylab
program.

Some Spacelab long module missions have a small window in the aft cone.
You can see the window quite clearly in the IMAX film "Destiny in Space"
where Bill Readdy calls Canadian payload specialist Roberta "Bobby"
Bondar over to the window as they pass over Canada during the STS-42
IML-1 mission. For the SLS-1 mission (STS-40) Jim Bagian was actually in
the module while the shuttle's cargo bay doors were closed, to watch the
door closing to make sure it didn't snag on the shuttle's insulating
blankets (a spacewalk was briefly discussed to tuck in the blankets but
deemed unnecessary).

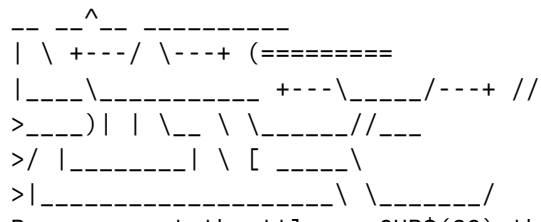
The STS-73 United States Microgravity Laboratory-2 (USML-2) mission in question as far as I know did not have the observation window in the aft end cone installed, and certainly did not have the optical window installed.

Check out the onboard JSC photo STS073-105-011 which shows Cady Coleman in the Spacelab module working on the glovebox experiment - the aft end cone is directly behind her. Or the photo STS73-103-019 which shows a wider view of the module with Cady and Fred Leslie in the module with the end cone in the background.

Like I said before - when this thread was young. I've spent a little time with Cady and she's got a good sense of humor. And I know her voice and Kathy Thornton's voice well nough to tell them apart. While it's certainly not absolutely 100% completely impossible that Cady saw a flying saucer, called it a UFO, and is part of this great conspirary to keep everything secret (although for the life of me I haven't the faintest idea what she'd gain by being part of that conspirary) it's much more reasonable to believe that she was just making a simple little joke.

Like later in the mission when commander Ken Bowersox was asked whether or not he had ever seen a space alien in space and he replied - on the voice to ground loop - that the only space alien he'd ever seen in space was fellow astronaut Story Musgrave.

(of course if Story really is a space alien then Ken and I just ruined his cover. Sorry 'bout that Story).

Philip Chien, Earth News - space writer and consultant PCHIEN@IDS.NET

Roger, go at throttle up CHR$(32) the final frontier

2654. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-16 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDJoJI4.A93@netcom.com>
Source record: 23464
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Donald Ratsch <sts48@ix.netcom.com> wrote:
> Sure there is a secret channel Smiley. What about after the STS-48
>footage was bagged by me and all the controversy that followed it and

By "controversy", you mean the ridiculous nonsense where certain
Shuttle-ignorant members the UFO lunatic fringe started inventing
wild stories about the ice particles being hit by an RCS plume.

>after that in 1992 the Transponder 5 on Satellite F2R was encrypted for
>downlinking secure and private communications.
Some time after that.

> The SUPPOSED reason for the encryption was to carry private medical
> information from the astronauts.

More accurately, the reason was so they could have private
medical video conferences with their doctors on the ground.

>But they could transmit UFO information as well and nobody
>would be the wiser. Any comments?

Yea, you're nuts! :> Everything you are saying is ridiculous.
NASA is using a *commercial* video encoder, the same type used
by ABC for example. That provides just enough security to
protect the modesty of any astronaut who may need to show
some part of their body to a doctor on the ground...

But when you start inventing wild stories about hiding "top secret
UFO space alien video", it (not surprisingly) becomes ludicrous.
Besdies, if the government ever wanted to send video of that sort,
first of all they would use the best military encryption systems
the NSA had to offer, and second they would not uplink it for all
to see on a commercial broadcast satellite.

As usual, your fantasies have no foundation in logic or reality,
and have everything to do with your complete ignorance of the
subject matter involved.

2655. Need Skeds for Sat WAS

Newsgroup: rec.radio.amateur.space
Date: 1995-12-16 00:00:00 UTC
From: nc7k@vhf.reno.nv.us
Message-ID: <4avf4b$kfh@news.greatbasin.net>
Source record: 23465

Hello from Reno Nevada de Tim - NC7K...

Recently I became QRV on AO10 and AO13 chasing Grids,
States, and countries. After 1 month I'm having trouble
finding the last states for Sat WAS. Is anyone QRV from,
MT, ND, SD, NE, CO, WY, KS, OK, AR, IA, MN, AL, SC,
NC, NH. RI, and ME ?

If so I'd like to set up some skeds and get it done.

Thanks and Happy Holidays from DM09ep...

Tim - NC7K... sk

NC7K@VHF.RENO.NV.US

2656. Super Space Site

Newsgroup: rec.radio.amateur.space
Date: 1995-12-16 00:00:00 UTC
From: charlie@smart.net
Message-ID: <4auses$3ai@news.smart.net>
Source record: 23466

If you are interested in either space information and or weather
information, you have to look into Mike Robinson page on the Web.
It contains everything you ever wanted to know about either subject.

Mike has had years of experience developing these subject and now
devotes much of his time to developing and maintaining this page

2657. Re: Satellit-Tracking STSPLUS

Newsgroup: rec.radio.amateur.space
Date: 1995-12-17 00:00:00 UTC
From: ROBERT BOWES <bowesro@mci.newscorp.com>
Message-ID: <4b1n49$aio@klein.delphi.com>
Source record: 23369

The quickest, most up-to-date source I know for the 2-line "xxx.tle"
files is ftp.afit.af.mil/pub/space

2658. Re: Junkosphere

Newsgroup: rec.radio.amateur.space
Date: 1995-12-17 00:00:00 UTC
From: rhyolite95@aol.com
Message-ID: <4b1uki$k1h@newsbf02.news.aol.com>
Source record: 23370

Is ATS-3 still alive?? I have tapes from a few years ago of members of the Bahai religion using the sat for roundtable discussions. I also monitored quite a few telephone calls from McMurdo (South Pole). As I have recently moved to a new QTH my antenna system is not what it was. I just put up a cushcraft AOP-1 and pointed to about where i thought ATS-3 was and listened in the 135.550-135.650 MHz passband. What I heard sounded like a lot of european land mobile traffic complete with multitone preambles. What is going on with the bird is it stable? Is anyone using it?? Please reply rhyolite95@aol.com

2659. Re: Satellit-Tracking STSPLUS

Newsgroup: rec.radio.amateur.space
Date: 1995-12-17 00:00:00 UTC
From: wallnerw@crash.cts.com
Message-ID: <4b25mj$hnt@news3.cts.com>
Source record: 23371

Bruce Kille (BKille@gnn.com) wrote:

: In article <30cefa10.1134146@news.isys.net> Freddi Warnke wrote:

: One of my favorite sites is the NASA Spacelink. It can be reached
: via WWW, gopher, FTP, or Telnet using the following address:
: spacelink.msfc.nasa.gov

Also, Dr. T.S. Kelso's archive by WWW <ftp://archive.afit.af.mil/pub/space/>

Bill

2660. re orientation of AO-13

Newsgroup: rec.radio.amateur.space
Date: 1995-12-17 00:00:00 UTC
From: Danie Brynard <danie.brynard@pixie.co.za>
Message-ID: <4b0uni$jsj@hawk.pix.za>
Source record: 23372

Is it possible to know what the antenna orientation of AO-13 is ?
Will some PC program give one this info ?

Danie zs6awk

2661. Re: re orientation of AO-13

Newsgroup: rec.radio.amateur.space
Date: 1995-12-17 00:00:00 UTC
From: Hank Blackstock <wa5jrh@ionet.net>
Message-ID: <4b1ps7$8mp@ionews.ionet.net>
Source record: 23373

Danie Brynard <danie.brynard@pixie.co.za> wrote:
>Is it possible to know what the antenna orientation of AO-13 is ?
>Will some PC program give one this info ?
>
>Danie zs6awk
>
>
Instatrack does..73 Hank WA5JRH

2662. Shuttle tracking program

Newsgroup: rec.radio.amateur.space
Date: 1995-12-18 00:00:00 UTC
From: jpotts@crl.com
Message-ID: <4b45nv$p0n@nntp.crl.com>
Source record: 23374

I am looking for a good program that I could use to track the shuttle when in orbit and the mir space station. Please list were the program can be found with your recommendations.

John Potts, kb6wgl

2663. Seek KR-10 rotator info desperately

Newsgroup: rec.radio.amateur.space
Date: 1995-12-18 00:00:00 UTC
From: caseycct@ridgecrest.ca.us
Message-ID: <DJsMwK.Mw4@ridgecrest.ca.us>
Source record: 23375

Hello I have a sat tracking program named Orbitrack for mac. It claims
to control a "KR-10" rotator (which I assume is az/el) via rs-232.
1. What IS a KR-10 ?
2. I would like to acquire such a rotator, or any that are rs-232 compatible
with a KR-10.
Thanks for any info, pointers, etc.
73

--
Erik van Bronkhorst
CW/KotGT DoD#4342585443 AMA#438054
caseycct@owens.ridgecrest.ca.us
ftp://www.ridgecrest.ca.us/pub/users/caseycct/erik.html
kc6uut@wa6ybn.#soca.ca.usa.na

2664. Re: re orientation of AO-13

Newsgroup: rec.radio.amateur.space
Date: 1995-12-18 00:00:00 UTC
From: Carl Gregory <cgregory@uiuc.edu>
Message-ID: <4b47l5$c9u@vixen.cso.uiuc.edu>
Source record: 23376

>Danie Brynard <danie.brynard@pixie.co.za> wrote:
>>Is it possible to know what the antenna orientation of AO-13 is ?
>>Will some PC program give one this info ?

So does WinOrbit, and many others. However, you must know the present attitude of the satellite, which is occasionally published here and elsewhere in the newsgroups. Herewith a repost of the last bulletin:

o

SB AMSAT @ WW $RUH951201
AO-13 Schedules 1996

Attitude Schedule

The planned attitude schedule for Oscar 13 during 1996 is:

Date [Mon] Alon/Alat Weeks

1996 Jan 01 220/0 13
1996 Apr 01 180/0 10
1996 Jun 10 220/0 t.b.a.

The session beginning 1996 June 10 will also last for about 3 months. After
that, 1996 September, perigee height will be 170 km and re-entry effects will
already be noticeable. This will be an interesting time, and the command team
welcomes suggestions which we could implement to make use of this unique
opportunity to observe an amateur spacecraft at re-entry.

Full details of re-entry, around 1996 Dec 05-19, can be found in:

- Proceedings of the 12th annual Amsat Space Symposium, Orlando, Florida,
USA, 1994. 4 pages.
- Oscar News (UK) 1994 Oct No. 109 p 16-20
- Jamsat Newsletter (JA) No. 166, 1995 March 25. p1-4
- Amsat-DL Journal (D), Jg. 22, No. 1, Mar/May 1995.
- Amsat OZ Journal (OZ) No. 37, 1995 May
- The Amsat Journal (USA) Vol 18 No.3, May/June 1995.

The article and regularly updated program listing is available via the Internet
by anonymous FTP:

Site: ftp.amsat.org
File: /amsat/articles/g3ruh/a114.zip (Article)
File: /amsat/satinfo/ao13/decaykep.zip (Decay keplerian elements)

Mode Schedule

M QST ** AO-13 TRANSPONDER SCHEDULE ** 1995 Dec 02 - 1996 Jan 01
Mode-B : MA 0 to MA 70 |
Mode-BS : MA 70 to MA 110 | Omnis : MA 230 to MA 25
Mode-S : MA 110 to MA 112 |<- S beacon only
Mode-S : MA 112 to MA 135 |<- S transponder; B trsp. is OFF
Mode-S : MA 135 to MA 140 |<- S beacon only
Mode-BS : MA 140 to MA 180 | Alon/Alat 182/0
Mode-B : MA 180 to MA 256 | Move to attitude 220/0, Jan 01

Please note that the higher powered engineering beacon 145.985 MHz is
ON for
two periods: MA 0 - 20 and MA 100-110.

Provisional Schedule

N QST *** AO-13 TRANSPONDER SCHEDULE *** 1996 Jan 01 - Apr 01
Mode-B : MA 0 to MA 140 | *** P R O V I S I O N A L
Mode-BS : MA 140 to MA 240 |
Mode-B : MA 240 to MA 256 | Alon/Alat 220/0
Omnis : MA 250 to MA 140 | Move to attitude 180/0, Apr 01

If In Doubt Invent It Department (IID^2)

Continuous up-to-date information about AO-13 operations is always
available on
the beacons, 145.812 MHz or 2400.664 MHz, in CW at 0 & 30 minutes past
the
hour, RTTY at 15 & 45 minutes past the hour and 400 bps PSK otherwise.
These
bulletins are also posted to Internet, ANS, Packet, PacSats etc, and
many
international newsletters.

A 400 bps PSK decoder is available from G3RUH and several DSP products;
display
software P3TLM, WINSAT, P3C.EXE (MS-DOS); !TLM13 (RiscOS) etc from Amsat
groups.

Internet users wanting the latest AO-13 information should always check:
ftp://ftp.amsat.org/amsat/satinfo/ao13/
http://www.amsat.org/amsat/

Telemetry is archived at:
ftp://ftp.amsat.org/amsat/satinfo/ao13/telemetry/

The active command stations are listed below, and constructive feedback
about operations is always welcome.

Peter DB2OS @ DB0FC.#NDS.DEU.EU
James G3RUH @ GB7DDX.#22.GBR.EU
Graham VK5AGR

They may also be reached via Internet (callsign@amsat.org) and KO-23.
Please remember to state clearly a return address.

Notes prepared on behalf of, and in cooperation with the above by:

James Miller G3RUH @ GB7DDX.#22.GBR.EU 1995 Dec 01 [Fri] 1521 utc
<end>
/EX

2665. Re: Native OS/2 Sat Tracking Program

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: gsharp@ibm.net
Message-ID: <4b4vf8$1ooo@news-s01.ny.us.ibm.net>
Source record: 23377

Several months ago someone posted a note indicating they
were going to develope a native OS/2 satellite tracking
program. Anyone know if this project ever got off the
ground? If so, anyone know the current status? Thanks...

Gerald R. Sharp KD0GS
gsharp@ibm.net

2666. Re: Shuttle tracking program

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: Bob Winingham <kc5ejk@onramp.net>
Message-ID: <4b5o0u$oqo@news.onramp.net>
Source record: 23378

I use OrbitTrack 2.1.5 on my Mac.

Check out AMSAT.ORG for PC/MAC tracker programs.

73

kc5ejk@onramp.net

2667. ARLS027 Mir seasons greetings

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls027.1995@arrl.org>
Source record: 23379
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS027
ARLS027 Mir seasons greetings

ZCZC AS07
QST de W1AW
Space Bulletin 027 ARLS027
From ARRL Headquarters
Newington, CT December 19, 1995
To all radio amateurs

SB SPACE ARL ARLS027
ARLS027 Mir seasons greetings

German astronaut Thomas Reiter, DF4TR/DP0MIR, will send seasons greetings to all hams and swls from aboard the Mir space station. Reiter will remain aboard Mir until February 1996. Reiter will record messages using a digital voice recorder constructed by Thomas Kieselbach, DL2MDE. The device can store up to eight minutes of messages.

Reiter also will transmit live from DP0MIR as time permits. The main transmission frequency is 145.800 MHz.

Because of some missing parts, including a diplexer for the dual-band antenna, 70-centimeter activity from Mir has been delayed. These parts and a 9600-baud TNC are on their way to Mir now. Frequencies to be used are 437.925 MHz for voice and 437.975 MHz for packet, simplex mode.
NNNN
/EX

2668. WAS on RS 12

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: kirkekirk@aol.com
Message-ID: <4b7tau$slm@newsbf02.news.aol.com>
Source record: 23380

Is it possible to work all states on rs 12 from Ohio.

Kirk
AA4YZ
Canton, oh

2669. Re: re orientation of AO-13

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: mbv@ti.com
Message-ID: <4b7c4n$ar@superb.csc.ti.com>
Source record: 23381

In article <4b0uni$jsj@hawk.pix.za>, danie.brynard@pixie.co.za says...
>
>Is it possible to know what the antenna orientation of AO-13 is ?
>Will some PC program give one this info ?
>
>Danie zs6awk
>
>~~~~~~

Danie, in addition to the programs and schedules mentioned above, all
you need to do is enter the alat and alon for the current date into the
tracking program. Instantrack will then tell you the pointing angle of
the sat antenna during the pass.

Enjoy,

Ken K5MBV mbv@ti.com

2670. ARLK072 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk072.1995@arrl.org>
Source record: 23382
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK072
ARLK072 Keplerian data

ZCZC SK97
QST de W1AW
Keplerian Bulletin 72 ARLK072
From ARRL Headquarters
Newington, CT December 19, 1995
To all radio amateurs

SB KEP ARL ARLK072
ARLK072 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95352.41156457 .00002002 00000-0 33394-4 0 3669
2 16609 51.6455 314.8213 0006664 113.3581 246.8114 15.57512530561671
HST
1 20580U 90037B 95352.11682405 .00000342 00000-0 18633-4 0 07706
2 20580 28.4708 308.8452 0006777 67.6427 292.4860 14.90988790111385
AO-10
1 14129U 83058B 95350.85159304 -.00000222 00000-0 10000-3 0 3948
2 14129 26.4373 233.4638 5977317 334.9617 5.3514 2.05883000 66090
RS-10/11
1 18129U 87054A 95352.14533100 .00000053 00000-0 41501-4 0 01586
2 18129 82.9232 283.0824 0010907 308.8577 51.1600 13.72360172425209
UO-11
1 14781U 84021B 95351.97995727 .00000135 00000-0 30603-4 0 08550
2 14781 97.7872 345.9577 0011140 318.7837 41.2549 14.69409865630890
RS-12/13
1 21089U 91007A 95351.99661259 .00000046 00000-0 33218-4 0 08616
2 21089 82.9188 324.4512 0030558 23.2892 336.9638 13.74063638244016
AO-13
1 19216U 88051B 95351.59091375 .00000186 00000-0 61627-4 0 01244
2 19216 57.4228 146.6079 7358608 26.5501 357.0844 2.09726805026017
UO-14
1 20437U 90005B 95352.18693920 .00000007 00000-0 19396-4 0 01500
2 20437 98.5592 73.5141 0011975 20.2723 339.8938 14.29906793308044
```

```
AO-16
1 20439U 90005D 95352.15170404 .00000022 00000-0 25483-4 0 09640
2 20439 98.5717 75.4088 0012176 21.4146 338.7560 14.29961564308059
DO-17
1 20440U 90005E 95352.12200776 .00000013 00000-0 21934-4 0 09631
2 20440 98.5732 75.9242 0012341 20.5109 339.6548 14.30103309308073
WO-18
1 20441U 90005F 95352.17799443 -.00000001 00000-0 16400-4 0 09574
2 20441 98.5730 75.9354 0013027 19.9645 340.2044 14.30073350308087
LO-19
1 20442U 90005G 95352.11749251 .00000006 00000-0 19221-4 0 09625
2 20442 98.5739 76.2972 0013134 19.7833 340.3852 14.30178941308094
FO-20
1 20480U 90013C 95352.17671600 -.00000040 00000-0 -19624-4 0 08507
2 20480 99.0578 46.4503 0540840 176.8048 183.6739 12.83232190274541
AO-21
1 21087U 91006A 95351.81240307 .00000094 00000-0 82657-4 0 06657
2 21087 82.9367 96.6835 0036103 356.9773 3.1158 13.74562708244950
UO-22
1 21575U 91050B 95352.17968183 .00000005 00000-0 16015-4 0 06722
2 21575 98.3760 58.7657 0008481 86.8126 273.4032 14.37004795231923
KO-23
1 22077U 92052B 95352.08248148 -.00000037 00000-0 10000-3 0 05558
2 22077 66.0798 210.7428 0004463 348.6208 11.4708 12.86293886157386
KO-25
1 22828U 93061F 95352.17462001 .00000116 00000-0 64097-4 0 04360
2 22828 98.5953 66.0261 0011198 30.7875 329.3948 14.28124068084134
IO-26
1 22826U 93061D 95352.15072521 -.00000031 00000-0 50907-5 0 04509
2 22826 98.6033 65.9604 0010181 45.8730 314.3289 14.27789751116020
AO-27
1 22825U 93061C 95352.14062923 .00000019 00000-0 25524-4 0 04503
2 22825 98.6029 65.8204 0009648 45.1334 315.0630 14.27682235116014
PO-28
1 22829U 93061G 95352.11873532 .00000036 00000-0 32011-4 0 04474
2 22829 98.5976 66.0186 0010915 32.3240 327.8663 14.28104827116040

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
December 23, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2671. Email Nondelivery Notice -- FAILED MESSAGE

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: Postmaster@mail.ATt.NET
Message-ID: <199512201411.GAA04952@UCSD.EDU>
Source record: 23383

Confirming-MTS-Message-ID: </C=US/AD=ATTMAIL;internet3531406160>
Not-Delivered-To: mhs!tva!c5t0c.office/G=gerald/S=nicely/RECIPNUM=1/MTA-BASIC@attmail.com
due to code 06 "Expired Maximum Time";
arrived Tue Dec 19 14:06:14 -0000 1995;

Subject: Ham-Space Digest V95 #h#363
P2-Originator: internet!UCSD.EDU!ham-space (Ham-Space Mailing List and Newsgroup)
To: Ham-Space@UCSD.EDU
Content-Type: Text/Plain; charset=us-ascii

Ham-Space Digest Tue, 19 Dec 95 Volume 95 : Issue 363

Today's Topics:
Native OS/2 Sat Tracking Program
Need Skeds for Sat WAS
re orientation of AO-13 (2 msgs)
Satellit-Tracking STSPLUS
Shuttle tracking program

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from ftp.UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 19 Dec 1995 00:02:48 GMT
From: gsharp@ibm.net (Gerald Sharp)
Subject: Native OS/2 Sat Tracking Program

Several months ago someone posted a note indicating they
were going to develope a native OS/2 satellite tracking
program. Anyone know if this project ever got off the
ground? If so, anyone know the current status? Thanks...

Gerald R. Sharp KD0GS
gsharp@ibm.net

Date: Sun, 17 Dec 1995 14:34:32 GMT
From: rob@pe1chl.ampr.org (Rob Janssen)
Subject: Need Skeds for Sat WAS

In <4avf4b$kfh@news.greatbasin.net> nc7k@vhf.reno.nv.us (Tim Marek) writes:

>Hello from Reno Nevada de Tim - NC7K...

>Recently I became QRV on AO10 and AO13 chasing Grids,
>States, and countries. After 1 month I'm having trouble
>finding the last states for Sat WAS. Is anyone QRV from,
>MT, ND, SD, NE, CO, WY, KS, OK, AR, IA, MN, AL, SC,
>NC, NH. RI, and ME ?

Hey, it's *supposed* to be difficult, isn't it?
When you can collect it in a month's time, what fun would it be?

Rob
--
+-----------------------------------+--------------------------------------+
| Rob Janssen rob@knoware.nl | BBS: +31-302870036 (2300-0730 local) |
| AMPRnet: rob@pe1chl.ampr.org | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+--------------------------------------+

Date: 17 Dec 1995 19:08:55 GMT
From: Hank Blackstock <wa5jrh@ionet.net>
Subject: re orientation of AO-13

Danie Brynard <danie.brynard@pixie.co.za> wrote:
>Is it possible to know what the antenna orientation of AO-13 is ?
>Will some PC program give one this info ?
>
>Danie zs6awk
>
>
Instatrack does..73 Hank WA5JRH

Date: 18 Dec 1995 17:16:21 GMT
From: Carl Gregory <cgregory@uiuc.edu>
Subject: re orientation of AO-13

>Danie Brynard <danie.brynard@pixie.co.za> wrote:
>>Is it possible to know what the antenna orientation of AO-13 is ?
>>Will some PC program give one this info ?

So does WinOrbit, and many others. However, you must know the present
attitude of the satellite, which is occasionally published here and
elsewhere in the newsgroups. Herewith a repost of the last bulletin:

o

SB AMSAT @ WW $RUH951201
AO-13 Schedules 1996

Attitude Schedule

The planned attitude schedule for Oscar 13 during 1996 is:

```
Date [Mon] Alon/Alat Weeks
--------------------------------
1996 Jan 01 220/0 13
1996 Apr 01 180/0 10
1996 Jun 10 220/0 t.b.a.
--------------------------------
```

The session beginning 1996 June 10 will also last for about 3 months. After
that, 1996 September, perigee height will be 170 km and re-entry effects will
already be noticeable. This will be an interesting time, and the command team
welcomes suggestions which we could implement to make use of this unique
opportunity to observe an amateur spacecraft at re-entry.

Full details of re-entry, around 1996 Dec 05-19, can be found in:

- Proceedings of the 12th annual Amsat Space Symposium, Orlando, Florida,
USA, 1994. 4 pages.
- Oscar News (UK) 1994 Oct No. 109 p 16-20
- Jamsat Newsletter (JA) No. 166, 1995 March 25. p1-4
- Amsat-DL Journal (D), Jg. 22, No. 1, Mar/May 1995.
- Amsat OZ Journal (OZ) No. 37, 1995 May
- The Amsat Journal (USA) Vol 18 No.3, May/June 1995.

The article and regularly updated program listing is available via the Internet
by anonymous FTP:

Site: ftp.amsat.org
File: /amsat/articles/g3ruh/a114.zip (Article)
File: /amsat/satinfo/ao13/decaykep.zip (Decay keplerian elements)

Mode Schedule

```
-------------
M QST ** AO-13 TRANSPONDER SCHEDULE ** 1995 Dec 02 - 1996 Jan 01
Mode-B : MA 0 to MA 70 |
Mode-BS : MA 70 to MA 110 | Omnis : MA 230 to MA 25
Mode-S : MA 110 to MA 112 |<- S beacon only
Mode-S : MA 112 to MA 135 |<- S transponder; B trsp. is OFF
Mode-S : MA 135 to MA 140 |<- S beacon only
Mode-BS : MA 140 to MA 180 | Alon/Alat 182/0
Mode-B : MA 180 to MA 256 | Move to attitude 220/0, Jan 01
```

Please note that the higher powered engineering beacon 145.985 MHz is ON for
two periods: MA 0 - 20 and MA 100-110.

Provisional Schedule

N QST *** AO-13 TRANSPONDER SCHEDULE *** 1996 Jan 01 - Apr 01
Mode-B : MA 0 to MA 140 | *** P R O V I S I O N A L
Mode-BS : MA 140 to MA 240 |
Mode-B : MA 240 to MA 256 | Alon/Alat 220/0
Omnis : MA 250 to MA 140 | Move to attitude 180/0, Apr 01

If In Doubt Invent It Department (IID^2)

Continuous up-to-date information about AO-13 operations is always
available on
the beacons, 145.812 MHz or 2400.664 MHz, in CW at 0 & 30 minutes past
the
hour, RTTY at 15 & 45 minutes past the hour and 400 bps PSK otherwise.
These
bulletins are also posted to Internet, ANS, Packet, PacSats etc, and
many
international newsletters.

A 400 bps PSK decoder is available from G3RUH and several DSP products;
display
software P3TLM, WINSAT, P3C.EXE (MS-DOS); !TLM13 (RiscOS) etc from Amsat
groups.

Internet users wanting the latest AO-13 information should always check:
ftp://ftp.amsat.org/amsat/satinfo/ao13/
http://www.amsat.org/amsat/

Telemetry is archived at:
ftp://ftp.amsat.org/amsat/satinfo/ao13/telemetry/

The active command stations are listed below, and constructive feedback
about operations is always welcome.

Peter DB2OS @ DB0FC.#NDS.DEU.EU
James G3RUH @ GB7DDX.#22.GBR.EU
Graham VK5AGR

They may also be reached via Internet (callsign@amsat.org) and KO-23.
Please remember to state clearly a return address.

Notes prepared on behalf of, and in cooperation with the above by:

James Miller G3RUH @ GB7DDX.#22.GBR.EU 1995 Dec 01 [Fri] 1521 utc
<end>
/EX

Date: 17 Dec 1995 22:30:43 GMT
From: wallnerw@crash.cts.com (Bill Wallner)
Subject: Satellit-Tracking STSPLUS

Bruce Kille (BKille@gnn.com) wrote:

: In article <30cefa10.1134146@news.isys.net> Freddi Warnke wrote:

: One of my favorite sites is the NASA Spacelink. It can be reached
: via WWW, gopher, FTP, or Telnet using the following address:
: spacelink.msfc.nasa.gov

Also, Dr. T.S. Kelso's archive by WWW <ftp://archive.afit.af.mil/pub/space/>

Bill

Date: 18 Dec 1995 16:43:43 GMT
From: jpotts@crl.com (John Potts)
Subject: Shuttle tracking program

I am looking for a good program that I could use to track the shuttle
when in orbit and the mir space station. Please list were the program
can be found with your recommendations.

John Potts, kb6wgl

End of Ham-Space Digest V95 #363
****

2672. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: pleadian@aol.com
Message-ID: <4b807i$vk@newsbf02.news.aol.com>
Source record: 23384
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Does anyone have the full stoey and the dates of this event ?

Thank you,

Michael S. Collins
MUFON/Orlando

2673. Re: Uplink/Downlinks of Sats Pse

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: Keith Stein <us011192@pop3.interramp.com>
Message-ID: <4b6qfd$706@usenet4.interramp.com>
Source record: 23385

You should get a subscription to Satellite Times magazine from Grove Enterprises (704) 837-9200. This magazine has all the frequencies you would ever want in the satellite hobby. Here are some sample downlinks:

135.575 Applied Technology Satellite (ATS)
268.450 FLTSATCOM
145.826 UoSat 11
435.025 UoSat 11
145.825 Dove
145.550 Mir
145.800 Mir (recorded Christmas message)
137.500 NOAA 12
137.620 NOAA 14
137.850 METEOR 3-5
137.400 SICH-1

--
Keith Stein

Community, Air & Space Report Editor:
http://www.newspace.com/publications/casr/home.html

Satellite Times magazine Editoral Staff Member
http://www.grove.net/hmpgst.html

2674. Re: Uplink/Downlinks of Sats Pse

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: Keith Stein <us011192@pop3.interramp.com>
Message-ID: <4b6qsa$7dl@usenet4.interramp.com>
Source record: 23386

You should get a subscription to Satellite Times magazine. They have all the frequencies you would ever want for the satellite hobby. Give Grove Enterprises a call at (704) 837-9200 to see about getting a subscription. I'll see about getting a small sample list together for you.

--
Keith Stein

Community, Air & Space Report Editor:
http://www.newspace.com/publications/casr/home.html

Satellite Times magazine Editoral Staff Member
http://www.grove.net/hmpgst.html

2675. Re: Uplink/Downlinks of Sats Pse

Newsgroup: rec.radio.amateur.space
Date: 1995-12-19 00:00:00 UTC
From: Keith Stein <us011192@pop3.interramp.com>
Message-ID: <4b6qg6$706@usenet4.interramp.com>
Source record: 23387

You should get a subscription to Satellite Times magazine from Grove Enterprises (704) 837-9200. This magazine has all the frequencies you would ever want in the satellite hobby. Here are some sample downlinks:

135.575 Applied Technology Satellite (ATS)
268.450 FLTSATCOM
145.826 UoSat 11
435.025 UoSat 11
145.825 Dove
145.550 Mir
145.800 Mir (recorded Christmas message)
137.500 NOAA 12
137.620 NOAA 14
137.850 METEOR 3-5
137.400 SICH-1

--
Keith Stein

Community, Air & Space Report Editor:
http://www.newspace.com/publications/casr/home.html

Satellite Times magazine Editoral Staff Member
http://www.grove.net/hmpgst.html

2676. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: dadams@netcom.com
Message-ID: <dadamsDJvxIG.1Jr@netcom.com>
Source record: 23388
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

Pleadian <pleadian@aol.com> wrote:
>Does anyone have the full stoey and the dates of this event ?
>Michael S. Collins
>MUFON/Orlando

Nope, since there was no "event"... unless you count a
few members of the UFO lunatic fringe letting their wild
imaginations run amok over a joke.

2677. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: Iver@ksu.ksu.edu
Message-ID: <4b91ia$2gc@fox.ksu.ksu.edu>
Source record: 23389
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

pleadian@aol.com (Pleadian) writes:

>Does anyone have the full stoey and the dates of this event ?

>Thank you,

>Michael S. Collins
>MUFON/Orlando

Why?
Its garbage.
Enough said?

2678. Re: FM Voice Sat?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: greg@core.rose.hp.com
Message-ID: <DJv3J7.26v@icon.rose.hp.com>
Source record: 23390

Ken Durham (durham@lobby.ti.com) wrote:
: >Does anyone know its status these days?
: >
: > -Rusty-
: >--
: >~~~~~~
: Rusty, AO-27 is alive and well. It is on during daylight hours 7 days
: a week now. Look for it after 11 AM and around 12:30 PM. Better yet use
: a tracking program with recent KEPS for the pass prediction.
:
:

Well, I tried listening for it this past weekend, and didn't hear anything.
Two passes each day, around lunch time.

I've worked the bird before, so I know my rig's up to it. Is it *always*
enabled on daylight passes? What happened?

Thanks,

Greg KO6TH

2679. Info?: NASA ATS-3 Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: rickcrider@aol.com
Message-ID: <4b89pi$5lm@newsbf02.news.aol.com>
Source record: 23391

Would appreciate any and all info I can gather regarding the ATS-3
Satellite. I have aquired a portable station for utilizing this
satellite through our clubs affilliation with the local Red Cross, though
the local Red Cross folks aren't well versed on the satellite.
Geostationary? Still in use? Rx/Tx freq.? Thanks...
Cordially:
Rick Crider KD4FXA
UCARS (Union County Amateur Radio Society)
Monroe NC
<rickcrider@aol.com>

2680. [Q] Does anyone know the P3D transponder bandwidth(s) ?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: jgrimes@mail.bcpl.lib.md.us
Message-ID: <DJwAGw.84G@abs.net>
Source record: 23392

Greetings:

I would like to know the tranponder bandwidth for P3D. I spoke with Frank Baurer and Pat Kilroy at the Goddard ARC banquet, they weren't sure but Pat thought it was 44 Khz. minimun. I checked the AMSAT web site and I could not find the info there. So if anyone out here has the info, I would sure appreciate your posting it. Thanks in advance.

73, de John, kd3wy
jgrimes@mail.bcpl.lib.md.us

2681. Will 2 rotors work ? HELP!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <4b9ds9$1s0t@ns3-1.CC.Lehigh.EDU>
Source record: 23393

Hello, i thought of a good idea and alot cheaper.
but will it work?
I have thought of mounting 2 radio shack <g> rotors, one for ELE and other as
AZM. kinnda like this

```
------OOO--|---XXX
|
)0(
)0(
|
|
```

the --'s being poles and OOO's being the rotors and XXX being a counter weight
now, will the rotors me able to handle turning 2, 11 element 2m beams or there
abouts with out breaking? heck, will this idea work at ALL? i did get this
idea from an old weather sat. handbook. if this works, i will save 400 or
more on rotor costs.
also, is there a program to contol a radio shak rotor via computer <MS
windoze, or xwindows>??

thanks...if you don't understand something, tell me, i'll try to clear it up

DAvid
|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	Technomage - BBS	
	N3SQE/1 - HAm V
	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

2682. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: myers@West.Sun.COM
Message-ID: <4b9b3e$gfu@abyss.West.Sun.COM>
Source record: 23394
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <4as4m0$eki@cloner2.ix.netcom.com>,
Donald Ratsch <sts48@ix.netcom.com> wrote:
>
> Sure there is a secret channel Smiley. What about after the STS-48
>footage was bagged by me and all the controversy that followed it and
>after that in 1992 the Transponder 5 on Satellite F2R was encrypted for
>downlinking secure and private communications. The SUPPOSED reason for
>the encryption was to carry private medical information from the
>astronauts. But they could transmit UFO information as well and nobody
>would be the wiser. Any comments?

"But they could transmit UFO information as well"....

Sure. They could transmit digitized images of my butt, too, and this
is probably more likely than UFO information.

--
* Dana H. Myers KK6JQ, DoD#: j | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *

2683. Re: Which Rig for 2m and 70 cm?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: tgliang@eskimo.com
Message-ID: <DJwGHv.5HK@eskimo.com>
Source record: 23395

In article <4aod1a$jqf@cloner2.ix.netcom.com>, hamdan@ix.netcom.com says...
>
>Jim: There is a product review of the 820 in the March '95 QST. The
>reviewer said that its satellite functions appeared to have been added as
>an "afterthought". The rig did poorly when used with a TNC to compensate
>for doppler shift when accessing the 1200 baud birds. It doesn't appear
>to have any capability to add any extra bands to it.
> I have used a Yaesu FT-736R for the analog satellites (RS-10, RS-15
>and FO-20 - I can only get the low earth orbit satellites cuz of my
>limited antenna system), and for the 1200 baud digital satellites (AO-16
>and LO-19). I have been quite pleased with its performance, and have
>heard the same from many other satellite ops. QST gave it a very good
>review (May 1990). Finally, it is at least competitively priced with the
>820, and may even be cheaper.
> By the way, I used to live in Grand Junction (lived about a block
>from the college for about 6 months). I miss the area sometimes!
> 73's de Bernie, KF0QS. Denver, Colorado
>
Hi Bernie! I am a regular on the 9600 satellites. I use a YAESU FT-736R, an
AEA DSP-1232 TNC, and I get excellent. But I need to say more. The FT-736R
came without receiving and transmitting 9600 baud capability. So I send it
to the YAESU factory, and they converted it for free. Maybe it was free
because it was under warranty. To continue, I have a YAESU G-5400B rotator
and a Gateway 4DX2-66V computer and WISP (software for tracking
communicating with the birds). I have it set up so that it tracks
automatically without my attention. So typically, it activates itself as
much as eight times for one bird in one 24-hour period. 73 de Tom

2684. Re: Info?: NASA ATS-3 Satellite

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: Keith Stein <us011192@interramp.com>
Message-ID: <4b9ddv$6ct@usenet1.interramp.com>
Source record: 23396

Rick,

ATS-3 is in geostationary orbit at 106.5 degrees west longitude. It is still used by several different agencies. You can find its downlink transmissions between 135.555-135.650 MHz. I recently received the following intercept from the ATS-3 satellite:

135.575 MHz ATS-3 transmitting voice communications between South Pole and Florida, 0100-0300 UTC, NFM. Individuals were talking about a "sun rise party" at the pole. First time they have seen the sun since winter set in.

--
Keith Stein

Community, Air & Space Report Editor:
http://www.newspace.com/publications/casr/home.html

Satellite Times magazine Editoral Staff Member
http://www.grove.net/hmpgst.html

2685. Re: Shuttle tracking program

Newsgroup: rec.radio.amateur.space
Date: 1995-12-20 00:00:00 UTC
From: Keith Stein <us011192@interramp.com>
Message-ID: <4b9d06$6ct@usenet1.interramp.com>
Source record: 23397

Well I don't where they are on the Internet, but you should look for
Traksat or STSORBIT. I use them and they are very good.

--
Keith Stein

Community, Air & Space Report Editor:
http://www.newspace.com/publications/casr/home.html

Satellite Times magazine Editoral Staff Member
http://www.grove.net/hmpgst.html

2686. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-21 00:00:00 UTC
From: videodog@cybergate.com
Message-ID: <4baq3l$j5k@opal.CyberGate.COM>
Source record: 23398
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In article <dadamsDJvxIG.1Jr@netcom.com>, dadams@netcom.com (Dean Adams) says:
>
>
>Pleadian <pleadian@aol.com> wrote:
>>Does anyone have the full stoey and the dates of this event ?
>>Michael S. Collins
>>MUFON/Orlando
>
>Nope, since there was no "event"... unless you count a
>few members of the UFO lunatic fringe letting their wild
>imaginations run amok over a joke.
>

Was it ever determined where the ufo transmission originated? (There
a chance it came from the flight deck where the windows are.)

Joe
(the flight deck where the windows are or the

2687. Forward scattering from satellites

Newsgroup: rec.radio.amateur.space
Date: 1995-12-21 00:00:00 UTC
From: thomsona@netcom.com
Message-ID: <thomsonaDJwxsF.E5K@netcom.com>
Source record: 23399

This is a slightly weird question, but I don't know of a better newsgroup in which to ask it:

Has anyone ever detected fluctuations in the signal from a geosynchronous (or Molniya) communications/TV satellite due to forward scattering off of satellites in low orbit passing close to the transmitter-receiver line of sight?

2688. Wanted: low cost UHF FM receiver

Newsgroup: rec.radio.amateur.space
Date: 1995-12-21 00:00:00 UTC
From: fx514@cleveland.Freenet.Edu
Message-ID: <4bcn69$deg@madeline.INS.CWRU.Edu>
Source record: 23400

I'm looking for a UHF FM receiver. I'm fairly new to
the hobby and want to try working AO-27. I have the
gear for the uplink, but need something for the downlink.

If you have an old receiver or scanner that you could
part with for low cost, please e-mail me at:

davidms@decus.ca

Thanks!

73 de VE1DMS (David)

2689. Re: Will 2 rotors work ? HELP!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-21 00:00:00 UTC
From: wday@dfw.net
Message-ID: <wday-2112952156440001@fw41.dfw.net>
Source record: 23401

In article <4b9ds9$1s0t@ns3-1.CC.Lehigh.EDU>, c002@Lehigh.EDU wrote:

> Hello, i thought of a good idea and alot cheaper.
> but will it work?
> I have thought of mounting 2 radio shack <g> rotors, one for ELE and other as
> AZM.

<snip>

David,

Sure, it'll work, as long as you don't exceed the load ratings for the rotors.

Lots of us got our start with Alliance U-100 rotators, mounting them sideways in order for them to be used as elevation rotors. Worked like a charm.

Fabricate a mounting plate so that the boom goes up through the first rotator (the azimuth rotator) and the plate mounts above that... then mount the second rotator to the plate, pass the antenna boom through the second rotator (the elevation rotor), and make sure the weights on either side of the antenna boom are approximately equal.

73 Wayne KF5ZC

Wayne Day KF5ZC Fort Worth,Texas,USA |
CompuServe: 76703,376 Internet: 76703.376@CompuServe.Com | ,__o
or Internet: wday@dfw.net |--_<,
Member: Bicycle Mobile Hams of America (*)/'(*)
For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net
---

2690. Re: STS-73 SEES UFO

Newsgroup: rec.radio.amateur.space
Date: 1995-12-22 00:00:00 UTC
From: sts48@ix.netcom.com
Message-ID: <4bd1jh$1k5@ixnews8.ix.netcom.com>
Source record: 23402
Cross-posted to: sci.space.shuttle,sci.space,alt.paranet.ufo,rec.radio.amateur.space

In <4b9b3e$gfu@abyss.West.Sun.COM> myers@West.Sun.COM (Dana Myers)
writes:
>
>In article <4as4m0$eki@cloner2.ix.netcom.com>,
>Donald Ratsch <sts48@ix.netcom.com> wrote:
>>
>> Sure there is a secret channel Smiley. What about after the STS-48
>>footage was bagged by me and all the controversy that followed it and
>>after that in 1992 the Transponder 5 on Satellite F2R was encrypted
for
>>downlinking secure and private communications. The SUPPOSED reason
for
>>the encryption was to carry private medical information from the
>>astronauts. But they could transmit UFO information as well and
nobody
>>would be the wiser. Any comments?
>
>"But they could transmit UFO information as well"....
>
>Sure. They could transmit digitized images of my butt, too, and

No I don't think so, there's not enough bytes for Ram

2691. Re: Which Rig for 2m and 70 cm?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-22 00:00:00 UTC
From: "Bernard A. Poskus and Cheryl A. Blehm-Poskus" <hamdan@ix.netcom.com>
Message-ID: <4bdh46$qn5@ixnews6.ix.netcom.com>
Source record: 23403

Tom: Glad to hear that you've had good luck with the FT-736R as well.
It is true that the Yaesu does not come automatically ready for 9600 baud operation. However, I understand that the necessary modifications are not too difficult, and the 736 does a FB job on all other satellite functions.
Sorry that you won't see me on the 9600 baud birds for a while. At least not till I get some yagis (and that won't happen for a while).
Take care and 73's de Bernie, KF0QS AO-16, LO-19

2692. PacSats --- HOW?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-22 00:00:00 UTC
From: n5zgt@swcp.com
Message-ID: <4ben92$qsf@sloth.swcp.com>
Source record: 23404

Hello Everybody,
I was wondering what it takes to get on some of the packet satellites. I do not have much satellite equipment, but I'm really interested in it all.
Are there any satellites that use 2 meter FM up and 440 FM down (Or vice-versa)? All other info would be greatly appreciated!
Merry Christmas!
Best of 73,
Brian, N5ZGT...

Boy Scouts of America Amateur Radio
J.A.S.M. - Troop 41 Call: N5ZGT
Albuquerque, NM Packet: N5ZGT @ KC5IZT.ALBQ.NM.USA.NA
Great Southwest Council Internet: n5zgt@swcp.com
O.A. Lodge 66

2693. EQUIPMENT ON MIR...

Newsgroup: rec.radio.amateur.space
Date: 1995-12-22 00:00:00 UTC
From: n5zgt@swcp.com
Message-ID: <4beodm$qsf@sloth.swcp.com>
Source record: 23405

Hello Everybody,
Just curious as to what kind of Amateur Radio equipment Mir has. I connected a couple times yesterday on packet. Also, has anybody heard Mir on its voice freq? What are the uplink and downlink freqs it is using?
Merry Christmas!
Best of 73,
Brian, N5ZGT...

Boy Scouts of America Amateur Radio
J.A.S.M. - Troop 41 Call: N5ZGT
Albuquerque, NM Packet: N5ZGT @ KC5IZT.ALBQ.NM.USA.NA
Great Southwest Council Internet: n5zgt@swcp.com
O.A. Lodge 66

2694. Re: Which Rig for 2m and 70 cm?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-22 00:00:00 UTC
From: kc5egg@eule.lanl.gov
Message-ID: <4bf5la$q2o@newshost.lanl.gov>
Source record: 23406

Bernie,

All the 9600 baud birds are LEOs and don't need a lot of signal. Many people use rather simple antenna systems for 9600 with reasonable success. I am currently setting up a mobile demo station with two egg beater turnstiles and a pre-amp on the 440 side. I expect to be able to get most passes over 20 degrees with this setup. Another project in the hopper is to use a mobile radio scanning over a very short frequency range as a receiver. This should take care of the doppler without a computer. You don't need a multi kilobuck station that just makes it easier.

73 Happy Holidays Jerry

2695. Re: PacSats --- HOW?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-22 00:00:00 UTC
From: caseycct@ridgecrest.ca.us
Message-ID: <DK0IBy.6xn@ridgecrest.ca.us>
Source record: 23407

Brian Mileshosky (n5zgt@swcp.com) wrote:
> Hello Everybody,
> I was wondering what it takes to get on some of the packet
> satellites. I do not have much satellite equipment, but I'm really
> interested in it all.
> Are there any satellites that use 2 meter FM up and 440 FM down (Or
> vice-versa)? All other info would be greatly appreciated!
> Merry Christmas!
> Best of 73,
> Brian, N5ZGT...

see
www.amsat.org

--
Erik van Bronkhorst
CW/KotGT DoD#4342585443 AMA#438054
caseycct@owens.ridgecrest.ca.us
ftp://www.ridgecrest.ca.us/pub/users/caseycct/erik.html
kc6uut@wa6ybn.#soca.ca.usa.na

2696. Satellite Decoding

Newsgroup: rec.radio.amateur.space
Date: 1995-12-23 00:00:00 UTC
From: Chuck Freeman <cfreeman@sound.net>
Message-ID: <4bh1np$dsj@guitar.sound.net>
Source record: 23408

I am using a A&A Engineering satellite decoder for the low orbiting sat's while running Dr. Taggarts 'WSHFAX' program on my PC. Does anyone know if the any version of the JVFAX programs can be used with this interface. The interface is decoded thru the parallel printer port. I am aware that the JVFAX ver 7.0 has a parallel option but according to waht I have found out the pins of the parallel interface that are being used are used (status lines) are not the same ones that the JVFAX software monitors (data lines).

Any help would be appreciated!!!

73's

WD0ASJ

2697. Best antennas for rs-15 ???/Rs-10 gives up.!!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-23 00:00:00 UTC
From: millerj@dnaco.net
Message-ID: <4bgig1$kn5@sisko.dnaco.net>
Source record: 23409

Does any one have any comments or ideas on the best Tx and Rx antennas
for use with on Rs-15. Also we have noticed that Rs10 will stop Tx
about half way through a pass. It acts just like some one turned it
OFF. Please any ideas.
TIA

Mr. Satellite
RS-10/11/RS-15
N8RTW
Johnny Miller
millerj@dnaco.net
Middletown, Ohio area 442.425(+)B.A.E.R.S Machine
Dayton, Ohio area 145.490(-) = Drake Machine

2698. Re: Satellite Decoding

Newsgroup: rec.radio.amateur.space
Date: 1995-12-23 00:00:00 UTC
From: Tfugate@pop.uky.edu
Message-ID: <4bh8an$aek@service2.uky.edu>
Source record: 23410

In article <4bh1np$dsj@guitar.sound.net>, Chuck Freeman <cfreeman@sound.net> says:
>
>I am using a A&A Engineering satellite decoder for the low orbiting sat's while
>running Dr. Taggarts 'WSHFAX' program on my PC. Does anyone know if the any version
>of the JVFAX programs can be used with this interface. The interface is decoded thru
>the parallel printer port. I am aware that the JVFAX ver 7.0 has a parallel option
>but according to waht I have found out the pins of the parallel interface that are
>being used are used (status lines) are not the same ones that the JVFAX software
>monitors (data lines).
>
>Any help would be appreciated!!!
>
>73's
>
>WD0ASJ
>
>
Yes. The A&A wefax board will work with JVFAX 7.0. I was never able to
get it to work the way the JVFAX suggested. I used the 5 input(status)
line to the printer port. I do not have the data wiht me and this
university will be shut down for the next week.(we get back on jan2)
The only problem wiht using the status inputs is that you must invert
one of them, the highest binary number. I will send you the full scoop
on the 2nd but if you are in a hurry(and who isn't?) just pull your spec
sheet out for the printer port, make a cable to bring out the 5 status
lines, (and a ground). I used 5 spst mini toggle swithes and 5 1 k pull
up resistors(to a +5v source). Wire up each lead to the pull up and wire
the switchs so that you can force that input lo. Run jvfax and
look at the "tune indicator"(after setting up jvfax to look at the right
printer address you want the input not the output). As you open and
close switches you will see the "inidcator" move. It took me about
30 minutes to map out what lead did what. It took another night of
thinking to realize that on line is inverted inside the printer card.
I use on section of a ttl ls hex inverter to drive that line. I also
had to bypass the A&A output ic and drive the port (and the single
inverter) wiht the direct out put of the ADC.
This will give you 32 shades of grey.(2^5=32). I have found a "real IBM"
printer card and think I have figuered out how to get a full 8Bits of
input. IF this works I will post the results here, and Email the
directions to you. I have a sams photofact diagram of the "IBM" card.
You could also use basic and write a program to look at the printer
input port and note the numbers returned as the program loops and
you change the switches.
I sure wish that I had ssen this yesterday, as I would have been able

to bring in the data that you need. Hang in their, if I could decipher this, anyone can. Just don't give up. 73 ran an artical several years ago that used the printer port for i/o control. You might try to scrounge that artical up, it gives all three common printer port addresses and shows how the ouput and input ports can be written to and read.
Good Luck. I hope this has not rambled to much and that you find the information usefull.

2699. Re: Best antennas for rs-15 ???/Rs-10 gives up.!!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-23 00:00:00 UTC
From: BKille@gnn.com
Message-ID: <4bhqon$jue@news-e1a.megaweb.com>
Source record: 23411

In article <4bgig1$kn5@sisko.dnaco.net> Johnny Miller wrote:
>Date: Sat, 23 Dec 1995 09:34:59 GMT
>From: millerj@dnaco.net (Johnny Miller)
>Newsgroups: rec.radio.amateur.space
>Subject: Best antennas for rs-15 ???/Rs-10 gives up.!!
>
>Does any one have any comments or ideas on the best Tx and Rx
>antennas
>for use with on Rs-15. Also we have noticed that Rs10 will stop Tx
>about half way through a pass. It acts just like some one turned
>it
>OFF. Please any ideas.
>TIA
>
>
>Mr. Satellite
>RS-10/11/RS-15
>N8RTW
>Johnny Miller
>millerj@dnaco.net
>Middletown, Ohio area 442.425(+)B.A.E.R.S Machine
>Dayton, Ohio area 145.490(-) = Drake Machine
>

Of course the best setup would be some sort of AZ/EL array...but
not many of us have that, especally for an HF downlink. I have
worked RS-10, RS-15, MIR, and several Shuttle missions using an
eleven element beam for 2meters and a two element beam for HF,
both mounted on the same mast and up only 25 ft. My point being
that it can be done with a modist station. I have noticed many
times on both the sats and shuttle that the apparent orentation
of their antennas makes a BIG difference and I have lost them
after only half the pass many times. So, if you can use beam
antennas and have access to a sat. tracking program, that is the
best way to go...but I have heard the RS birds on my dipole ok.
Just stay with it and keep trying...good luck OM.

73, Bruce WA4JAV

2700. Re: EQUIPMENT ON MIR...

Newsgroup: rec.radio.amateur.space
Date: 1995-12-23 00:00:00 UTC
From: kc7gnm@primenet.com
Message-ID: <4bhr02$qsu@nntp3.news.primenet.com>
Source record: 23412

In <4beodm$qsf@sloth.swcp.com>, n5zgt@swcp.com (Brian Mileshosky) writes:
>Hello Everybody,
> Just curious as to what kind of Amateur Radio equipment Mir has. I
>connected a couple times yesterday on packet. Also, has anybody heard
>Mir on its voice freq? What are the uplink and downlink freqs it is
>using?

Don't know what type of equipment either. I just connected to r0mir-1 about 10 min ago. I have read that the two voice freqs of 145.800 and 145.200 are simplex.

73 de KC7GNM
Greg

2701. Re: Packet Satellite Baud Rates

Newsgroup: rec.radio.amateur.space
Date: 1995-12-24 00:00:00 UTC
From: rob@pe1chl.ampr.org
Message-ID: <DK3GFF.IC5@pe1chl.ampr.org>
Source record: 23317
Cross-posted to: aus.radio.amsat,rec.radio.amateur.space

In <4bi7p5jaj1@mhadg.production.compuserve.com> Brian Webb <102670.1206@CompuServe.COM> writes:

>I just purchased the stock version of the MFJ1270C TNC-2 Packet
>Controller. The maximum data rate is 1200 baud. Can I work any of
>the amateur radio packet satellites with only 1200 baud and 6
>Watts using FM narrow mode?

No. The packet satellites that you can "work" use either 1200 bps PSK
(for which you need an SSB transceiver) or 9600 bps FSK.

The exception is Dove, which transmits 1200 bps AFSK telemetry on 145.825.
However, that is receive-only and gets boring pretty quickly...

Rob
--
+-----------------------------------+--+
| Rob Janssen rob@knoware.nl | BBS: +31-302870036 (2300-0730 local) |
| AMPRnet: rob@pe1chl.ampr.org | AX.25 BBS: PE1CHL@PI8WNO.#UTR.NLD.EU |
+-----------------------------------+--+

2702. MFJ-1270C WEFAX Reception

Newsgroup: rec.radio.amateur.space
Date: 1995-12-24 00:00:00 UTC
From: Brian Webb <102670.1206@CompuServe.COM>
Message-ID: <4bi83njaj2@mhadg.production.compuserve.com>
Source record: 23413
Cross-posted to:
aus.radio.amsat,rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.shortwave

I just purchased an MFJ-1270C TNC. It has HF weather FAX
capability, but the user manual says virtually nothing about how
to use this feature. Does anybody know how to command the unit
for WEFAX reception and the tuning offset to use with my HF
receiver?

73s

Brian Webb, KD6NRP

2703. Packet Satellite Baud Rates

Newsgroup: rec.radio.amateur.space
Date: 1995-12-24 00:00:00 UTC
From: Brian Webb <102670.1206@CompuServe.COM>
Message-ID: <4bi7p5jaj1@mhadg.production.compuserve.com>
Source record: 23414
Cross-posted to: aus.radio.amsat,rec.radio.amateur.space

I just purchased the stock version of the MFJ1270C TNC-2 Packet Controller. The maximum data rate is 1200 baud. Can I work any of the amateur radio packet satellites with only 1200 baud and 6 Watts using FM narrow mode?

If yes, which satellites and how do I work them?

73s

Brian Webb, KD6NRP

2704. VARIAN MICROWAVE AMPS and related gear MUST SELL or TRADE

Newsgroup: rec.radio.amateur.space
Date: 1995-12-24 00:00:00 UTC
From: ando1@ix.netcom.com
Message-ID: <4bkl3t$hh7@ixnews3.ix.netcom.com>
Source record: 23415
Cross-posted to: misc.forsale,rec.radio.swap,sci.electronics,sci.engr.manufacturing,sci.med.radiology,sci.engr.chem,rec.radio.amateur.space,sci.space,rec.radio.amateur.equipment

FOR SALE- OR TRADE::
Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
$16,000.
Varian VZM6993051505 12-18ghz 53db gain 200watt KU band amp
(new)$13,000.
Varian VZX6981KADEH 8-12.4ghz 40db gain 20 watt Xband amp(1007
hrs.)$7,500.
L&R Communications low noise amp local controle & monitor
Scientific Atlanta Antenna Motor Controler Mod.# 8841A
Arbiter Systems Satelite Controled clock mod.#1026B
LAMDA LFS-44-48
Digital H7100A
Scientific Atlanta 3267260 mod.#4663R
" " Digital Processing Unit mod.#7325
" " Signal Source mod.#2180
" "Power Amp 3080 Pedestal
Datum Digital Clock
Texas Instruments XDS/22 Illuminator
12 Schlumberger Test Fixture Kit cases
Canoga Perkins fiber optics Bus Interface
Aerotech 1000 D.C. Permanent Magnet Servo Motor
560sq.ft. S.C.I.F.(secure compartemented information facility)3
rooms,all electronic filters,etc...
Frequency West mod.MO-109XB-17 serial 320 1435omhz
Midwest Microwave mod1044 Step Athenuator D.C. 8.0ghz
Dishes,300' wave guid,and alot more 770-726-5548-dig.pager
Ready to make Package deal !!! 770-279-9507-hm.# after Dec. 29th
Must move,any interesting trades???

2705. Re: Satellite Decoding

Newsgroup: rec.radio.amateur.space
Date: 1995-12-24 00:00:00 UTC
From: Tfugate@pop.uky.edu
Message-ID: <4bjq22$f0i@service2.uky.edu>
Source record: 23416

In article <4bh1np$dsj@guitar.sound.net>, Chuck Freeman <cfreeman@sound.net> says:
>
>I am using a A&A Engineering satellite decoder for the low orbiting sat's while
>running Dr. Taggarts 'WSHFAX' program on my PC. Does anyone know if the any version
>of the JVFAX programs can be used with this interface. The interface is decoded thru
>the parallel printer port. I am aware that the JVFAX ver 7.0 has a parallel option
>but according to waht I have found out the pins of the parallel interface that are
>being used are used (status lines) are not the same ones that the JVFAX software
>monitors (data lines).
>
>Any help would be appreciated!!!
>
>73's
>
>WD0ASJ
>
Well here I am back at work 8 days early(wrapping presents for the Famimly
and I know they can not find me here....
Ok there are 3 main (semi-standard) printer addresses..

LPT1/2 LPT1 LPT2/3
DATA BYTE 378(888)3BC(956)278(632)
STATUS 379(889)3BD(957)279(633)
OUTPUT 37A(890)3B3(958)27A(634)
FIRST IS HEX IN()DECIMAL
printer connector
11=b7(inverted)
10=b6
12=b5
13=b4
15=b3
b=bit number ,b3 is the lowest(lsb) and b7 is the highest(msb)
bits 0,1,2 are locked hi internaly(thats why I needed a real IBM card,
I am going to cut traces etc)
I also have a problem in that the adc0804(adc) does not always get
reset on power up. I added a switch to pull pin 1 to +5v.
feed the output of the adc to the printer port..
adc 18>15
17>13
16>12
15>10
16>inverter>11
go to configuration and set to 5bits parallel port,my port (lpt1)is
3bd(957), you may hve to try all three status ports.

Good luck and I hope this helps.
Merry Christmas and a happy new year.
If this doesn't work go wiht the simple 74q comparator and use the
exar 2206(?) vco to drive it. Works fairly well, check out his diagrams
if this last part doesn't make any sense.
later
Terry

2706. Re: Packet Satellite Baud Rates

Newsgroup: rec.radio.amateur.space
Date: 1995-12-25 00:00:00 UTC
From: Hank Blackstock <wa5jrh@ionet.net>
Message-ID: <4bl9fq$ocu@ionews.ionet.net>
Source record: 23318
Cross-posted to: aus.radio.amsat,rec.radio.amateur.space

rob@pe1chl.ampr.org (Rob Janssen) wrote:

>
>The exception is Dove, which transmits 1200 bps AFSK telemetry on 145.825.

There is also the space station MIR and some of the shuttle
missions that utilize 1200 bps AFSK packet.

&3 Hank WA5JRH

2707. SSTV from MIR?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-25 00:00:00 UTC
From: Hank Blackstock <wa5jrh@ionet.net>
Message-ID: <4bmtlu$4t4@ionews.ionet.net>
Source record: 23319

I read somewhere that Mir had been transmitting some SSTV. Can anyone advise if this is still true and which frequency and schedule if available.

Thanks es 73, Hank

2708. Re: SSTV from MIR?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-25 00:00:00 UTC
From: c002@Lehigh.EDU
Message-ID: <4bn034$r21@ns4-1.CC.Lehigh.EDU>
Source record: 23320

In article <4bmtlu$4t4@ionews.ionet.net>, Hank Blackstock <wa5jrh@ionet.net> wri
tes:
>I read somewhere that Mir had been transmitting some SSTV. Can
>anyone advise if this is still true and which frequency and
>schedule if available.
>
>Thanks es 73, Hank

I hope its on, 2m fm!! :)

if anydoes have info, please send it this way too!!!

DAvid

|---|
| David Roseman | c002@lehigh.edu OUTTA ORDER!
	Saucon Valley Sen. HS	
SysOp of NODE 3 BBS	The Flying HAm - BBS	
Running OBV/2 Software	Technomage - BBS	
	N3SQE/1 - HAm V
	N3SQE@Nxxxx.FNxxxx.PA.USA.NA - Packet

2709. connecting to MIR

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: toml@rmii.com
Message-ID: <4bnr3e$8j5@natasha.rmii.com>
Source record: 23321

Who do you connect to when connecting to the MIR? Is it R�MIR or
R�MIR-1? How do you know that you are connected? Just your computer
saying that you are connected or do you get a conformation from MIR?
One last question, who do you send the QSL card to?
Thanks
73 Tom N�MWY

2710. Re: Ham-Space Digest V95 #368

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: sfylaqc@scfn.THpl.lib.fl.US
Message-ID: <Pine.SUN.3.91.951225235959.14151D-100000@scfn>
Source record: 23322

unsubscribe

2711. Re: Ham-Space Digest V95 #369

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: sfylaqc@scfn.THpl.lib.fl.US
Message-ID: <Pine.SUN.3.91.951226001515.14151X-100000@scfn>
Source record: 23323

unsubscribe

2712. Re: connecting to MIR

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: trandall@mhv.net
Message-ID: <4bopif$g1m@over.mhv.net>
Source record: 23324

In article <4bnr3e$8j5@natasha.rmii.com>,
toml@rmii.com (Tom Levendusky Jr.) wrote:
>Who do you connect to when connecting to the MIR? Is it R�MIR or
>R�MIR-1? How do you know that you are connected? Just your computer
>saying that you are connected or do you get a conformation from MIR?
>One last question, who do you send the QSL card to?
>Thanks
>73 Tom N�MWY
>

When you connect to R0MIR (via packet) your connecting to the keyboard
for a live QSO. After 2100utc no one is at the radio station. You'll get a
hello type message. When you connect to R0MIR-1 your connected to the
PBBS. The PBBS can only accept 1 connect at a time. The keyboard can
accept 7 at a time. You'll know when you connect to either port. Just
watch you screen.In the U.S. there's a NEW Mir QSL card manager:

N6JLH
Dave Larsen
P.O.Box 1501
Pine Grove, Calif. 95665

The cosmonauts DO use voice mode but not that often. Tom Reiter's call
is DP0MIR. Listen BEFORE you call in either mode to see what mode they are
in first!

Good Luck!

Tom

Tom Randall Amateur Radio - KB2SMS
trandall@mhv.net Mt. Beacon Amateur Radio Club / ARRL
Member: AAVSO Solar Division

Opinions herein are mine and they are not that of MHV.NET!

2713. Re: SSTV from MIR?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: trandall@mhv.net
Message-ID: <4bopm6$g1m@over.mhv.net>
Source record: 23325

In article <4bmtlu$4t4@ionews.ionet.net>,
Hank Blackstock <wa5jrh@ionet.net> wrote:
>I read somewhere that Mir had been transmitting some SSTV. Can
>anyone advise if this is still true and which frequency and
>schedule if available.
>
>Thanks es 73, Hank
>

Mir WILL be doing SSTV in the near future. Not right now though.
More equipment will be on it's way soon for 70cm packet too.

Tom

Tom Randall Amateur Radio - KB2SMS
trandall@mhv.net Mt. Beacon Amateur Radio Club / ARRL
Member: AAVSO Solar Division

Opinions herein are mine and they are not that of MHV.NET!

2714. 9600 baud with TS-790A

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: George La Belle <george_labelle@ccm.hf.intel.com>
Message-ID: <4bpeph$45c@ornews.intel.com>
Source record: 23326

Anybody had luck running 9600baud on the TS-790A? What is required
to get it working?

Thanks,
George WB6YZZ

2715. TM455 for sat work???

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: bsmith@msn.com
Message-ID: <4bpg3f$hus@news.internetmci.com>
Source record: 23327

Have a chance to pick up a Kenwood TM455 for a song. Any opinions on this rig for SAT work. Need to get the 430 side covered.

Thanks in advance for any info.
--
Bob Smith, Atlanta, GA
n3ftu@amsat.org
TAPR 5412 ARRL

2716. Re: Super Space Site

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: charlie@smart.net
Message-ID: <4bpiko$je9@news.smart.net>
Source record: 23328

charlie@smart.net (Charles M. Clark) wrote:

>charlie@smart.net (Charles M. Clark) wrote:

>> If you are interested in either space information and or weather
>>information, you have to look into Mike Robinson page on the Web.
>> It contains everything you ever wanted to know about either subject.

>> Mike has had years of experience developing these subject and now
>>devotes much of his time to developing and maintaining this page

> Try http://www.airtime.co.uk/users/homebase/homebase.htm

> I think you will need this. SORRY. OOPS.

I spoke to Mike via phone on Christmas and he will be ungrading
his WEB page in the next two weeks, so look for more and better
info from this site.

2717. ARLK073 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk073.1995@arrl.org>
Source record: 23329
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK073
ARLK073 Keplerian data

ZCZC SK98
QST de W1AW
Keplerian Bulletin 73 ARLK073
From ARRL Headquarters
Newington, CT December 26, 1995
To all radio amateurs

SB KEP ARL ARLK073
ARLK073 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95355.17052551 .00003586 00000-0 54425-4 0 03986
2 16609 51.6452 300.9946 0006344 123.1295 237.0306 15.57533889562107
AO-10
1 14129U 83058B 95350.85159304 -.00000222 00000-0 10000-3 0 3948
2 14129 26.4373 233.4638 5977317 334.9617 5.3514 2.05883000 66090
RS-10/11
1 18129U 87054A 95355.20747046 .00000043 00000-0 30514-4 0 1516
2 18129 82.9234 280.8191 0010582 299.1994 60.8105 13.72360264425622
UO-11
1 14781U 84021B 95355.92950294 .00000152 00000-0 33576-4 0 8493
2 14781 97.7874 349.7246 0011000 305.5324 54.4867 14.69411492631470
RS-12/13
1 21089U 91007A 95354.98213245 .00000060 00000-0 48045-4 0 8537
2 21089 82.9191 322.2366 0030400 15.3063 344.9003 13.74063994244426
AO-13
1 19216U 88051B 95354.45165701 -.00000373 00000-0 68706-4 0 1230
2 19216 57.4246 146.0656 7360315 26.7547 357.0078 2.09731727 26076
UO-14
1 20437U 90005B 95355.19584280 .00000005 00000-0 18772-4 0 01675
2 20437 98.5593 76.4723 0011924 11.9187 348.2274 14.29907000308474
RS-15
1 23439U 94085A 95355.02553892 -.00000039 00000-0 10000-3 0 01111
2 23439 64.8173 312.8232 0165954 230.4319 128.1845 11.27524006040589
```

```
AO-16
1 20439U 90005D 95355.16049224 -.00000011 00000-0 12440-4 0 09579
2 20439 98.5717 78.3708 0012080 13.2875 346.8623 14.29961552308486
DO-17
1 20440U 90005E 95355.13049764 .00000036 00000-0 30658-4 0 09541
2 20440 98.5736 78.8888 0012419 11.7107 348.4374 14.30103790308508
WO-18
1 20441U 90005F 95355.18654751 -.00000012 00000-0 12232-4 0 9515
2 20441 98.5730 78.8988 0012826 12.2600 347.8895 14.30073338308516
LO-19
1 20442U 90005G 95355.12582317 -.00000023 00000-0 79962-5 0 09570
2 20442 98.5736 79.2599 0012957 12.1658 347.9805 14.30178863308525
FO-20
1 20480U 90013C 95355.13960277 -.00000061 00000-0 -68619-4 0 8430
2 20480 99.0573 48.8572 0541178 170.0902 191.1404 12.83231996274926
AO-21
1 21087U 91006A 95354.79684349 .00000094 00000-0 82657-4 0 06644
2 21087 82.9380 94.4799 0036339 348.5783 11.4544 13.74562630245360
UO-22
1 21575U 91050B 95355.17374652 .00000003 00000-0 15277-4 0 06656
2 21575 98.3757 61.6789 0008535 79.6267 280.5883 14.37005097232351
KO-23
1 22077U 92052B 95355.03700169 -.00000037 00000-0 10000-3 0 05451
2 22077 66.0793 204.5565 0004259 348.0840 12.0077 12.86293852157764
KO-25
1 22828U 93061F 95355.11721637 .00000006 00000-0 19736-4 0 04302
2 22828 98.5960 68.9242 0011102 23.0579 337.1096 14.28123523084555
IO-26
1 22826U 93061D 95355.16408438 .00000020 00000-0 25600-4 0 04466
2 22826 98.6029 68.9264 0010392 35.9576 324.2294 14.27790576116452
AO-27
1 22825U 93061C 95355.15421815 -.00000021 00000-0 90794-5 0 04434
2 22825 98.6028 68.7869 0009551 37.8027 322.3824 14.27682026116443
PO-28
1 22829U 93061G 95355.13143148 -.00000014 00000-0 11719-4 0 04426
2 22829 98.5976 68.9846 0010755 24.9744 335.1956 14.28104652116472

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Saturday,
December 30, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2718. MIR Christmas Greetings audio files

Newsgroup: rec.radio.amateur.space
Date: 1995-12-26 00:00:00 UTC
From: wday@dfw.net
Message-ID: <wday-2612952243450001@fw58.dfw.net>
Source record: 23330

Two files containing a 1:08 recording of German astronaut Thomas Reiter,
DF4TR/DP0MIR, and his Christmas greetings from the Russian MIR spacecraft,
have been uploaded to CompuServe's HamNet Forum, and AMSAT's ftp site.
The two files are available in AIFF-C format (approx .5 meg in size) or
WAV format (approx 1.6 megabytes of data) [note: the differences is the
3:1 compression of the AIFF-C format!].

On CompuServe, the files are MIR.AIF and MIR.WAV and are located in
Library 5 of HamNet, the satellite library.

On ftp.amsat.org, we'll have to see where Paul, KB5MU, puts the files.

The recording is a 22.3 kHz sample rate, with fairly good quality,
recorded at KF5ZC's north Texas QTH on 25 Dec 95 at 0540 UTC on 145.800.
It was the only pass that I heard the prerecorded greetings.

73 & Merry Christmas

Wayne KF5ZC

Wayne Day KF5ZC Fort Worth,Texas,USA kf5zc@amsat.org |
CompuServe: 76703,376 76703.376@CompuServe.Com | ,__o
wday@dfw.net |--_<,
Member: Bicycle Mobile Hams of America (*)/'(*)
For info on BMHA or the BIKEHAM mailing list: Finger KF5ZC@dfw.net
---

2719. Re: VARIAN MICROWAVE AMPS and related gear MUST SELL or TRADE

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: jburnett@cline.com
Message-ID: <4bqc0k$ph8@kirin.wwa.com>
Source record: 23331
Cross-posted to: sci.electronics,sci.engr.manufacturing,sci.med.radiology,sci.engr.chem,rec.radio.amateur.space,sci.space

In article <4bkl3t$hh7@ixnews3.ix.netcom.com>,
Johnny B. Goode <ando1@ix.netcom.com> wrote:
>
> FOR SALE- OR TRADE::
>Varian VZX6983G5GLM 8-12.4 ghz 53db gain 200watt Xband amp (new)
>$16,000.

snip.....

Dear Mr. Goode,
You're advertising in newsgroups that were not set up for
advertising.

John Burnett

2720. STS-74 heard/worked lists

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: bd703@scn.org
Message-ID: <DK86wz.75x@scn.org>
Source record: 23332

Does anyone have the heard/worked lists for STS-74?

Kerwin, N7JGW

--
~~~~~~
#
bd703@scn.org # History is a thing of the past.
#
~~~~~~

2721. Re: MFJ-1270C WEFAX Reception

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: Tfugate@pop.uky.edu
Message-ID: <4bs2o4$h20@service2.uky.edu>
Source record: 23333
Cross-posted to:
aus.radio.amsat,rec.radio.amateur.digital.misc,rec.radio.amateur.misc,rec.radio.amateur.space,rec.radio.shortwave

In article <4bi83njaj2@mhadg.production.compuserve.com>, Brian Webb
<102670.1206@CompuServe.COM> says:
>
>I just purchased an MFJ-1270C TNC. It has HF weather FAX
>capability, but the user manual says virtually nothing about how
>to use this feature. Does anybody know how to command the unit
>for WEFAX reception and the tuning offset to use with my HF
>receiver?
>
>73s
>
>Brian Webb, KD6NRP
If the MFJ1270c is anything like the MFJ1278, the wefax reception is
pathetic. Black and white with NO resolution. Check out you
disk that came with the tnc. In the 1278 the command is something
like mode fax NNNN where NNN is the type of fax. I don't have my manual
here(at work)but I will look up the exact command and what program
I had to use.

A much better approach is to download JVFAX 7.0 from either the ARRL,
Amsat, of(I think) the oakland ftp sites. It is near freeware, Works
GREAT and uses a simple uA741 powered by, and "talking" to a Asynch/comm
port. Costs less than $5.oo us if you buy everything new. It is really
the best way to go. Hamcom is another good(though not as gooda as JVFAX
in my opinion). If you have a "real" or 100% compatable Sound blaster,
you could try WXMAN2. It does a good job just by feeding the sb card
with audio.
8080KHz is the best place to start. Nam is on every night as of a couple
of weeks ago. I guess they will keep on the air even if the Feds can't
get their budget togather.
None of the above programs can receive NOAA wx sat fax with out some work.
JVFAX has a diagram for a WX sat am to fm fax converter. It uses an exar
2201?(check out the diagram), and while it is best to build a "real" am
fax demod, you can get impressive results by feeding the output of the
exar to any of the above programs.
Good luck
Email me if you have any questions, I won't be back on unitl jan 2, 1996.
(unless I end up in here for something else)
WEFAX is great fun, do not get discouraged by any intitial hassels. Hang
in there. It will be worth it.

2722. Xmas on Mir

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: jcorby@headwaters.com
Message-ID: <4brlt2$238@news.worldlinx.com>
Source record: 23334

The following recorded message was received from Mir on Christmas Eve:

"Hello you people on Earth, this is not Santa Claus yet, this is the Russian space station Mir calling - crew 20.

As you all on Earth, we are celebrating Christmas Eve today here in Earth orbit, and we wish you all a Merry Christmas and a peaceful and happy new year, and I will hand you over now to Yuri who will also direct some words to you:

------------------Message in Russian------------------

All the best to you once again, Merry Christmas, Frolische Weihnachten, 73 and bye-bye."

This message was recorded by German cosmonaut Thomas Reiter and was heard every four minutes during passes over my QTH (near Toronto, Canada) on 145.800 MHz.

John Corby
Toronto, Canada
Moderator, HearSat-L mailing list.
jcorby@headwaters.com

2723. Packet/Mir

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: jcorby@headwaters.com
Message-ID: <4brlt8$238@news.worldlinx.com>
Source record: 23335

For those of us whose interests lie in merely receiving signals from space, can anybody monitoring this newsgroup explain how to hear the difference between packet traffic uplinking to ROMIR, and packet traffic downlinking from ROMIR?

By "hear", I literally mean listening to the signal over the receiver's speaker.

John Corby
Toronto, Canada
Moderator, HearSat-L mailing list
jcorby@headwaters.com

2724. Sound Blaster 16 as a DSP unit ?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: Sean McDonald <seanmcd@iaccess.za>
Message-ID: <4bsabf$cal@grovel.iafrica.com>
Source record: 23336

Hi. Does anyone have any information / programmes on the use of the Creative Labs Sound Blaster 16 as a DSP unit, similar to the MFJ-784 ?

I would appreciate any information / programmes info related to this. Information of DSP ?

Thanks, 73s

Sean McDonald, ZS5TM
email:seanmcd@iaccess.za

2725. Re: Packet/Mir

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: trandall@mhv.net
Message-ID: <4bsdhn$c3b@over.mhv.net>
Source record: 23337

In article <4brlt8$238@news.worldlinx.com>,
jcorby@headwaters.com (John Corby) wrote:
>For those of us whose interests lie in merely receiving signals from
>space, can anybody monitoring this newsgroup explain how to hear the
>difference between packet traffic uplinking to ROMIR, and packet
>traffic downlinking from ROMIR?
>
>By "hear", I literally mean listening to the signal over the
>receiver's speaker.
>
>---------------------------------
>John Corby
>Toronto, Canada
>Moderator, HearSat-L mailing list
>jcorby@headwaters.com
>

You cannot tell the difference in packet signals via speaker audio.
Both sound the same. Sorry. Thanks to N6JLH I finally got my Mir QSL card!

Tom

Tom Randall Amateur Radio - KB2SMS
trandall@mhv.net Mt. Beacon Amateur Radio Club / ARRL
Member: AAVSO Solar Division

Opinions herein are mine and they are not that of MHV.NET!

2726. Receive antenna preamp designs

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: pepperb@gov.on.ca
Message-ID: <4bsbt4$4ai@govonca3.gov.on.ca>
Source record: 23338

I am curious as to if anyone has any sources for some good antenna preamp designs (as might be in some old backissues of QST, CQ or HamRadio, or 73; as I have a reference library available with most of those). We are interested getting a bit of nice signal amplification on the receiving antenna for RS12 reception (hence 29.408 region). Not all that keen on too intense antenna designs at this point, but if you have modest ideas we are interested. I have not at all even looked at the ARRL handbook, antenna book or anything at all, so I should do so.
But one member of our club is a bit further ahead than I and asked me to see if I could get an idea what he could do to preamp his receive antenna.

Otherwise, thanks for ideas and directions. I see a lot of stuff at the AMSAT and some other web pages - very helpful indeed.

Thanks

Brien
Toronto

for the Durham Region QRP Club (space interested sub-set)

pepperb@gov.on.ca

2727. Re: VARIAN MICROWAVE AMPS and related gear MUST SELL or TRADE

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: Wesley <wesley29@server.iadfw.net>
Message-ID: <30E22B9F.5110@server.iadfw.net>
Source record: 23339
Cross-posted to: sci.electronics,sci.engr.manufacturing,sci.med.radiology,sci.engr.chem,rec.radio.amateur.space,sci.space

Funny I did not see a notice posted when I entered. Did some die and appoint you King? Or do you view your life as the protector of small news groups?

2728. IC-820H suitable for satellite ?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-27 00:00:00 UTC
From: info@mopa.global.it
Message-ID: <4bpds3$j4i@maggiore.dsnet.it>
Source record: 23340

Hello everybody
I read semewhere that ICOM IC-820H is not so good for satellite
traffic.....(I mean SSB communications via OSCAR-13).
Is it true ? I hope not as I'm going to buy one!

Thank you in advance

IK4JQW Roberto Manderioli
info@mopa.global.it
FERRARA - ITALY

2729. Re: Mars Relay Flight Test - Public May Participate!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-28 00:00:00 UTC
From: domonkos@access.digex.net
Message-ID: <4bsspi$2ud@news4.digex.net>
Source record: 23341
Cross-posted to: sci.astro,alt.sci.planetary,sci.astro.amateur,rec.radio.amateur.space

Will this be a modulated beacon or CW? Thanks.

Andy N3LCW

2730. Mars Relay Flight Test - Public May Participate!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-28 00:00:00 UTC
From: baalke@kelvin.jpl.nasa.gov
Message-ID: <28DEC199500564811@kelvin.jpl.nasa.gov>
Source record: 23342
Cross-posted to: sci.astro,alt.sci.planetary,sci.astro.amateur,rec.radio.amateur.space

MGS MARS RELAY FLIGHT TEST

The Public May Participate!

(Preliminary Information - 12/14/95)

With the launch of Mars Global Surveyor (MGS) in November of 1996, NASA with begin a decade long exploration of the Red Planet. With the program managed by the Jet Propulsion Laboratory (JPL), NASA plans to launch two spacecraft to Mars every alignment opportunity (approximately every two years). These missions will include a combination of orbiters and landers to explore Mars in a comprehensive and systematic way. To provide data communication capabilities between several of the landed systems to be placed on the surface of Mars and the spacecraft in orbit, many of the orbiters will carry UHF radio relays.

MGS will carry such a relay, called the Mars Relay. The Mars Relay will provide communication support, at first, between several Russian small lander stations on the surface of Mars and the orbiting Mars Global Surveyor. Then future missions planned for launch in 1998 and beyond will also be able to exploit this relay on MGS for surface data return.

During the Mars Global Surveyor Mission, JPL plans to perform a near-Earth test of the Mars Relay. Sometime around 20 to 30 days after launch of MGS in November of 1996, JPL will initiate a test of the Relay employing UHF communication equipment on the Earth. Because the Relay operates at frequencies in the 70 cm band, an opportunity exists for student and amateur participation in the near-Earth test of the Mars Relay. Using 70 cm antennas, individuals will be able to listen for a 1.3-watt beacon operating from the spacecraft on 437.1 MHz at a distance of 8 million kilometers (20 times the distance to the Moon) - the ultimate DX!

Stay tuned to the Mars Global Surveyor Home Page for further details on how to participate in the test:

http://mgs-www.jpl.nasa.gov/

2731. Fabrication of a Ground Plane and the Egg Beater

Newsgroup: rec.radio.amateur.space
Date: 1995-12-28 00:00:00 UTC
From: seeler@upei.ca
Message-ID: <30e2e6df.591005@137.149.3.1>
Source record: 23343
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.space

Hi - I was wondering if anyone has fabricated a groundplane for the 440 MHz eggbeater? I would be interested in knowing more about the specifics in order to improve upon the operations at my QTH.

ThanKs in advance and Season's greetings!

Internet: Seeler@upei.ca

Regards,
David Seeler, VY2DCS
Charlottetown, PEI

2732. Hubble Downlink

Newsgroup: rec.radio.amateur.space
Date: 1995-12-28 00:00:00 UTC
From: gayle@ldd.net
Message-ID: <4bth46$m1e@sparky.midwest.net>
Source record: 23344

Greetings:

Is it possible to receive and 'decode' data from the HST?

Any info would be appreciated.

Marty Albert (Amatuer Radio Station KC6UFM)
PO Box 717
Fredericktown, MO 63645

2733. TM733 for Satelites Will it work??

Newsgroup: rec.radio.amateur.space
Date: 1995-12-28 00:00:00 UTC
From: C Jefferson <cjeffers@204.248.112.2>
Message-ID: <4bujkd$f98@wavefront.wavefront.com>
Source record: 23345

Will a Kenwood TM733A work for amatuer satelites. Also is a KPC-3 TNC
good for any satellite work? Thank you very much Jim KB0THN

cjeffers@luminet.net of kb0thn@amsat.org

2734. MIR frequencies?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-28 00:00:00 UTC
From: Richard David Glueck <glue9600@spacelink.msfc.nasa.gov>
Message-ID: <Pine.SOL.3.91.951228134640.22784D-100000@spacelink>
Source record: 23346

Is MIR currently using 145.550 simplex or 145.800 simplex, or both?

Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

2735. Mir Xmas russian part

Newsgroup: rec.radio.amateur.space
Date: 1995-12-28 00:00:00 UTC
From: dhend@cyberportal.net
Message-ID: <4bv494$74q@news.cyberportal.net>
Source record: 23347

This is the 30 seconds of Russian..

"Dear people of the Earth, the crew of the MIR orbital station greets you and
sends you the best Christmas wishes. Let the teachings of Christ be always
present in our life. Our best wishes of health, love and happiness to you.
Peace to you and your families."
Courtesy, Victor Marchenko, Graduate Student Darmouth College Hanover, N>H>

e-mail=dhend@cyberportal.net
packet= N1PPP @ WA1WOK.FN43FE.NH.USA.NOAM zip 03743
phone 1-603-542-2493 1-603-542-6917

Sex is the most fun you can have without logging on.

Diplomacy is the art of saying "Nice doggie!"...until you can find a rock.

Be wary of strong drink.
It can make you shoot at tax collectors and miss.
-Lazarus Long

I still miss my ex-wife, but my aim is getting better....

2736. Re: EVA's on STS-72

Newsgroup: rec.radio.amateur.space
Date: 1995-12-29 00:00:00 UTC
From: romanr@bga.com
Message-ID: <4c00sa$huo@giga.bga.com>
Source record: 23348
Cross-posted to: sci.space.shuttle,rec.radio.amateur.space

Daryl,
Thanks for sharing this info. I would be
interested in knowing if there is any hope
of listening to the EVA directly via the
suit-to-orbiter UHF radio link. Will the
EVAs occur over the U.S.? Can you tell us
what chances we have of hearing anything
on 259.7 MHz (or anywhere else)?

Thanks in advance.
roman
Roman Robles KI5XZ
Austin, TX

In article <000020cd+0000234b@msn.com>,
Daryl_Schuck@msn.com says...
>
>I thought folks in this forum would be interested in
the fact that
>there are two Extravehicular Activities (EVA's)
scheduled on the next
>shuttle flight (STS-72). As lead flight controller
for the EVA
>discipline on STS-72, I thought it would be a good
idea to write up a
>short summary for everyone's perusal. In a nutshell,
here is what's
>going to be happening:
>

>Fire away!!
>
>Daryl Schuck
>STS-72 Lead EVA Flight Controller
>Houston, TX

2737. Re: 9600 baud with TS-790A

Newsgroup: rec.radio.amateur.space
Date: 1995-12-29 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <4c0ehb$fcs@wagner.spc.videotron.ca>
Source record: 23349

Hello George
I am running my TS-790A along with a DSP-2232 on KO-23 / KO-25 / UO-22
at 9600 Bauds no problem. I like this radio very much.

I mainly use the radio for satellite work

Phone and digital

bye !

from Benoit

VE2VB@AMSAT.ORG

2738. Re: 9600 baud with TS-790A

Newsgroup: rec.radio.amateur.space
Date: 1995-12-29 00:00:00 UTC
From: sylvestre <sylvestre@pandore.qc.ca>
Message-ID: <4c0eju$fcs@wagner.spc.videotron.ca>
Source record: 23350

Hello George
I am running my TS-790A along with a DSP-2232 on KO-23 / KO-25 / UO-22
at 9600 Bauds no problem. I like this radio very much.

I mainly use the radio for satellite work

Phone and digital

bye !

from Benoit

VE2VB@AMSAT.ORG

2739. Satellite Tracking Hardware

Newsgroup: rec.radio.amateur.space
Date: 1995-12-29 00:00:00 UTC
From: mbv@ti.com
Message-ID: <4c18sh$39f@superb.csc.ti.com>
Source record: 23351

I would like to be able to decide on a tracking board, box, adapter, or whatever is suitable for operating my G5400 rotor box, but the options are sort of confusing. I have heard of the KC Tracker, Sat Trak, SASI, and others that may actually be the same devices under a different name. I don't have extra com ports or a second printer port to devote to this system.
Has anyone done a comparison of these devices to see which one is the most useful, practical, economical, etc.?
I would like to use an automatic tuner feature also, so maybe that would be a must have feature for me, however the doppler shift shown by Instantrack is always way off the actual doppler shift indicated by my FT736.
Any ideas welcomed. Oh Yeah... I don't want to make cables if they are available with these systems. The ads don't say.

Ken K5MBV mbv@ti.com

2740. Re: Hubble Downlink

Newsgroup: rec.radio.amateur.space
Date: 1995-12-29 00:00:00 UTC
From: 334-8006@mcimail.com
Message-ID: <4c1tpv$q2m@news.internetmci.com>
Source record: 23352

It is my understanding that Hubble data to sent over to a govermant
Satillie and then its scramble and downloaded to nasa. the data we can
not decode it.

Russell
gayle@ldd.net (Gayle Albert) wrote:

>Greetings:

>Is it possible to receive and 'decode' data from the HST?

>Any info would be appreciated.

>Marty Albert (Amatuer Radio Station KC6UFM)
>PO Box 717
>Fredericktown, MO 63645

2741. ARLS028 DOVE OSCAR 17 Fails Again

Newsgroup: rec.radio.amateur.space
Date: 1995-12-29 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arls028.1995@arrl.org>
Source record: 23353
Cross-posted to: rec.radio.info,rec.radio.amateur.space

SB SPACE @ ARL $ARLS028
ARLS028 DOVE OSCAR 17 Fails Again

ZCZC AS08
QST de W1AW
Space Bulletin 028 ARLS028
From ARRL Headquarters
Newington, CT December 30, 1995
To all radio amateurs

SB SPACE ARL ARLS028
ARLS028 DOVE OSCAR 17 Fails Again

The DOVE OSCAR 17 satellite has failed again after a brief time back on 2 meters broadcasting a holiday greeting. The latest failure occurred December 29 at 0500Z as the AMSAT DOVE team continued to reload the spacecraft's software in the wake of a failure December 3.

Jim White, WD0E, of the AMSAT DOVE team says the latest crash suggests a hardware problem aboard the spacecraft. The team had hoped that reloading the satellite's software would fix the problem.

DOVE-OSCAR 17 is used for educational and research purposes.
NNNN
/EX

2742. New Mir recorded greeting!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-29 00:00:00 UTC
From: trandall@mhv.net
Message-ID: <4c1arv$oqu@over.mhv.net>
Source record: 23354

On the 1701 pass today over East N.Y. Mir transmitted another greeting to all. It reads:

"I guess this will be the last TCIS(?) message for this year so a ...we all wish you an especially nice Friday evening and hope you have some especially nice drinks. Please don't forget to have some drinks for us. For Yuriy(SP?), Sergi and myself many greetings, 73 and bye bye."

I threw out a call for Tom Reiter but this message came back.

Tom

Tom Randall Amateur Radio - KB2SMS
trandall@mhv.net Mt. Beacon Amateur Radio Club / ARRL
Member: AAVSO Solar Division

Opinions herein are mine and they are not that of MHV.NET!

2743. Re: Satellite Tracking Hardware

Newsgroup: rec.radio.amateur.space
Date: 1995-12-30 00:00:00 UTC
From: Geert Pirens <Geert.Pirens@ping.be>
Message-ID: <30E50ADF.5566@ping.be>
Source record: 23355

Ken Durham wrote:
>
> be a must have feature for me, however the doppler shift shown by Instantrack
> is always way off the actual doppler shift indicated by my FT736.
> Any ideas welcomed. Oh Yeah... I don't want to make cables if they are
> available with these systems. The ads don't say.
> Can you send me some information and technical information about
automatick antenna tracking hard & software ?

Plaese let me now.

Bye

Geert Pirens

73, ONL2057

2744. Antenna Tracking System Hardware wanted,

Newsgroup: rec.radio.amateur.space
Date: 1995-12-30 00:00:00 UTC
From: Geert Pirens <Geert.Pirens@ping.be>
Message-ID: <30E50BA0.28BA@ping.be>
Source record: 23356

Hello All,

I want to buy me a decent antenna Tracking hardware or If someone have
it for make it myself ? (hpmebrew).

I am looking for a schematic of a Kansas City Tracker, or compatible.

If aneyone have some kind of schematic or PCB layout ?

Or if you have better stuff than this? plaese send me more information.

I like to send commands via my computer to the antenna rotors.

The program I use is INSTANT TRACK v1.0b.

Who is so kind to help me with this ? I wil pay if needed!

PLAESE contact me!! by sending e-mail, or fido mail.

Greetings

Geert Pirens

E-Mail Geert.Pirens@ping.be
or Geert.Pirens@p9.f115.n292.z2.fidonet.org
Fidonet Geert Pirens / 2:292/115.9

2745. NORAD Two-Line Orbital Element Set Format

Newsgroup: rec.radio.amateur.space
Date: 1995-12-30 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <4c2ujq$jai@blackbird.afit.af.mil>
Source record: 23357

As a service to the satellite user community, the following description of the NORAD two-line orbital element set format is uploaded to sci.space.news and rec.radio.amateur.space on a monthly basis. The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity. In addition, element sets (updated daily) and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

==========

Data for each satellite consists of three lines in the following format:

```
AAAAAAAAAAAAAAAAAAAAA
1 NNNNNU NNNNNAAA NNNNN.NNNNNNNN +.NNNNNNNN +NNNNN-N +NNNNN-N N NNNNN
2 NNNNN NNN.NNNN NNN.NNNN NNNNNNN NNN.NNNN NNN.NNNN NN.NNNNNNNNNNNNN
```

Line 0 is a twenty-two-character name (this change is being made to be consistent with the name length in the NORAD SATCAT).

Lines 1 and 2 are the standard Two-Line Orbital Element Set Format identical to that used by NORAD and NASA. The format description is:

```
Line 1
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
10-11 International Designator (Last two digits of launch year)
12-14 International Designator (Launch number of the year)
15-17 International Designator (Piece of launch)
19-20 Epoch Year (Last two digits of year)
21-32 Epoch (Julian Day and fractional portion of the day)
34-43 First Time Derivative of the Mean Motion
or Ballistic Coefficient (Depending on ephemeris type)
45-52 Second Time Derivative of Mean Motion (decimal point assumed;
blank if N/A)
54-61 BSTAR drag term if GP4 general perturbation theory was used.
Otherwise, radiation pressure coefficient. (Decimal point assumed)
63-63 Ephemeris type
65-68 Element number
69-69 Check Sum (Modulo 10)
(Letters, blanks, periods, plus signs = 0; minus signs = 1)
```

Line 2
Column Description
01-01 Line Number of Element Data
03-07 Satellite Number
09-16 Inclination [Degrees]
18-25 Right Ascension of the Ascending Node [Degrees]
27-33 Eccentricity (decimal point assumed)
35-42 Argument of Perigee [Degrees]
44-51 Mean Anomaly [Degrees]
53-63 Mean Motion [Revs per day]
64-68 Revolution number at epoch [Revs]
69-69 Check Sum (Modulo 10)

All other columns are blank or fixed.

Example:

NOAA 6
1 11416U 86 50.28438588 0.00000140 67960-4 0 5293
2 11416 98.5105 69.3305 0012788 63.2828 296.9658 14.24899292346978
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2746. NORAD Two-Line Orbital Element Sets (TLE728)

Newsgroup: rec.radio.amateur.space
Date: 1995-12-30 00:00:00 UTC
From: tkelso@afit.af.mil
Message-ID: <4c2umc$jas@blackbird.afit.af.mil>
Source record: 23358

The most current orbital elements from the NORAD two-line element sets are carried on the Celestial BBS, (334) 409-9280, and are updated daily (when possible). Documentation and tracking software are also available on this system. The Celestial BBS may be accessed 24 hours/day at speeds up to 28,800 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily) and some documentation and software are available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

As a service to the satellite user community, the most current of these elements are uploaded weekly to sci.space.news and rec.radio.amateur.space. This week's elements are provided below.

```
- Current Two-Line Element Sets #728 -
Alouette 1
1 00424U 62049A 95348.36100255 .00000018 00000-0 10305-4 0 1592
2 00424 80.4544 107.1010 0022426 149.3518 210.8930 13.67857482656937
ATS 1
1 02608U 66110A 95349.57563549 -.00000027 00000-0 10000-3 0 9505
2 02608 14.6379 354.7816 0012166 77.8951 282.2507 1.00398102 23011
ATS 3
1 03029U 67111A 95363.08047799 -.00000122 00000-0 10000-3 0 4333
2 03029 14.8895 1.6509 0010472 268.1049 110.8216 1.00272491103050
Starlette
1 07646U 75010A 95345.91535286 -.00000078 00000-0 50884-4 0 9345
2 07646 49.8295 171.6654 0205563 328.6282 30.2482 13.82190784 52924
LAGEOS
1 08820U 76039A 95363.07625750 .00000016 00000-0 10000-3 0 1602
2 08820 109.8527 327.3824 0044311 165.7799 194.3967 6.38664393202908
ETS-2
1 09852U 77014A 95353.32048303 .00000066 00000-0 10000-3 0 549
2 09852 13.0034 35.0079 0004103 121.1590 238.8691 1.00017150 15837
GOES 2
1 10061U 77048A 95354.54082948 .00000068 00000-0 00000+0 0 6192
2 10061 12.1037 39.1880 0013574 133.6180 296.1899 1.00286918 12647
IUE
1 10637U 78012A 95362.16347859 -.00000243 00000-0 10000-3 0 2091
2 10637 35.5100 85.8908 1344709 52.2925 344.7292 1.00278787 18217
GPS BI-01
1 10684U 78020A 95347.99602640 -.00000037 00000-0 10000-3 0 4091
2 10684 64.9215 29.4050 0060849 162.2974 197.9876 1.98069402115728
GPS BI-02
1 10893U 78047A 95349.80536076 -.00000020 00000-0 10000-3 0 2048
2 10893 63.2513 266.9025 0227217 14.7453 345.9281 2.01627134129097
```

```
GOES 3
1 10953U 78062A 95362.24889222 -.00000105 00000-0 10000-3 0 5877
2 10953 11.0975 41.9070 0009060 141.1431 253.7085 1.00384104 17339
SeaSat 1
1 10967U 78064A 95362.06348310 -.00000022 00000-0 37297-4 0 4530
2 10967 107.9994 178.6222 0002381 248.2145 111.8741 14.38077937916707
GPS BI-03
1 11054U 78093A 95362.92015361 -.00000046 00000-0 10000-3 0 3731
2 11054 62.9402 265.2027 0045607 180.8393 179.2043 1.93505252125347
Nimbus 7
1 11080U 78098A 95361.60366114 -.00000032 00000-0 90174-5 0 5531
2 11080 98.9696 226.9926 0009805 70.8770 289.3443 13.83699504867301
GPS BI-04
1 11141U 78112A 95354.44089685 -.00000013 00000-0 10000-3 0 188
2 11141 64.9203 31.3364 0048852 27.5441 332.8116 1.92894753 14416
GPS BI-05
1 11690U 80011A 95362.33832120 -.00000056 00000-0 10000-3 0 9709
2 11690 65.2632 30.5038 0151981 193.4959 166.1531 2.00570082130750
GPS BI-06
1 11783U 80032A 95344.63225715 -.00000008 00000-0 10000-3 0 1163
2 11783 62.3716 260.0334 0223035 29.4477 331.8253 2.03456394114976
GOES 5
1 12472U 81049A 95349.15186700 -.00000192 00000-0 10000-3 0 8992
2 12472 7.8520 52.1413 0005366 52.0489 307.9110 1.00214869 11244
Cosmos 1383
1 13301U 82066A 95363.18679141 .00000039 00000-0 28416-4 0 4603
2 13301 82.9310 259.1653 0028184 354.6514 5.4333 13.68070866673992
LandSat 4
1 13367U 82072A 95363.18626890 .00000073 00000-0 25967-4 0 8289
2 13367 98.1010 54.0639 0006113 326.1120 33.9687 14.57164436715633
DMSP B5D2-1
1 13736U 82118A 95363.06445090 -.00000016 00000-0 11449-4 0 9175
2 13736 98.6253 189.1831 0008555 163.0181 197.1286 14.25766945676685
IRAS
1 13777U 83004A 95363.03221977 .00000272 00000-0 21693-3 0 1826
2 13777 98.9636 187.1615 0011948 204.9050 155.1520 13.99250422329437
Cosmos 1447
1 13916U 83021A 95349.00746913 .00000039 00000-0 25915-4 0 5538
2 13916 82.9427 328.0024 0037045 310.4188 49.3735 13.74332390638303
TDRS 1
1 13969U 83026B 95354.42227675 .00000059 00000-0 00000+0 0 5122
2 13969 8.6843 45.4022 0003236 243.6602 176.8083 1.00425209 19582
GOES 6
1 14050U 83041A 95354.13795721 -.00000225 00000-0 10000-3 0 4705
2 14050 6.6880 55.3600 0001960 16.3894 343.4753 1.00308669104395
OSCAR 10
1 14129U 83058B 95345.99476340 .00000071 00000-0 10000-3 0 3939
2 14129 26.4153 234.2339 5978432 333.6570 5.6309 2.05880346 65999
LandSat 5
1 14780U 84021A 95353.74854335 -.00000007 00000-0 87509-5 0 4075
```

```
2 14780 98.3590 46.3007 0003110 112.1510 248.0015 14.57033014627656
UoSat 2
1 14781U 84021B 95351.02661777 .00000126 00000-0 29085-4 0 8485
2 14781 97.7874 345.0490 0011270 322.2802 37.7611 14.69409470630750
GPS BI-09
1 15039U 84059A 95353.28699668 -.00000013 00000-0 10000-3 0 3806
2 15039 64.5832 25.7185 0082163 18.6350 341.7374 1.92302258 83955
Cosmos 1574
1 15055U 84062A 95361.54683129 .00000057 00000-0 44361-4 0 7574
2 15055 82.9542 13.2673 0028983 100.3645 260.0780 13.73630803577285
GPS BI-10
1 15271U 84097A 95362.47841435 -.00000036 00000-0 10000-3 0 901
2 15271 62.0549 259.8976 0158363 356.2544 3.6895 2.00607180 81829
Cosmos 1602
1 15331U 84105A 95347.84215874 .00000189 00000-0 19440-4 0 4386
2 15331 82.5321 287.5979 0018784 199.4575 160.5913 14.84702150605324
NOAA 9
1 15427U 84123A 95363.08160859 .00000041 00000-0 45292-4 0 5278
2 15427 98.9696 62.7216 0015845 77.9345 282.3606 14.13751346569451
GPS BI-11
1 16129U 85093A 95346.29834469 -.00000043 00000-0 10000-3 0 6939
2 16129 65.2531 29.3090 0156528 85.9239 275.9358 1.89368015 18367
Mir
1 16609U 86017A 95363.31886022 .00003052 00000-0 47214-4 0 3738
2 16609 51.6450 260.1718 0006351 151.1474 208.9815 15.57595592563378
SPOT 1
1 16613U 86019A 95353.84124113 .00000090 00000-0 62356-4 0 8815
2 16613 98.6302 60.8676 0000854 50.3924 309.7325 14.20082440194716
Cosmos 1766
1 16881U 86055A 95354.46322853 .00000188 00000-0 19845-4 0 3551
2 16881 82.5172 339.1832 0018052 204.5902 155.4455 14.83692880507198
EGP
1 16908U 86061A 95362.86397716 -.00000083 00000-0 10000-3 0 534
2 16908 50.0087 163.7232 0011092 296.7871 63.1828 12.44413690 95076
NOAA 10
1 16969U 86073A 95363.01223182 .00000005 00000-0 20339-4 0 4452
2 16969 98.5142 0.0626 0013534 130.1161 230.1206 14.24968893482221
MOS-1
1 17527U 87018A 95362.18366540 -.00000043 00000-0 00000+0 0 3670
2 17527 98.9688 62.7395 0019197 85.2875 275.0483 14.00418393450917
GOES 7
1 17561U 87022A 95361.33259443 .00000074 00000-0 10000-3 0 6943
2 17561 2.7116 70.7911 0001286 313.4651 55.9971 1.00282054 15570
Kvant-1
1 17845U 87030A 95362.09984089 .00001623 00000-0 28267-4 0 4801
2 17845 51.6439 266.2845 0006295 145.9674 214.1723 15.57585003497296
DMSP B5D2-3
1 18123U 87053A 95361.89575017 .00000014 00000-0 29308-4 0 2651
2 18123 98.7724 189.9832 0015019 28.8290 331.3711 14.15428132440120
RS-10/11
```

```
1 18129U 87054A 95351.19752666 .00000030 00000-0 16299-4 0 1503
2 18129 82.9234 283.7836 0010898 311.6235 48.3987 13.72359854425079
Meteor 2-16
1 18312U 87068A 95361.83358391 .00000007 00000-0 -66485-5 0 4489
2 18312 82.5556 128.7919 0012876 352.2119 7.8843 13.84068044422334
Meteor 2-17
1 18820U 88005A 95353.54650578 .00000025 00000-0 84407-5 0 8056
2 18820 82.5426 190.7973 0018119 73.3767 286.9380 13.84748621398524
DMSP B5D2-4
1 18822U 88006A 95354.55587779 .00000015 00000-0 24794-4 0 1439
2 18822 98.3905 190.0942 0006079 163.0262 197.1120 14.23175089409020
Glonass 34
1 19163U 88043A 95353.39195057 -.00000012 00000-0 10000-3 0 390
2 19163 65.1804 91.9340 0007623 157.3404 202.6961 2.13102459 58381
Glonass 36
1 19165U 88043C 95345.47123390 .00000013 00000-0 10000-3 0 4454
2 19165 65.1738 92.1628 0001236 299.8842 60.1081 2.13102123 58831
METEOSAT 3
1 19215U 88051A 95347.86981809 -.00000071 00000-0 10000-3 0 2241
2 19215 2.8853 68.7620 0004663 132.0920 227.5750 0.96948337 15374
AO-13
1 19216U 88051B 95361.60374044 .00000317 00000-0 96668-4 0 1265
2 19216 57.4021 144.6284 7365626 27.0750 356.8955 2.09725527 26216
OKEAN 1
1 19274U 88056A 95361.66575296 .00000303 00000-0 34818-4 0 579
2 19274 82.5137 73.0831 0019738 338.3760 21.6626 14.82428108403818
Meteor 3-2
1 19336U 88064A 95351.22382624 .00000051 00000-0 10000-3 0 4456
2 19336 82.5422 295.8816 0018419 338.1488 21.8847 13.16975372355393
Glonass 39
1 19503U 88085C 95345.96965858 -.00000028 00000-0 10000-3 0 3370
2 19503 65.6433 331.0691 0006205 156.5289 203.5111 2.13101764 56334
NOAA 11
1 19531U 88089A 95361.89088008 -.00000007 00000-0 21142-4 0 3331
2 19531 99.1929 10.4550 0012262 8.0946 352.0420 14.13076444374111
TDRS 2
1 19548U 88091B 95361.68706792 -.00000193 00000-0 10000-3 0 1688
2 19548 2.2029 72.7880 0007690 168.9156 186.0603 1.00272381 13792
Glonass 40
1 19749U 89001A 95349.29251333 .00000006 00000-0 10000-3 0 5543
2 19749 65.1407 91.6036 0004862 256.6913 103.2631 2.13101512 53912
Glonass 41
1 19750U 89001B 95344.18587717 .00000005 00000-0 10000-3 0 4612
2 19750 65.1532 91.8449 0007194 233.9091 126.0291 2.13101773 53823
GPS BII-01
1 19802U 89013A 95350.66988416 .00000041 00000-0 10000-3 0 1587
2 19802 55.2547 117.9535 0024352 181.0856 178.8813 2.00561411 50030
Akebono
1 19822U 89016A 95362.11925677 .00007628 00000-0 42514-3 0 6303
2 19822 75.0983 223.4554 3757766 235.7824 82.8760 7.89373625153092
```

```
Meteor 2-18
1 19851U 89018A 95350.70484561 .00000097 00000-0 73001-4 0 4443
2 19851 82.5195 67.3862 0015057 125.1992 235.0584 13.84402400343446
MOP-1
1 19876U 89020B 95347.06923474 -.00000120 00000-0 10000-3 0 1667
2 19876 1.6011 71.6716 0018697 275.4221 83.6595 0.97110381 4802
TDRS 3
1 19883U 89021B 95347.06222685 -.00000254 00000-0 10000-3 0 1446
2 19883 0.0578 63.2572 0003942 223.0686 136.3519 1.00269845197247
GPS BII-02
1 20061U 89044A 95353.99925896 -.00000050 00000-0 10000-3 0 1572
2 20061 54.3125 293.8448 0148634 216.0095 142.9398 2.00563522 47842
Nadezhda 1
1 20103U 89050A 95361.89940894 .00000049 00000-0 36077-4 0 6259
2 20103 82.9605 235.7243 0037342 171.4281 188.7523 13.73861684325020
GPS BII-03
1 20185U 89064A 95349.34943877 .00000049 00000-0 10000-3 0 1739
2 20185 55.0310 118.4863 0016345 331.3329 28.6896 2.00562242 46323
GMS 4
1 20217U 89070A 95353.61380588 -.00000356 00000-0 10000-3 0 2790
2 20217 1.4226 75.3875 0000950 52.7253 300.9092 1.00271552 23609
INTERCOSMOS 24
1 20261U 89080A 95362.11282886 .00000137 00000-0 32519-4 0 4649
2 20261 82.5915 20.6330 1243151 72.9309 300.3952 12.47308157284457
GPS BII-04
1 20302U 89085A 95343.90417015 .00000010 00000-0 10000-3 0 1625
2 20302 53.3128 234.1685 0013169 165.7144 194.4339 2.00561324 45014
Meteor 3-3
1 20305U 89086A 95362.16220793 .00000044 00000-0 10000-3 0 4656
2 20305 82.5564 243.5264 0006744 26.5819 333.5649 13.04430540295777
COBE
1 20322U 89089A 95351.08641453 -.00000089 00000-0 -28759-4 0 1746
2 20322 98.9511 4.3308 0008598 182.7272 177.3844 14.03457094311243
Kvant-2
1 20335U 89093A 95362.09984089 .00001623 00000-0 28267-4 0 4709
2 20335 51.6439 266.2845 0006295 145.9674 214.1723 15.57585003346309
GPS BII-05
1 20361U 89097A 95344.41378629 -.00000043 00000-0 10000-3 0 16
2 20361 55.8762 60.7913 0084430 129.2668 231.5208 2.00562976 34506
COSMOS 2054 (Altair-1)
1 20391U 89101A 95354.57991448 -.00000130 00000-0 10000-3 0 2685
2 20391 3.5030 64.6151 0001174 210.1282 6.1704 1.00277184 22192
SPOT 2
1 20436U 90005A 95354.53632264 .00000169 00000-0 10000-3 0 100
2 20436 98.7187 66.0784 0001020 74.3342 285.7946 14.20033702306343
UO-14
1 20437U 90005B 95347.21874792 .00000016 00000-0 22877-4 0 1469
2 20437 98.5595 68.6309 0012104 33.9049 326.2903 14.29906302307334
UO-15
1 20438U 90005C 95350.77305246 -.00000006 00000-0 14738-4 0 9430
```

```
2 20438 98.5547 70.3672 0011031 29.7949 330.3859 14.29220842307722
PACSAT
1 20439U 90005D 95361.73784052 -.00000007 00000-0 14124-4 0 9480
2 20439 98.5711 84.8442 0011755 354.8552 5.2502 14.29962206309425
DO-17
1 20440U 90005E 95344.14600830 -.00000000 00000-0 16812-4 0 9444
2 20440 98.5735 68.0686 0012436 42.1825 318.0312 14.30102357306936
WO-18
1 20441U 90005F 95350.77866747 .00000006 00000-0 19243-4 0 9505
2 20441 98.5731 74.5577 0013073 23.8663 336.3124 14.30073281307880
LO-19
1 20442U 90005G 95348.26962646 .00000053 00000-0 37446-4 0 9442
2 20442 98.5752 72.5105 0013365 30.1580 330.0364 14.30178770207540
GPS BII-06
1 20452U 90008A 95352.78784694 .00000113 00000-0 10000-3 0 1099
2 20452 54.0294 174.1410 0061874 85.3834 275.3699 2.00557701 43177
MOS-1B
1 20478U 90013A 95354.55183982 .00000090 00000-0 10000-3 0 8735
2 20478 99.1310 61.1549 0000961 59.5798 300.5441 13.94864356219515
DEBUT
1 20479U 90013B 95346.15232355 -.00000059 00000-0 -61010-4 0 9446
2 20479 99.0577 41.7271 0540199 189.9731 169.0287 12.83337427273789
FO-20
1 20480U 90013C 95350.69527278 -.00000079 00000-0 -10699-3 0 8428
2 20480 99.0577 45.2460 0540912 180.1508 179.9509 12.83231926274356
MOS-1B R/B
1 20491U 90013D 95353.31176639 .00000824 00000-0 16192-2 0 1986
2 20491 99.0670 106.6766 0469968 358.0811 1.8541 13.02980484278307
LACE
1 20496U 90015A 95348.11606560 .00000752 00000-0 29870-4 0 6047
2 20496 43.1041 185.1591 0011504 290.6356 69.3253 15.35176826325224
Nadezhda 2
1 20508U 90017A 95361.91414863 .00000044 00000-0 29985-4 0 6264
2 20508 82.9517 10.2616 0045576 124.0474 236.5027 13.73502593292246
OKEAN 2
1 20510U 90018A 95350.64512743 .00000189 00000-0 22711-4 0 4631
2 20510 82.5239 36.3434 0017623 193.5290 166.5452 14.78557327312554
GPS BII-07
1 20533U 90025A 95361.16605718 -.00000067 00000-0 10000-3 0 1458
2 20533 54.6742 294.2287 0038041 117.5173 242.8691 2.00574125 42114
PegSat
1 20546U 90028A 95343.73910509 .00005036 00000-0 97510-4 0 8713
2 20546 94.1262 243.9689 0064578 22.6485 337.7571 15.45528284315579
HST
1 20580U 90037B 95349.37231716 .00000429 00000-0 27274-4 0 7465
2 20580 28.4707 326.4837 0006936 43.0864 317.0276 14.90988410110975
MACSAT 2
1 20608U 90043B 95354.01597441 .00000139 00000-0 21385-4 0 1470
2 20608 89.9274 174.9263 0105419 327.3353 32.1368 14.64886156299917
Glonass 44
```

```
1 20619U 90045A 95353.88412563 -.00000031 00000-0 10000-3 0 2529
2 20619 65.2415 330.1272 0026074 208.2771 151.5854 2.13102472 43465
Glonass 45
1 20620U 90045B 95354.00282639 -.00000031 00000-0 10000-3 0 2547
2 20620 65.2387 330.1120 0007362 43.0083 317.0517 2.13102521 43502
Glonass 46
1 20621U 90045C 95353.60066721 -.00000029 00000-0 10000-3 0 8447
2 20621 65.2577 330.1809 0012640 196.3136 163.6489 2.13101814 43499
Kristall
1 20635U 90048A 95362.09984089 .00001623 00000-0 28267-4 0 2623
2 20635 51.6439 266.2845 0006295 145.9674 214.1723 15.57585003317131
ROSAT
1 20638U 90049A 95347.26201206 .00000178 00000-0 30461-4 0 5167
2 20638 52.9913 60.8000 0010399 277.2052 82.7730 15.07317713304123
Meteor 2-19
1 20670U 90057A 95347.47484685 .00000033 00000-0 15992-4 0 9435
2 20670 82.5451 136.1688 0017444 60.3656 299.9235 13.84151211275911
CRRES
1 20712U 90065A 95361.85704239 .00000018 00000-0 14575-3 0 1989
2 20712 18.0996 320.8677 7185405 248.6525 25.3862 2.35651389 39057
GPS BII-08
1 20724U 90068A 95349.52561041 .00000043 00000-0 10000-3 0 9768
2 20724 54.8889 116.0819 0124398 177.2296 182.8303 2.00565337 37743
Feng Yun1-2
1 20788U 90081A 95354.45936726 .00000274 00000-0 20955-3 0 6827
2 20788 98.8091 1.1223 0013745 280.1151 79.8466 14.01362286270922
Meteor 2-20
1 20826U 90086A 95347.26881148 .00000069 00000-0 49470-4 0 9541
2 20826 82.5254 73.0729 0013356 330.4268 29.6128 13.83620348262992
GPS BII-09
1 20830U 90088A 95354.06383400 -.00000039 00000-0 10000-3 0 9861
2 20830 55.8367 58.3720 0065411 99.0594 261.7309 2.00559605 38479
GPS BIIA-10
1 20959U 90103A 95354.46500891 .00000010 00000-0 10000-3 0 9497
2 20959 55.0979 117.9108 0103186 231.0021 128.0342 2.00568120 37078
DMSP B5D2-5
1 20978U 90105A 95361.86946336 .00000098 00000-0 50723-4 0 4601
2 20978 98.6179 69.2330 0078799 319.4722 40.0610 14.32610697265046
Glonass 47
1 21006U 90110A 95361.60268933 -.00000024 00000-0 10000-3 0 8205
2 21006 65.1270 90.5325 0058419 187.1261 172.8151 2.13102662 39335
Glonass 48
1 21007U 90110B 95353.34585633 -.00000013 00000-0 10000-3 0 9431
2 21007 65.1317 90.8921 0035333 178.5188 181.4955 2.13101096 39142
Glonass 49
1 21008U 90110C 95361.68534653 -.00000025 00000-0 00000+0 0 1692
2 21008 65.1252 90.5554 0010019 266.5196 93.3959 2.13098947 39315
AO-21
1 21087U 91006A 95354.21451354 .00000094 00000-0 82657-4 0 6605
2 21087 82.9381 94.9114 0036327 350.1498 9.8919 13.74562596245285
```

```
RS-12/13
1 21089U 91007A 95346.46247481 .00000029 00000-0 14751-4 0 8510
2 21089 82.9187 328.5575 0030788 38.1089 322.2236 13.74063304243254
MOP-2
1 21140U 91015B 95346.93963524 .00000013 00000-0 10000-3 0 1262
2 21140 0.1654 52.0996 0002569 205.8356 162.2638 1.00283013 19734
Nadezhda 3
1 21152U 91019A 95361.88069424 .00000018 00000-0 21921-5 0 3157
2 21152 82.9258 273.4037 0043248 100.8306 259.7716 13.73527308240093
Glonass 50
1 21216U 91025A 95361.15230340 -.00000045 00000-0 10000-3 0 4664
2 21216 64.9913 329.4868 0006600 187.2102 172.7633 2.13102736 36833
Glonass 51
1 21217U 91025B 95353.71384075 -.00000030 00000-0 10000-3 0 8717
2 21217 64.9854 329.7354 0011561 228.3751 131.5273 2.13101757 36666
Glonass 52
1 21218U 91025C 95354.29430341 -.00000034 00000-0 10000-3 0 3472
2 21218 64.9783 329.6943 0007850 325.1341 34.8141 2.13102479 36681
GRO
1 21225U 91027B 95343.67503675 .00002027 00000-0 38196-4 0 3192
2 21225 28.4604 72.8391 0002942 211.8682 148.1689 15.43420008140462
Meteor 3-4
1 21232U 91030A 95348.47706735 .00000050 00000-0 10000-3 0 8540
2 21232 82.5410 144.0892 0012195 267.9219 92.0510 13.16470343223101
NOAA 12
1 21263U 91032A 95361.89223993 .00000094 00000-0 60980-4 0 7626
2 21263 98.5686 20.8329 0013853 56.3366 303.9132 14.22586474239964
OKEAN 3
1 21397U 91039A 95361.83908208 .00000159 00000-0 19539-4 0 1567
2 21397 82.5231 299.6286 0020524 237.0347 122.8913 14.76439849245930
GPS BIIA-11
1 21552U 91047A 95346.26390871 -.00000045 00000-0 10000-6 0 9198
2 21552 56.1150 56.4443 0068791 244.4964 114.8396 2.00554445 32506
ERS-1
1 21574U 91050A 95349.19875445 .00000182 00000-0 83834-4 0 2283
2 21574 98.5480 60.9177 0001128 62.6409 297.4889 14.32249473230960
UO-22
1 21575U 91050B 95343.68488714 .00000010 00000-0 17583-4 0 6508
2 21575 98.3777 50.5014 0008250 109.5060 250.7021 14.37003389230701
ORBCOMM-X
1 21576U 91050C 95343.70540808 .00000046 00000-0 30377-4 0 7455
2 21576 98.3747 48.7202 0004408 113.6943 246.4706 14.36414516230602
TUBSAT-A
1 21577U 91050D 95344.17760830 .00000010 00000-0 17907-4 0 6440
2 21577 98.3751 49.7405 0006962 109.9707 250.2222 14.36503084230703
SARA
1 21578U 91050E 95353.75284991 .00000239 00000-0 91144-4 0 8477
2 21578 98.3993 65.7152 0005786 81.1394 279.0448 14.39116171232380
TDRS 4
1 21639U 91054B 95354.43598275 .00000090 00000-0 00000+0 0 9795
```

```
2 21639 0.0536 119.2531 0002193 143.2850 168.6338 1.00268698110105
Meteor 3-5
1 21655U 91056A 95348.36262716 .00000051 00000-0 10000-3 0 8520
2 21655 82.5521 91.7112 0012255 279.5996 80.3735 13.16842735208216
UARS
1 21701U 91063B 95354.45349712 -.00000033 00000-0 18213-4 0 7265
2 21701 56.9834 110.2449 0005256 111.3400 248.8182 14.96467555233459
DMSP B5D2-6
1 21798U 91082A 95361.93728960 .00000088 00000-0 69961-4 0 1123
2 21798 98.9526 14.0605 0013235 0.8701 359.2495 14.13937620210583
Glonass 53
1 21853U 92005A 95348.40575191 .00000008 00000-0 10000-3 0 562
2 21853 65.0593 90.6532 0007322 186.7810 173.2214 2.13102264 30160
Glonass 54
1 21854U 92005B 95344.47085112 .00000006 00000-0 10000-3 0 2217
2 21854 65.0616 90.7845 0014749 18.8585 341.1978 2.13104050 30067
Glonass 55
1 21855U 92005C 95347.35185712 .00000012 00000-0 00000+0 0 2183
2 21855 65.0622 90.6906 0008566 199.9147 160.0634 2.13102204 30119
JERS-1
1 21867U 92007A 95361.73852465 .00000207 00000-0 22104-4 0 7435
2 21867 97.7017 76.3503 0001380 47.9667 312.1673 14.98653213212035
GPS BIIA-12
1 21890U 92009A 95354.19962642 .00000054 00000-0 10000-3 0 7390
2 21890 53.8546 234.0799 0058359 187.9093 172.0873 2.00563240 28037
GPS BIIA-13
1 21930U 92019A 95353.91001256 -.00000044 00000-0 10000-3 0 7198
2 21930 55.7162 355.8271 0032881 180.9892 179.0384 2.00561628 26957
EUVE
1 21987U 92031A 95354.21584629 .00000928 00000-0 32991-4 0 5077
2 21987 28.4336 312.8626 0009791 239.1205 120.8427 15.19585410196279
SAMPEX
1 22012U 92038A 95354.42147193 .00000454 00000-0 37117-4 0 6821
2 22012 81.6704 309.0888 0119796 39.6202 321.3668 14.91534257188430
GPS BIIA-14
1 22014U 92039A 95361.92617433 .00000077 00000-0 00000+0 0 6328
2 22014 54.8391 175.4440 0092976 328.0742 31.3676 2.00562154 18959
Glonass 56
1 22056U 92047A 95361.79787515 -.00000047 00000-0 00000+0 0 1342
2 22056 64.8282 329.5478 0006811 273.5574 86.3631 2.13102228 26516
Glonass 57
1 22057U 92047B 95354.11624706 -.00000033 00000-0 00000+0 0 1157
2 22057 64.8339 329.8260 0009151 309.3744 50.5466 2.13102777 26326
Glonass 58
1 22058U 92047C 95362.03334972 -.00000047 00000-0 10000-3 0 723
2 22058 64.8234 329.5562 0011511 264.7122 95.1537 2.13103135 26547
TOPEX
1 22076U 92052A 95351.13241609 -.00000038 00000-0 10000-3 0 9282
2 22076 66.0410 232.8817 0007389 269.2235 90.7933 12.80931202156677
KO-23
```

```
1 22077U 92052B 95345.70693721 -.00000037 00000-0 10000-3 0 5415
2 22077 66.0788 224.0887 0003290 350.8424 9.2536 12.86293389156565
S80/T
1 22078U 92052C 95361.76394579 -.00000037 00000-0 10000-3 0 5420
2 22078 66.0791 189.1573 0005734 355.9070 4.1891 12.86578465158719
GPS BIIA-15
1 22108U 92058A 95352.91541948 .00000047 00000-0 10000-3 0 6691
2 22108 54.0969 234.9169 0113194 156.6346 203.9776 2.00555837 23950
FREJA
1 22161U 92064A 95348.52311959 .00000131 00000-0 90658-4 0 5697
2 22161 62.9903 351.8147 0824928 2.2587 358.1802 13.21864219153888
LAGEOS II
1 22195U 92070B 95353.47768400 -.00000009 00000-0 10000-3 0 4548
2 22195 52.6468 105.8634 0137741 357.6662 2.3251 6.47294048 74577
GPS BIIA-16
1 22231U 92079A 95348.61152663 .00000101 00000-0 10000-3 0 6337
2 22231 54.5929 177.0767 0010988 286.4035 73.5062 2.00557245 22440
GPS BIIA-17
1 22275U 92089A 95361.71970347 .00000075 00000-0 10000-3 0 6722
2 22275 54.6302 174.1315 0038899 254.1370 105.1713 2.00571446 22114
TDRS 5
1 22314U 93003B 95354.51125579 -.00000273 00000-0 10000-3 0 5968
2 22314 2.2673 70.7244 0003141 211.0443 305.3163 1.00272777 10782
GPS BIIA-18
1 22446U 93007A 95354.31063098 -.00000051 00000-0 10000-3 0 6452
2 22446 54.3304 294.6739 0086115 356.6412 3.3417 2.00567599 20954
Glonass 59
1 22512U 93010A 95349.34589647 .00000003 00000-0 10000-3 0 7558
2 22512 65.0721 90.4785 0009455 191.3439 168.6468 2.13102006 21750
Glonass 60
1 22513U 93010B 95347.40770124 .00000011 00000-0 00000+0 0 8472
2 22513 65.0663 90.5684 0007960 194.6838 165.3094 2.13102845 21900
Glonass 61
1 22514U 93010C 95353.33229004 -.00000014 00000-0 00000+0 0 8405
2 22514 65.0970 90.3406 0011804 187.7958 172.1910 2.13102546 22036
ASTRO-D
1 22521U 93011A 95354.54293520 .00001073 00000-0 69382-4 0 4596
2 22521 31.1041 130.3055 0056015 185.8361 174.1628 15.02647070155428
UFO F1
1 22563U 93015A 95349.42277165 .00000086 00000-0 00000+0 0 4774
2 22563 25.6661 291.5631 0009347 282.8716 77.0484 0.99248688 14267
GPS BIIA-19
1 22581U 93017A 95346.97499866 -.00000057 00000-0 10000-3 0 4872
2 22581 55.2216 355.5821 0058681 34.5667 325.8444 2.00567484 19869
ARSENE
1 22654U 93031B 95350.51041156 -.00000085 00000-0 10000-3 0 3431
2 22654 2.9391 77.8590 2884820 226.6956 105.0867 1.42203090 8982
GPS BIIA-20
1 22657U 93032A 95354.09388889 -.00000047 00000-0 10000-3 0 5754
2 22657 55.2045 355.1195 0074807 215.5012 144.0301 2.00556980 15336
```

```
RADCAL
1 22698U 93041A 95354.22565941 .00000057 00000-0 19473-4 0 4539
2 22698 89.5391 280.7934 0089805 191.1355 168.7852 14.21360826128867
GPS BIIA-21
1 22700U 93042A 95353.05732305 .00000046 00000-0 10000-3 0 4808
2 22700 54.2581 235.7270 0043396 352.2417 7.7770 2.00570037 18116
NOAA 13
1 22739U 93050A 95354.36607530 -.00000031 00000-0 76964-5 0 9572
2 22739 99.0189 303.6367 0009159 15.5049 344.6358 14.10951191121691
GPS BIIA-22
1 22779U 93054A 95353.15069877 -.00000051 00000-0 10000-3 0 5544
2 22779 54.4239 294.7509 0019391 258.0933 101.6895 2.00558034 16874
Meteor 2-21
1 22782U 93055A 95348.85550487 .00000025 00000-0 91024-5 0 4481
2 22782 82.5478 134.0199 0022828 133.6911 226.6146 13.83043413115510
UFO F2
1 22787U 93056A 95349.82190703 -.00000052 00000-0 00000+0 0 5947
2 22787 4.3378 325.9999 0003949 279.4683 206.1927 1.00270763 6989
SPOT 3
1 22823U 93061A 95348.72884291 -.00000044 00000-0 00000+0 0 4944
2 22823 98.7198 60.4130 0000605 78.3216 281.8028 14.20035830114914
STELLA
1 22824U 93061B 95345.22638358 -.00000040 00000-0 15559-5 0 4350
2 22824 98.6049 58.5760 0007342 61.5263 298.6654 14.27103104114982
AO-27
1 22825U 93061C 95346.18353378 .00000030 00000-0 30002-4 0 4383
2 22825 98.6038 59.9585 0009633 59.6074 300.6050 14.27681636115160
IO-26
1 22826U 93061D 95353.69244389 .00000012 00000-0 22664-4 0 4395
2 22826 98.6030 67.4775 0010339 40.3972 319.7971 14.27790320116241
HEATHSAT
1 22827U 93061E 95348.72185919 .00000028 00000-0 28739-4 0 4999
2 22827 98.6007 62.5051 0010179 43.8773 316.3210 14.27918948115547
ITAMSAT
1 22828U 93061F 95343.69713855 .00000029 00000-0 29034-4 0 4155
2 22828 98.5959 57.6818 0011272 52.6820 307.5375 14.28122501 82927
PO-28
1 22829U 93061G 95348.75572366 .00000032 00000-0 30552-4 0 4306
2 22829 98.5968 62.7070 0011036 40.7777 319.4228 14.28104400115566
KO-25
1 22830U 93061H 95354.14086422 -.00000064 00000-0 -85953-5 0 4506
2 22830 98.4957 59.0579 0011845 4.5658 355.5632 14.28102333116331
JIANBING-93 P/L(1)
1 22870U 93063H 95354.24549651 .00236670 84297-5 14935-3 0 3529
2 22870 56.4563 18.5059 0563002 267.5238 86.1260 15.04517529105308
GPS BIIA-23
1 22877U 93068A 95354.19414032 -.00000039 00000-0 10000-3 0 3634
2 22877 55.5391 56.3268 0037774 295.5118 64.1539 2.00566108 15782
METEOSAT 6
1 22912U 93073B 95354.50689236 -.00000074 00000-0 10000-3 0 3904
```

```
2 22912 0.4423 282.6240 0003225 352.7275 345.9951 1.00275031 6054
HST Array
1 22920U 90037C 95353.87220092 .00004399 00000-0 30669-3 0 4110
2 22920 28.4707 237.3999 0003201 352.3320 7.7280 15.03016881112259
Meteor 3-6
1 22969U 94003A 95351.17197901 .00000051 00000-0 10000-3 0 2186
2 22969 82.5577 29.6287 0015654 341.1854 18.8680 13.16733376 90960
TUBSAT-B
1 22970U 94003B 95348.53756162 .00000051 00000-0 10000-3 0 2094
2 22970 82.5584 31.4079 0016233 345.4600 14.6060 13.16826902 90627
GPS BIIA-24
1 23027U 94016A 95353.27943641 -.00000043 00000-0 10000-3 0 2978
2 23027 55.0832 357.1931 0066657 200.7034 159.0600 2.00569451 13078
Glonass 62
1 23043U 94021A 95347.30998027 -.00000022 00000-0 00000+0 0 2913
2 23043 64.7142 330.4282 0006978 201.4850 158.5023 2.13103257 13024
Glonass 63
1 23044U 94021B 95349.53885595 -.00000016 00000-0 00000+0 0 2605
2 23044 64.7059 330.3461 0030367 207.8110 152.0378 2.13103405 13070
Glonass 64
1 23045U 94021C 95354.40805204 -.00000035 00000-0 00000+0 0 2743
2 23045 64.6904 330.1944 0010020 25.9091 334.1435 2.13102704 13173
GOES 8
1 23051U 94022A 95353.92547160 -.00000244 00000-0 00000+0 0 4408
2 23051 0.4099 84.3154 0002622 178.2226 83.6095 1.00280446 13550
MSTI 2
1 23101U 94028A 95343.51223956 .00003963 00000-0 66745-4 0 2645
2 23101 97.0879 174.3311 0011197 314.6088 45.4217 15.52228090 89709
STRV-1A
1 23125U 94034B 95353.16159430 .00002455 00000-0 62838-3 0 2413
2 23125 7.5595 315.3134 7255172 271.4393 14.5935 2.31682494 11923
STRV-1B
1 23126U 94034C 95349.26045286 .00000760 00000-0 21710-3 0 2065
2 23126 7.5959 317.0099 7261409 267.9654 15.6616 2.31503065 11875
Nadezhda 4
1 23179U 94041A 95343.62707437 .00000030 00000-0 16164-4 0 1515
2 23179 82.9464 17.8397 0035622 298.3690 61.3877 13.75674794 70593
Glonass 65
1 23203U 94050A 95354.54591250 .00000108 00000-0 00000+0 0 2288
2 23203 64.7776 210.1485 0007616 135.1937 224.9588 2.13102250 10576
Glonass 66
1 23204U 94050B 95351.02574587 .00000095 00000-0 00000+0 0 2367
2 23204 64.7648 210.2988 0015052 352.3999 7.6645 2.13102251 10490
Glonass 67
1 23205U 94050C 95349.50072917 .00000079 00000-0 00000+0 0 2225
2 23205 64.7665 210.3363 0001546 358.5845 1.5097 2.13102791 10469
DMSP B5D2-7
1 23233U 94057A 95353.89784665 .00000116 00000-0 86140-4 0 6017
2 23233 98.8550 50.0769 0012602 335.7060 24.3508 14.12665240 67378
OKEAN 1-7
```

```
1 23317U 94066A 95353.66742633 .00000055 00000-0 49958-5 0 1175
2 23317 82.5447 225.0830 0025490 310.9198 48.9773 14.73985442 63946
ELEKTRO
1 23327U 94069A 95353.79934057 -.00000090 00000-0 00000+0 0 1096
2 23327 0.3880 255.8310 0001293 164.7510 31.1495 1.00272718 4196
RESURS 1-3
1 23342U 94074A 95353.67650878 .00000084 00000-0 22175-4 0 4202
2 23342 97.9933 49.7854 0001174 101.2768 258.8563 14.69799994 60292
Glonass 68
1 23396U 94076A 95353.09807382 -.00000013 00000-0 00000+0 0 1841
2 23396 65.0094 90.4341 0031029 191.1155 168.8188 2.13102784 8385
Glonass 69
1 23397U 94076B 95354.21227083 -.00000013 00000-0 00000+0 0 1919
2 23397 65.0036 90.3976 0012233 317.5926 42.3204 2.13102304 8407
Glonass 70
1 23398U 94076C 95354.09585610 -.00000013 00000-0 00000+0 0 2044
2 23398 64.9905 90.3818 0003125 266.5092 93.4603 2.13102200 8419
LUCH (Altair-2)
1 23426U 94082A 95354.48678632 -.00000265 00000-0 00000+0 0 2200
2 23426 1.8193 271.1364 0002411 341.3299 106.6473 1.00272183 3705
RS-15
1 23439U 94085A 95343.49531988 -.00000039 00000-0 10000-3 0 974
2 23439 64.8140 331.4678 0166515 232.2365 126.3383 11.27523690 39289
NOAA 14
1 23455U 94089A 95353.81839947 .00000070 00000-0 62936-4 0 4333
2 23455 98.9222 295.0476 0010560 33.6686 326.5167 14.11556310 50002
ODERACS II A
1 23471U 95004C 95353.75768889 .00063507 13017-4 13594-3 0 2645
2 23471 51.6410 241.2379 0010024 110.6309 249.5729 15.98726433 50686
Glonass 71
1 23511U 95009A 95354.52509721 -.00000035 00000-0 00000+0 0 1307
2 23511 64.7245 330.4406 0007437 231.2022 128.7336 2.13103439 6142
Glonass 72
1 23512U 95009B 95349.48107231 -.00000016 00000-0 00000+0 0 1407
2 23512 64.7140 330.6278 0008402 309.8033 50.1217 2.13102111 6033
Glonass 73
1 23513U 95009C 95348.83562347 -.00000017 00000-0 00000+0 0 1501
2 23513 64.7256 330.6590 0013811 209.8657 150.0690 2.13103254 6023
SFU
1 23521U 95011A 95347.25693678 .00002458 00000-0 75882-4 0 1291
2 23521 28.4559 292.2353 0008139 145.7238 214.3878 15.29432284 41384
GMS 5
1 23522U 95011B 95353.46036169 -.00000271 00000-0 10000-3 0 840
2 23522 0.6059 310.1977 0000855 82.7396 0.6525 1.00271147 2640
DMSP B5D2-8
1 23533U 95015A 95353.97562961 .00000063 00000-0 57672-4 0 3327
2 23533 98.8356 353.8132 0006494 202.3445 157.7446 14.12717178 38188
Microlab 1
1 23547U 95017C 95346.14685468 .00000160 00000-0 62487-4 0 700
2 23547 69.9799 246.4169 0010097 89.0020 271.2260 14.45457719 36499
```

```
OFEQ 3
1 23549U 95018A 95348.86388680 .00010059 00000-0 26144-3 0 1641
2 23549 143.3655 181.7760 0238773 22.0243 339.0581 15.11605434 38274
GFZ-1
1 23558U 86017JE 95348.39100719 .00002302 00000-0 32858-4 0 835
2 23558 51.6505 329.9819 0005579 237.0629 122.9830 15.61126127560977
ERS-2
1 23560U 95021A 95354.25067662 .00000015 00000-0 21635-4 0 1475
2 23560 98.5503 65.9127 0000843 60.6495 299.4775 14.32248360 34815
Spektr
1 23579U 95024A 95354.20810813 .00010056 00000-0 14038-3 0 2146
2 23579 51.6448 305.8225 0006399 119.1410 241.0482 15.57531378 33388
GOES 9
1 23581U 95025A 95353.87448245 -.00000051 00000-0 00000+0 0 1074
2 23581 0.1667 271.9377 0011977 181.6025 205.4942 1.00009784 2114
Helios 1A
1 23605U 95033A 95348.56270634 .00000095 00000-0 27149-4 0 1250
2 23605 98.1050 282.0966 0001393 69.5759 290.5592 14.63859086 23390
UPM SAT 1
1 23606U 95033B 95354.17053600 .00000055 00000-0 18501-4 0 995
2 23606 98.0873 288.0636 0008067 38.0250 322.1523 14.66915286 24323
CERISE
1 23607U 95033C 95346.84434817 .00000251 00000-0 53147-4 0 470
2 23607 98.0884 280.9005 0009975 59.6125 300.6066 14.67188899 23152
TDRS 6
1 23613U 95035B 95354.42037060 .00000137 00000-0 00000+0 0 1032
2 23613 0.3046 84.0632 0002713 157.1266 208.7698 1.00275023 1588
Glonass 74
1 23620U 95037A 95345.33530748 .00000052 00000-0 00000+0 0 757
2 23620 64.8336 210.3040 0018274 162.6778 197.4737 2.13102927 2988
Glonass 75
1 23621U 95037B 95353.95857760 .00000110 00000-0 00000+0 0 868
2 23621 64.8409 210.0146 0017622 173.9592 186.1543 2.13102333 3161
Glonass 76
1 23622U 95037C 95351.20154691 .00000097 00000-0 00000+0 0 817
2 23622 64.8292 210.1136 0036766 162.3371 197.8739 2.13102418 3103
Prognoz-M2
1 23632U 95039A 95348.15089960 -.00001191 00000-0 00000+0 0 228
2 23632 68.2070 253.2340 8948563 318.2430 21.6880 0.26356400 353
SICH-1
1 23657U 95046A 95351.18426273 .00000127 00000-0 16176-4 0 405
2 23657 82.5325 9.0012 0026566 286.7175 73.1113 14.73440418 15887
Soyuz TM-22
1 23665U 95047A 95354.20810813 .00010056 00000-0 14038-3 0 1067
2 23665 51.6448 305.8225 0006399 119.1410 241.0482 15.57531378 16824
Progress M-29
1 23678U 95053A 95353.63073565 .00000240 00000-0 10000-4 0 709
2 23678 51.6447 308.7174 0006487 106.1658 254.2399 15.57257433561836
RADARSAT
1 23710U 95059A 95353.53480380 -.00000044 00000-0 00000+0 0 806
```

```
2 23710 98.5777 357.7871 0001062 80.3183 279.8119 14.29976076 6428
1995067A
1 23730U 95067A 95351.67517763 .00039257 00000-0 62299-2 0 40
2 23730 6.9522 236.4969 7286486 187.0099 150.1447 2.28781363 243
1995067B
1 23731U 95067B 95353.52570602 -.00000254 00000-0 00000+0 0 87
2 23731 0.1546 268.1661 0011906 217.8628 243.3818 1.00336009 141
1995067C
1 23732U 95067C 95345.28709180 -.00000113 00000-0 00000+0 0 25
2 23732 6.8016 240.2951 7350648 180.8584 142.4403 2.18269142 92
1995067D
1 23733U 95067D 95349.06334745 .00030753 00000-0 51908-2 0 81
2 23733 6.9643 237.9068 7286966 184.5044 160.0384 2.28594318 186
1995068A
1 23734U 95068A 95354.36670451 .00000109 00000-0 10000-3 0 91
2 23734 64.8364 209.9160 0005111 193.5355 166.4984 2.13130912 132
1995068B
1 23735U 95068B 95354.36708650 .00000109 00000-0 10000-4 0 131
2 23735 64.8251 209.9333 0004841 214.7186 145.3573 2.13115134 136
1995068B
1 23736U 95068B 95349.36604390 .00000078 00000-0 00000+0 0 29
2 23736 64.8586 210.0602 0005948 205.5700 277.6749 2.13119384 11
1995068D
1 23737U 95068D 95348.94371692 .11793098 78787-5 10221-3 0 68
2 23737 64.8168 207.7143 0007255 256.5960 238.9392 16.51600890 117
1995068E
1 23738U 95068E 95348.55609337 .59377249 81617-5 21656-3 0 42
2 23738 64.7999 209.2089 0008852 357.2814 2.8330 16.57875961 36
1995068F
1 23739U 95068F 95352.48510548 .00000107 00000-0 10000-4 0 63
2 23739 64.8326 209.9903 0009035 258.5111 101.4780 2.13374180 85
1995068G
1 23740U 95068G 95348.60000000 .00000032 00000-0 00000+0 0 17
2 23740 64.8690 210.0580 5811747 297.3930 95.0500 4.23954300 24
1995069A
1 23741U 95069A 95350.97392924 -.00019761 24967-6 -15424-2 0 71
2 23741 26.9016 272.3386 7301358 178.6937 185.8735 2.28230978 55
1995069B
1 23742U 95069B 95353.82402826 .00035005 13196-5 24158-2 0 30
2 23742 26.9543 270.2055 7211821 181.5191 173.6904 2.39874582 129
Progress M-30
1 23744U 95070A 95354.65608425 .00078341 13837-4 15241-3 0 113
2 23744 51.6428 303.5524 0050716 131.0990 229.4864 15.97800376 339
1995070B
1 23745U 95070B 95354.80247787 .04817474 12384-4 37767-3 0 138
2 23745 51.6408 302.3246 0004997 88.5238 271.6359 16.39340807 363
1995071A
1 23748U 95071A 95354.80123264 .00005794 00000-0 10000-3 0 66
2 23748 65.0203 133.5618 0006496 233.0437 127.0114 15.52064873 126
1995071C
```

1 23750U 95071C 95354.40085137 .43548823 87146-5 41247-3 0 49
2 23750 65.0056 134.7662 0128187 56.1759 305.6754 16.30497756 64
--
Dr TS Kelso Adjunct Professor of Space Operations
tkelso@afit.af.mil Air Force Institute of Technology

2747. DL0ART/am - 4th balloon launch scheduled

Newsgroup: rec.radio.amateur.space
Date: 1995-12-30 00:00:00 UTC
From: welp@uni-muenster.de
Message-ID: <4c3m28$fp4@majestix.uni-muenster.de>
Source record: 23359

DL0ART/am - The Nienberge Amateur Radio Group (Germany) plans
another balloon launch on monday, 01-01-96.

This is our fourth flight and will be the first one carrying
a "user access". We`ll have a 70 cm/2 m crossband repeater
aboard. All hams are invited to use this facility. Please,
show appropriate ham spirit while using the repeater!

Planned ARTOB launch 01-01-96:

Launch: # 4
Launch date: 01-01-96 (Monday)
Launch time: 1200 UTC
Launch site: Nienberge near Muenster, Germany, JO32SA

Call sign: DL0ART/am
QRG/mod.: (1) Telemetry beacon: 145.200 MHz (F2D & F2A)
(2) Crossband repeater (F3E):
Uplink: 432.570 MHz
Downlink: 144.470 MHz
(3) RX for remote control on 70 cm and 10 m

Power: (1) 2 W
(2) 5 W

Antennas: (1) groundplane
(2) big wheel - one for 70 cm, one for 2 m
(3) 70 cm: groundplane / 10 m: lamda/2

Diameter ballon: ca. 8 ft

Talk back of DF teams and ground control via repeater Muenster,
DB0PD (R 84). Reports are welcome, please call DL3YBQ or DL9QJ.
Or send QSL to DL9QJ via bureau, via PR or via Internet. Each
report will be confirmed by a special QSL card of the balloon.

Any suggestion or response is always welcome!
Best 73,
Oliver

[Oliver Welp, DL9QJ, N3NSF
Internet: n3nsf@amsat.org or welp@uni-muenster.de
PR: DL9QJ@DB0EA.#NRW.DEU.EU
phone/fax: +49-2533-7312]

2748. ARLK074 Keplerian data

Newsgroup: rec.radio.amateur.space
Date: 1995-12-30 00:00:00 UTC
From: w1aw@arrl.org
Message-ID: <$arlk074.1995@arrl.org>
Source record: 23360
Cross-posted to: rec.radio.info,rec.radio.amateur.space

```
SB KEP @ ARL $ARLK074
ARLK074 Keplerian data

ZCZC SK99
QST de W1AW
Keplerian Bulletin 74 ARLK074
From ARRL Headquarters
Newington, CT December 30, 1995
To all radio amateurs

SB KEP ARL ARLK074
ARLK074 Keplerian data

Thanks to NASA, AMSAT and WA5QGD for the following Keplerian data.

Decode 2-line elsets with the following key:
1 AAAAAU 00 0 0 BBBBB.BBBBBBBB .CCCCCCCC 00000-0 00000-0 0 DDDZ
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJJKKKKKZ
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

Mir
1 16609U 86017A 95362.86974824 .00003541 00000-0 53713-4 0 3728
2 16609 51.6445 262.4214 0006368 149.7815 210.3572 15.57594581563305
AO-10
1 14129U 83058B 95361.05092806 .00000125 00000-0 10000-3 0 3968
2 14129 26.4171 231.8593 5978045 337.6927 4.6747 2.05878141 66305
RS-10/11
1 18129U 87054A 95362.13373968 .00000028 00000-0 14207-4 0 01709
2 18129 82.9240 275.7004 0010215 277.3383 82.6609 13.72360346426575
UO-11
1 14781U 84021B 95361.99001009 .00000089 00000-0 22848-4 0 08633
2 14781 97.7872 355.5034 0010712 284.3585 75.6427 14.69412813632364
RS-12/13
1 21089U 91007A 95361.89980059 .00000006 00000-0 -90879-5 0 08667
2 21089 82.9202 317.1066 0030080 356.5784 3.5154 13.74063775245370
AO-13
1 19216U 88051B 95361.60374044 .00000317 00000-0 96668-4 0 1254
2 19216 57.4021 144.6284 7365626 27.0750 356.8955 2.09725527 26227
UO-14
1 20437U 90005B 95362.19329050 .00000020 00000-0 24577-4 0 01593
2 20437 98.5583 83.3478 0011416 352.8680 7.2346 14.29907856309470
RS-15
1 23439U 94085A 95361.05673110 -.00000039 00000-0 10000-3 0 1016
2 23439 64.8172 303.0704 0165651 229.4247 129.2147 11.27524010 41264
```

```
AO-16
1 20439U 90005D 95362.15767069 .00000029 00000-0 28259-4 0 09506
2 20439 98.5710 85.2573 0011898 353.4925 6.6098 14.29962610309481
DO-17
1 20440U 90005E 95362.12698287 .00000020 00000-0 24774-4 0 09509
2 20440 98.5730 85.7782 0012176 352.8516 7.2487 14.30104323309504
WO-18
1 20441U 90005F 95362.11321215 .00000023 00000-0 25827-4 0 09641
2 20441 98.5698 85.7167 0012670 352.6763 7.4250 14.30074415309504
LO-19
1 20442U 90005G 95362.12193615 .00000064 00000-0 41734-4 0 09510
2 20442 98.5731 86.1509 0012875 351.9005 8.1972 14.30180591309520
FO-20
1 20480U 90013C 95362.15694522 -.00000029 00000-0 21324-5 0 08635
2 20480 99.0558 54.5558 0541112 154.2148 208.7017 12.83232452275824
AO-21
1 21087U 91006A 95361.71200700 .00000093 00000-0 82657-4 0 06716
2 21087 82.9392 89.3652 0035625 329.4083 30.4994 13.74562917246316
UO-22
1 21575U 91050B 95362.13668387 .00000032 00000-0 25070-4 0 06600
2 21575 98.3754 68.4555 0008700 59.3118 300.8924 14.37006112233350
KO-23
1 22077U 92052B 95361.95679522 -.00000037 00000-0 10000-3 0 05570
2 22077 66.0795 190.0675 0004594 346.0700 14.0191 12.86294339158651
KO-25
1 22828U 93061F 95360.72215775 .00000014 00000-0 23042-4 0 4197
2 22828 98.5954 74.4406 0010808 8.4457 351.6907 14.28124128 85359
IO-26
1 22826U 93061D 95359.15853818 -.00000000 00000-0 17573-4 0 4408
2 22826 98.5980 72.8543 0010109 26.6203 333.5495 14.27790658117022
AO-27
1 22825U 93061C 95359.21905631 .00000009 00000-0 21393-4 0 4419
2 22825 98.6021 72.7864 0009566 26.3686 333.7974 14.27682705117027
PO-28
1 22829U 93061G 95361.71732213 .00000050 00000-0 37770-4 0 4338
2 22829 98.5969 75.4682 0010710 6.4819 353.6492 14.28106001117419

Keplerian bulletins are transmitted twice weekly from W1AW.
The next scheduled transmission of these data will be Tuesday,
January 2, 1995, at 2330z on Baudot and AMTOR.
NNNN
/EX
```

2749. Re: MIR frequencies?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-30 00:00:00 UTC
From: trandall@mhv.net
Message-ID: <4c4fut$bei@over.mhv.net>
Source record: 23361

In article <Pine.SOL.3.91.951228134640.22784D-100000@spacelink>,
Richard David Glueck <glue9600@spacelink.msfc.nasa.gov> wrote:
>Is MIR currently using 145.550 simplex or 145.800 simplex, or both?
>----------
>Richard David Glueck Email:glue9600@spacelink.msfc.nasa.gov

Mir uses both but mainly 145.550. They were broadcasting a pre-recorded
greetings message yesterday. Listen in to both, you never know which
they'll use but they run mainly packet on 145.550. No packet yesterday,
just the message.

Tom

Tom Randall Amateur Radio - KB2SMS
trandall@mhv.net Mt. Beacon Amateur Radio Club / ARRL
Member: AAVSO Solar Division

Opinions herein are mine and they are not that of MHV.NET!

2750. OS/2 satellite trackers?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-31 00:00:00 UTC
From: jim@draco.bison.mb.ca
Message-ID: <4c5gl6$50k@draco.bison.mb.ca>
Source record: 23267

Are there any OS/2 PM (or char. mode) satellite tracker programs
available. There was one person who was supposedly working on an OS/2
progrm but e-mail to him just bounces.
--
Winnipeg MB Canada jim@draco.bison.mb.ca
TEAM OS/2 MIME OK
VE4JAF
OS/2 -- 10 Million Licenses and Growing Daily!

2751. Re: Hubble Downlink

Newsgroup: rec.radio.amateur.space
Date: 1995-12-31 00:00:00 UTC
From: Richard Rohrer <rrohrer@mail.bcpl.lib.md.us>
Message-ID: <Pine.SOL.3.91.951230202749.10880A-100000@mail>
Source record: 23362

Gayle,

The data from the HST is sent to the Tracking Data Relay Satellites on S-band, convertered and downlinked to WhiteSands NM on Ku band. The data rate is in the multi megabit/sec rate. With out very specialized equipment processing equipment there is not much to be gained in receiving the data.

Dick Rohrer, KC3EF

On Thu, 28 Dec 1995, Gayle Albert wrote:

> Greetings:
>
> Is it possible to receive and 'decode' data from the HST?
>
> Any info would be appreciated.
>
>
> Marty Albert (Amatuer Radio Station KC6UFM)
> PO Box 717
> Fredericktown, MO 63645
>
>
>

2752. STS-72 When?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-31 00:00:00 UTC
From: js@ibbs.av.org
Message-ID: <DKH1F1.7B3@ibbs.av.org>
Source record: 23363

I signed up on a mailing list out of San Diego, CA. The elements are very good and up to date. Needless to say, I am impressed. However, the set sent before a launch has no launch date. :-) So when is STS-72 going to launch?

Oh, BTW. What happend to NASA Select? The only thing that has been on is "NASA WASH" with a color pattern. Did even NASA get laid off? If so what about the people that are military that happen to be assigned to NASA duty? I ask since there has been no lack of work for me. We have continued as normal. Humm..

--

Jeff Stillinger - KB6IBB js@ibbs.av.org
PSC Box 3429 js@red-eft.la.ca.us
Edwards AFB, CA 93524 +1 805 258 7303 8N1
Flight Test Center, crashing aircraft so you don't have too.

2753. Mir Happy New Year!!!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-31 00:00:00 UTC
From: dhend@cyberportal.net
Message-ID: <4c73bi$pll@news.cyberportal.net>
Source record: 23364

this message was heard from Mir 12/31/95 during the afternoon, on 145.550
Happy New Year!!!!

Roma-zero-MIR Roma-zero-MIR
Mir Space Station
Russian Mir Space Station
Wishing you a Happy New Year!
This is Crew Number 20 of Space Station Mir here working.
Yuri Gidzenko Board commander,Board Engineer Thomas Reiter, and myself
Sergei Avdeyev Board Engineer #1.
We wish you hello and A Very Happy Next Year!!!
This is Mir Space Station.

e-mail=dhend@cyberportal.net
packet= N1PPP @ WA1WOK.FN43FE.NH.USA.NOAM zip 03743
phone 1-603-542-2493 1-603-542-6917

Sex is the most fun you can have without logging on.

Diplomacy is the art of saying "Nice doggie!"...until you can find a rock.

Be wary of strong drink.
It can make you shoot at tax collectors and miss.
-Lazarus Long

I still miss my ex-wife, but my aim is getting better....

2754. Re: STS-72 When?

Newsgroup: rec.radio.amateur.space
Date: 1995-12-31 00:00:00 UTC
From: Keith@unix.asb.com
Message-ID: <Keith.673.00082681@unix.asb.com>
Source record: 23365

>Oh, BTW. What happend to NASA Select? The only thing that has been on is
>"NASA WASH" with a color pattern. Did even NASA get laid off? If so what
>about the people that are military that happen to be assigned to NASA duty?
>I ask since there has been no lack of work for me. We have continued as
>normal. Humm..
>--
>Jeff Stillinger - KB6IBB js@ibbs.av.org

Can you say GOVERNMENT SHUTDOWN ????
|===|
|| Keith@unix.asb.com == SLIP/PPP Internet Address |
| Keith@asb.com == BBS Internet Address |
| Http://www.asb.com/usr/keith == My WWW Page URL Address |
| N2NJS@KC2FD.NY.USA.NA == Ham Radio AX25 Packet Address |
| 70302,2701 == CompuServe Address |
| K.Knipschild == GENIE Address |
|===|
^^

2755. SATCOM Books Wanted!

Newsgroup: rec.radio.amateur.space
Date: 1995-12-31 00:00:00 UTC
From: zuritaj@omni.voicenet.com
Message-ID: <4c6o5o$kr4@news.voicenet.com>
Source record: 23366
Cross-posted to: rec.video.satellite.dbs,sci.space.tech,rec.radio.amateur.space

I am looking to buy the following two out-of-print books on satellite communications. If you have them and are willing to sell, please send e-mail with ISBN number. The books are:

Satellite Communications - 2nd ed.
- Robert Gagliardi
Van Nostrand Rheinhold

Digital Communications by Satellite
- James Spilker
Prentice Hall

Thanks! - JRZ